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*The material contained in this announcement is not for distribution or circulation, directly or indirectly, in or into the United States. This announcement is solely for the purpose of reference and does not constitute an offer to sell or the solicitation of an offer to buy any securities in the United States or any other jurisdiction in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of any such jurisdiction. The securities referred to herein have not been and will not be registered under the United States Securities Act of 1933, as amended (the "**Securities Act**"), and may not be offered or sold within the United States, except pursuant to an exemption from, or in a transaction not subject to, the registration requirements of the Securities Act. Accordingly, the securities offer are being offered and sold only outside the United States in offshore transaction in compliance with Regulation S under the Securities Act.*

***Notice to Hong Kong investors:** The Issuer (defined as below) and the Guarantor (defined as below) confirm that the Bonds (as defined below) are intended for purchase by professional investors (as defined in Chapter 37 of the Listing Rules) only and have been listed on the Hong Kong Stock Exchange (as defined below) on that basis. Accordingly, each the Issuer and the Guarantor confirm that the Bonds are not appropriate as an investment for retail investors in Hong Kong. Investors should carefully consider the risks involved.*

PUBLICATION OF THE OFFERING CIRCULAR

CHINALCO CAPITAL HOLDINGS LIMITED

(a BVI business company incorporated with limited liability in the British Virgin Islands and an indirect wholly-owned subsidiary of Aluminum Corporation of China)
*(the "**Issuer**")*

U.S.$600,000,000 2.95 per cent. Guaranteed Bonds due 2027

(Stock Code: 4497)

unconditionally and irrevocably guaranteed by

CHINALCO

ALUMINUM CORPORATION OF CHINA
（中國鋁業集團有限公司）

(an enterprise incorporated with limited liability in the People's Republic of China)
(the "**Guarantor**")

Joint Global Coordinators, Joint Bookrunners and Joint Lead Managers

Bank of China	**Standard Chartered Bank**	**UBS**

Joint Bookrunners and Joint Lead Managers

China Construction Bank (Asia)	**DBS Bank Ltd.**	**Haitong International**

This announcement is issued pursuant to Rule 37.39A of the Rules Governing the Listing of Securities (the "**Listing Rules**") on The Stock Exchange of Hong Kong Limited (the "**Hong Kong Stock Exchange**").

Reference is made to the notice of listing of the U.S.$600,000,000 2.95 per cent. Guaranteed Bonds due 2027 (the "**Bonds**") dated 24 February 2022 published by the Issuer.

Please refer to the offering circular dated 16 February 2022 (the "**Offering Circular**") appended hereto in relation to the Bonds. As disclosed in the Offering Circular, the Bonds to be issued are intended for purchase by professional investors (as defined in Chapter 37 of the Listing Rules) only and have been listed on the Hong Kong Stock Exchange on that basis.

The Offering Circular does not constitute a prospectus, notice, circular, brochure or advertisement offering to sell any securities to the public in any jurisdiction, nor is it an invitation to the public to make offers to subscribe for or purchase any securities, nor is it circulated to invite offers by the public to subscribe for or purchase any securities.

25 February 2022

As at the date of this announcement, the directors of the Issuer are Mr. Hu Zhenjie, Ms. Shan Shulan and Ms. Hu Weixi.

As at the date of this announcement, the directors of the Guarantor are Mr. Yao Lin, Mr. Liu Xiangmin, Mr. Ao Hong, Mr. Zhong Jun, Mr. Zhang Yuanrong, Mr. Ren Shuhui, Mr. Nie Xiaofu, Mr. Cao Yuanzheng and Mr. Mao Shiqing.

IMPORTANT NOTICE

NOT FOR DISTRIBUTION TO ANY PERSON OR ADDRESS IN THE UNITED STATES. THIS OFFERING IS AVAILABLE ONLY TO INVESTORS WHO ARE ADDRESSEES OUTSIDE OF THE UNITED STATES.

IMPORTANT: You must read the following disclaimer before continuing. The following disclaimer applies to the attached offering circular ("**Offering Circular**"). You are advised to read this disclaimer carefully before accessing, reading or making any other use of the attached Offering Circular. In accessing the attached Offering Circular, you agree to be bound by the following terms and conditions, including any modifications to them from time to time, each time you receive any information from us as a result of such access. In order to view this Offering Circular or make an investment decision with respect to the securities, you must not be located in the United States.

Confirmation of Your Representation: This Offering Circular is being sent to you at your request and by accepting the e-mail and accessing the attached Offering Circular, you shall be deemed to represent to Bank of China Limited, BOCI Asia Limited, Standard Chartered Bank, UBS AG Hong Kong Branch, China Construction Bank (Asia) Corporation Limited, DBS Bank Ltd. and Haitong International Securities Company Limited (together, the "**Joint Lead Managers**") that (1) you and any customers you represent are not, and the e-mail address that you gave us and to which this e-mail has been delivered is not located, in the United States, its territories or possessions, and (2) you consent to delivery of the attached Offering Circular and any amendments or supplements thereto by electronic transmission.

The attached Offering Circular has been made available to you in electronic form. You are reminded that documents transmitted via this medium may be altered or changed during the process of transmission and consequently none of the Joint Lead Managers, the Trustee (as defined in the attached Offering Circular) or the Agents (as defined in the attached Offering Circular) or any of their respective affiliates, directors, officers, employees, representatives, advisers or agents or any person who controls any of them accepts any liability or responsibility whatsoever in respect of any discrepancies between the document distributed to you in electronic format and the hard copy version. We will provide a hard copy version to you upon request.

Restrictions: The attached Offering Circular is being furnished in connection with an offering outside the United States in compliance with Regulation S under the U.S. Securities Act of 1933, as amended (the "**Securities Act**") solely for the purpose of enabling a prospective investor to consider the purchase of the securities described herein.

NOTHING IN THIS ELECTRONIC TRANSMISSION CONSTITUTES AN OFFER OF SECURITIES FOR SALE IN THE UNITED STATES OR ANY OTHER JURISDICTION WHERE IT IS UNLAWFUL TO DO SO. THE SECURITIES AND THE GUARANTEE THEREOF HAVE NOT BEEN, AND WILL NOT BE, REGISTERED UNDER THE SECURITIES ACT, OR THE SECURITIES LAWS OF ANY STATE OF THE UNITED STATES OR OTHER JURISDICTION AND THE SECURITIES MAY NOT BE OFFERED OR SOLD WITHIN THE UNITED STATES, EXCEPT PURSUANT TO AN EXEMPTION FROM, OR IN A TRANSACTION NOT SUBJECT TO, THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT AND APPLICABLE STATE OR LOCAL SECURITIES LAWS. THIS OFFERING IS MADE SOLELY IN OFFSHORE TRANSACTIONS PURSUANT TO REGULATION S UNDER THE SECURITIES ACT.

Nothing in this electronic transmission constitutes an offer or an invitation by or on behalf of the issuer of the securities, the guarantor thereof or the Joint Lead Managers, the Trustee or the Agents to subscribe for or purchase any of the securities described therein, and access has been limited so that it shall not constitute in the United States or elsewhere a general solicitation or general advertising (as those terms are used in Regulation D under the Securities Act) or directed selling efforts (within the meaning of Regulation S under the Securities Act). If a jurisdiction requires that the offering be made by a licensed broker or dealer and the Joint Lead Managers or any affiliate of the Joint Lead Managers are licenced brokers or dealers in that jurisdiction, the offering shall be deemed to be made by the Joint Lead Managers or such affiliate on behalf of the issuer in such jurisdiction.

You are reminded that you have accessed the attached Offering Circular on the basis that you are a person into whose possession this Offering Circular may be lawfully delivered in accordance with the laws of the jurisdiction in which you are located and you may not nor are you authorised to deliver this Offering Circular, electronically or otherwise, to any other person. If you have gained access to this transmission contrary to the foregoing restrictions, you are not allowed to purchase any of the securities described in the attached Offering Circular.

Actions that You May Not Take: If you receive this document by e-mail, you should not reply by e-mail to this announcement, and you may not purchase any securities by doing so. Any reply e-mail communications, including those you generate by using the "Reply" function on your e-mail software, will be ignored or rejected.

*Singapore SFA Product Classification: In connection with Section 309B of the Securities and Futures Act (Chapter 289) of Singapore (the "**SFA**") and the Securities and Futures (Capital Markets Products) Regulations 2018 of Singapore (the"**CMP Regulations 2018**"), the Issuer has determined, and hereby notifies all relevant persons (as defined in Section 309A(1) of the SFA), that the Bonds are "prescribed capital markets products" (as defined in the CMP Regulations 2018).*

PRIIPs REGULATION — PROHIBITION OF SALES TO EEA RETAIL INVESTORS — The Bonds are not intended to be offered, sold or otherwise made available to and should not be offered, sold or otherwise made available to any retail investor in the European Economic Area ("**EEA**"). For these purposes, a retail investor means a person who is one (or more) of: (i) a retail client as defined in point (11) of Article 4(1) of Directive 2014/65/EU (as amended, "**MiFID II**"); or (ii) a customer within the meaning of Directive (EU) 2016/97 (the "**Insurance Distribution Directive**"), where that customer would not qualify as a professional client as defined in point (10) of Article 4(1) of MiFID II. Consequently no key information document required by Regulation (EU) No 1286/2014 (as amended, the "**PRIIPs Regulation**") for offering or selling the Bonds or otherwise making them available to retail investors in the EEA has been prepared and therefore offering or selling the Bonds or otherwise making them available to any retail investor in the EEA may be unlawful under the PRIIPS Regulation.

UK PRIIPs REGULATION — PROHIBITION OF SALES TO UK RETAIL INVESTORS — The Bonds are not intended to be offered, sold or otherwise made available to and should not be offered, sold or otherwise made available to any retail investor in the United Kingdom (the "**UK**"). For these purposes, a retail investor means a person who is one (or more) of: (i) a retail client, as defined in point (8) of Article 2 of Regulation (EU) No 2017/565 as it forms part of domestic law by virtue of the European Union (Withdrawal) Act 2018 (the "**EUWA**"); or (ii) a customer within the meaning of the provisions of the Financial Services and Markets Act 2000 (the "**FSMA**") and any rules or regulations made under the FSMA to implement the Insurance Distribution Directive, where that customer would not qualify as a professional client, as defined in point (8) of Article 2(1) of Regulation (EU) No 600/2014 as it forms part of domestic law by virtue of the EUWA. Consequently no key information document required by the PRIIPs Regulation as it forms part of domestic law by virtue of the EUWA (the "**UK PRIIPs Regulation**") for offering or selling the Bonds or otherwise making them available to retail investors in the UK has been prepared and therefore offering or selling the Bonds or otherwise making them available to any retail investor in the UK may be unlawful under the UK PRIIPs Regulation.

YOU ARE NOT AUTHORISED TO AND YOU MAY NOT FORWARD OR DELIVER THE ATTACHED OFFERING CIRCULAR, ELECTRONICALLY OR OTHERWISE, TO ANY OTHER PERSON OR REPRODUCE SUCH OFFERING CIRCULAR IN ANY MANNER WHATSOEVER. ANY FORWARDING, DISTRIBUTION OR REPRODUCTION OF THE ATTACHED OFFERING CIRCULAR IN WHOLE OR IN PART IS UNAUTHORISED. FAILURE TO COMPLY WITH THIS DIRECTIVE MAY RESULT IN A VIOLATION OF THE SECURITIES ACT OR THE APPLICABLE LAWS OF OTHER JURISDICTIONS.

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Chinalco Capital Holdings Limited

(a BVI business company incorporated with limited liability in the British Virgin Islands and an indirect wholly-owned subsidiary of Aluminum Corporation of China)

US$600,000,000 2.95 per cent. Guaranteed Bonds due 2027
Unconditionally and irrevocably guaranteed by

ALUMINUM CORPORATION OF CHINA
（中國鋁業集團有限公司）

(an enterprise incorporated with limited liability in the People's Republic of China)

Issue Price: 98.517 per cent.

The 2.95 per cent. Guaranteed Bonds due 2027 in the aggregate principal amount of US$600,000,000 (the "**Bonds**") will be issued by Chinalco Capital Holdings Limited (the "**Issuer**") and will be unconditionally and irrevocably guaranteed (the "**Guarantee**") by Aluminum Corporation of China (中國鋁業集團有限公司) (the "**Guarantor**") pursuant to a deed of guarantee to be executed on or about 24 February 2022 (the "**Deed of Guarantee**"). The Issuer is a subsidiary of the Guarantor.

The specified denomination of the Bonds shall be US$200,000 and integral multiples of US$1,000 in excess thereof.

Interest on the Bonds will be payable semi-annually in arrear on 24 February and 24 August in each year. The Bonds will constitute direct, unsubordinated, unconditional and (subject to Condition 4(a) of the terms and conditions of the Bonds (the "**Terms and Conditions of the Bonds**") unsecured obligations of the Issuer and shall at all times rank *pari passu* and without any preference or priority among themselves. The payment obligations of the Issuer under the Bonds shall, save for such exceptions as may be provided by applicable law and subject to Condition 4(a) of the Terms and Conditions of the Bonds, at all times rank at least equally with all the Issuer's other present and future unsecured and unsubordinated obligations. The obligations of the Guarantor under the Guarantee shall, save for such exceptions as may be provided by applicable law and subject to Condition 4(a) of the Terms and Conditions of the Bonds, at all times rank at least equally with all its other present and future unsecured and unsubordinated obligations.

All payments of principal, premium (if applicable) and interest by or on behalf of the Issuer or the Guarantor in respect of the Bonds or under the Guarantee shall be made free and clear of, and without withholding or deduction for or on account of, any present or future taxes, duties, assessments or governmental charges of whatever nature imposed, levied, collected, withheld or assessed by or within any Relevant Jurisdiction (as defined in the Terms and Conditions of the Bonds) or any political subdivision or authority therein or thereof having power to tax, unless such withholding or deduction is required by law. See "*Terms and Conditions of the Bonds — Taxation*".

The Bonds will mature on 24 February 2027 at their principal amount. The Bonds may be redeemed at the option of the Issuer in whole, but not in part, at any time, on giving not less than 30 nor more than 60 days' notice to the Bondholders and in writing to the Trustee and the Principal Paying Agent at their principal amount together with interest accrued to but excluding the date fixed for redemption in the event of certain changes affecting taxes of any Relevant Jurisdiction or any political subdivision or any authority thereof or therein having power to tax, or any change in the application or official interpretation of such laws or regulations (including a judgment or order of a court of competent jurisdiction). On giving not less than 30 nor more than 60 days' notice to the Trustee in writing and to the Bondholders, the Issuer may at any time and from time to time redeem the Bonds, in whole but not in part, at a Make Whole Price (as defined in the Terms and Conditions of the Bonds) as of, and accrued and unpaid interest, if any, to (but excluding), the redemption date specified in the notice. At any time following the occurrence of a Change of Control or a No Registration Event (each as defined in the Terms and Conditions of the Bonds), the holder of any Bond will have the right, at such holder's option, to require the Issuer to redeem all, but not some only, of that holder's Bonds on the Put Settlement Date (as defined in the Terms and Conditions of the Bonds) at a redemption price equal to 101 per cent. (in the case of a redemption for a Change of Control) or 100 per cent. (in the case of a redemption for a No Registration Event) of their principal amount, together with accrued interest to but excluding such Put Settlement Date. The Issuer may, on giving not less than 30 nor more than 60 days' notice to the Bondholders and in writing to the Trustee and the Principal Paying Agent, redeem the Bonds in whole, but not in part, at any time on or after 24 January 2027, at 100 per cent. of their principal amount together with any interest accrued to but excluding the date fixed for redemption. See "*Terms and Conditions of the Bonds — Redemption and Purchase*".

Pursuant to the Notice on Promoting the Reform of the Filing and Registration System for Issuance of Foreign Debt by Enterprises (《國家發展改革委關於推進企業發行外債備案登記制管理改革的通知》發改外資[2015]2044號) promulgated by the National Development and Reform Commission of the PRC (the "**NDRC**") on 14 September 2015 which came into effect immediately (the "**Circular 2044**"), the Guarantor has registered the issuance of the Bonds with the NDRC and has obtained a certificate from the NDRC on 7 December 2021 evidencing such registration and will undertake to file or cause to be filed the relevant information in connection with the Bonds to the NDRC within the prescribed timeframe after the Issue Date of the Bonds and in accordance with the Circular 2044 and any implementation rules, regulations, certificates, circulars or notices in connection therewith issued by the NDRC from time to time.

The Guarantor will undertake to file or cause to be filed with the State Administration of Foreign Exchange of the PRC or its local branch ("**SAFE**") the Deed of Guarantee within the prescribed timeframe after execution of the Deed of Guarantee in accordance with the Provisions on the Foreign Exchange Administration of Cross-Border Guarantees (《跨境擔保外匯管理規定》匯發[2014]29號) promulgated by SAFE on 12 May 2014 which came into effect on 1 June 2014 (the "**Cross-Border Security Registration**"). The Guarantor shall use all reasonable endeavours to complete the Cross-Border Security Registration and obtain a registration certificate from SAFE (or any other document evidencing the completion of registration issued by SAFE) on or before the Registration Deadline (as defined in the Terms and Conditions of the Bonds) and comply with all applicable PRC laws and regulations in relation to the Cross-Border Security Registration.

Investing in the Bonds involves certain risks. See "*Risk Factors*" beginning on page 17.

The Bonds and the Guarantee have not been and will not be registered under the United States Securities Act of 1933, as amended (the "**Securities Act**") and, subject to certain exceptions, may not be offered or sold within the United States. Accordingly, the Bonds are being offered and sold only outside the United States in offshore transactions in reliance of Regulation S under the Securities Act. For a description of these and certain further restrictions on offers and sales of the Bonds and the distribution of this Offering Circular, see the section entitled "*Subscription and Sale*" on page 177.

Application will be made to The Stock Exchange of Hong Kong Limited (the "**Hong Kong Stock Exchange**") for the listing of, and permission to deal in, the Bonds by way of debt issues to professional investors (as defined in Chapter 37 of the Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited) (the "**Professional Investors**") only and such permission is expected to become effective on 25 February 2022. This document is for distribution to Professional Investors only.

Notice to Hong Kong investors: The Issuer and the Guarantor confirm that the Bonds are intended for purchase by Professional Investors only and will be listed on the Hong Kong Stock Exchange on that basis. Accordingly, the Issuer and the Guarantor confirm that the Bonds are not appropriate as an investment for retail investors in Hong Kong. Investors should carefully consider the risks involved.

The Hong Kong Stock Exchange has not reviewed the contents of this Offering Circular, other than to ensure that the prescribed form disclaimer and responsibility statements, and a statement limiting distribution of this Offering Circular to Professional Investors only have been reproduced in this Offering Circular. Listing of the Bonds on the Hong Kong Stock Exchange is not to be taken as an indication of the commercial merits or credit quality of the Bonds or the Issuer, the Guarantor or the Group or quality of disclosure in this Offering Circular. Hong Kong Exchanges and Clearing Limited and the Hong Kong Stock Exchange take no responsibility for the contents of this Offering Circular, make no representation as to its accuracy or completeness and expressly disclaim any liability whatsoever for any loss howsoever arising from or in reliance upon the whole or any part of the contents of this Offering Circular.

The Bonds will be represented initially by interests in a global certificate (the "**Global Certificate**") in registered form which will be registered in the name of a nominee of, and shall be deposited on or about 24 February 2022 (the "**Issue Date**") with, a common depositary for Euroclear Bank SA/NV ("**Euroclear**") and Clearstream Banking S.A. ("**Clearstream**"). Interests in the Global Certificate will be shown on, and transfers thereof will be effected only through, records maintained by Euroclear and Clearstream. Except as described in the Global Certificate, individual certificates for Bonds will not be issued in exchange for interests in the Global Certificate. See "*Summary of Provisions relating to the Bonds while in Global Form*".

The Bonds are expected to be assigned a rating of A- by Fitch Ratings Ltd. ("**Fitch**"). The rating does not constitute a recommendation to buy, sell or hold the Bonds and may be subject to suspension, reduction or withdrawal at any time by Fitch. A suspension, reduction or withdrawal of the rating assigned to the Bonds may adversely affect the market price of the Bonds.

Joint Global Coordinators, Joint Bookrunners and Joint Lead Managers

Bank of China **Standard Chartered Bank** **UBS**

Joint Bookrunners and Joint Lead Managers

China Construction Bank (Asia) **DBS Bank Ltd.** **Haitong International**

Offering Circular dated 16 February 2022

IMPORTANT NOTICE

Each of the Issuer and the Guarantor confirms that (i) this Offering Circular contains all information with respect to the Issuer, the Guarantor and its subsidiaries taken as a whole (together, the "**Group**"), the Bonds and the Guarantee which is material in the context of the issue and offering of the Bonds; (ii) the statements contained herein relating to the Issuer, the Guarantor and the Group are in every material respect true and accurate and not misleading; (iii) the opinions and intentions expressed in this Offering Circular with regard to the Issuer, the Guarantor and the Group are honestly held, have been reached after considering all relevant circumstances and are based on reasonable assumptions; (iv) there are no other facts in relation to the Issuer, the Guarantor, the Group, the Bonds or the Guarantee, the omission of which would, in the context of the issue and offering of the Bonds, make any statement in this Offering Circular misleading in any material respect; and (v) all reasonable enquiries have been made by the Issuer and the Guarantor to ascertain such facts and to verify the accuracy of all such information and statements.

This Offering Circular includes particulars given in compliance with the Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited for the purpose of giving information with regard to the Issuer, the Guarantor and the Group. Each of the Issuer and the Guarantor accepts full responsibility for the accuracy of the information contained in this Offering Circular and confirms, having made all reasonable enquiries, that to the best of its knowledge and belief there are no other facts the omission of which would make any statement herein misleading. Hong Kong Exchanges and Clearing Limited and the Hong Kong Stock Exchange take no responsibility for the contents of this Offering Circular, make no representation as to its accuracy or completeness and expressly disclaim any liability whatsoever for any loss howsoever arising from or in reliance upon the whole or any part of the contents of this Offering Circular.

This Offering Circular has been prepared by the Issuer and the Guarantor solely for use in connection with the proposed offering of the Bonds described in this Offering Circular. The distribution of this Offering Circular and the offering of the Bonds in certain jurisdictions may be restricted by law. Persons into whose possession this Offering Circular comes are required by the Issuer, the Guarantor and Bank of China Limited, BOCI Asia Limited, Standard Chartered Bank, UBS AG Hong Kong Branch, China Construction Bank (Asia) Corporation Limited, DBS Bank Ltd. and Haitong International Securities Company Limited (together, the "**Joint Lead Managers**") to inform themselves about and to observe any such restrictions. This Offering Circular does not constitute an offer of, or an invitation by or on behalf of the Joint Lead Managers, the Issuer, or the Guarantor to subscribe for or purchase any of the Bonds. None of the Issuer, the Guarantor and the Joint Lead Managers represents that this Offering Circular may be lawfully distributed, or that the Bonds may be lawfully offered, in compliance with any applicable registration or other requirements in any such jurisdiction, or pursuant to an exemption available thereunder, or assume any responsibility for facilitating any such distribution or offering. No action is being taken to permit a public offering of the Bonds or the distribution of this Offering Circular in any jurisdiction where action would be required for such purposes. There are restrictions on the offer and sale of the Bonds and the circulation of documents relating thereto, in certain jurisdictions including the United States, the European Economic Area, the United Kingdom, the British Virgin Islands, the PRC, Hong Kong, Singapore and Japan, and to persons connected therewith. For a description of certain further restrictions on offers, sales and resales of the Bonds and distribution of this Offering Circular, see "*Subscription and Sale*" below. By purchasing the Bonds, investors are deemed to have represented and agreed to all of those provisions contained in that section of this Offering Circular. This Offering Circular is personal to each offeree and does not constitute an offer to any other person or to the public generally to subscribe for, or otherwise acquire, the Bonds. Distribution of this

Offering Circular to any person other than the prospective investor and any person retained to advise such prospective investor with respect to its purchase is unauthorised. Each prospective investor, by accepting delivery of this Offering Circular, is deemed to have agreed to the foregoing and to make no photocopies of this Offering Circular or any documents referred to in this Offering Circular.

No person has been or is authorised to give any information or to make any representation concerning the Issuer, the Guarantor, the Group, the Bonds or the Guarantee other than as contained herein and, if given or made, any such other information or representation should not be relied upon as having been authorised by the Issuer, the Guarantor, the Joint Lead Managers, the Trustee or the Agents (as defined in the Terms and Conditions of the Bonds) (or any of their respective affiliates, directors, officers, employees, representatives, advisers or agents or any person who controls any of them). Neither the delivery of this Offering Circular nor any offering, sale or delivery made in connection with the issue of the Bonds shall, under any circumstances, constitute a representation that there has been no change or development reasonably likely to involve a change in the affairs of the Issuer, the Guarantor, the Group or any of them since the date hereof or create any implication that the information contained herein is correct as at any date subsequent to the date hereof. This Offering Circular does not constitute an offer of, or an invitation by or on behalf of the Issuer, the Guarantor, the Joint Lead Managers, the Trustee or the Agents (or any of their respective affiliates, directors, officers, employees, representatives, advisers or agents or any person who controls any of them) to subscribe for or purchase any of the Bonds and may not be used for the purpose of an offer to, or a solicitation by, anyone in any jurisdiction or in any circumstances in which such offer or solicitation is not authorised or is unlawful.

This Offering Circular is being furnished by the Issuer and the Guarantor in connection with the offering of the Bonds and is exempt from registration under the Securities Act solely for the purpose of enabling a prospective investor to consider purchasing the Bonds. Investors must not use this Offering Circular for any other purpose, make copies of any part of this Offering Circular or give a copy of it to any other person, or disclose any information in this Offering Circular to any other person. The information contained in this Offering Circular has been provided by the Issuer and the Guarantor and other sources identified in this Offering Circular. Any reproduction or distribution of this Offering Circular, in whole or in part, and any disclosure of its contents or use of any information herein for any purpose other than the consideration of an investment in the Bonds offered by this Offering Circular is prohibited.

The Issuer has submitted this Offering Circular confidentially to a limited number of institutional investors so that they can consider a purchase of the Bonds. Neither the Issuer nor the Guarantor has authorised its use for any other purpose. This Offering Circular is being furnished by the Issuer and the Guarantor in connection with the offering of the Bonds exempt from registration under the Securities Act solely for the purpose of enabling a prospective investor to consider purchasing the Bonds. Investors must not use this Offering Circular for any other purpose, make copies of any part of this Offering Circular or give a copy of it to any other person, or disclose any information in this Offering Circular to any other person. The information contained in this Offering Circular has been provided by the Issuer, the Guarantor and other sources identified in this Offering Circular. Any reproduction or distribution of this Offering Circular, in whole or in part, and any disclosure of its contents or use of any information herein for any purpose other than considering an investment in the Bonds offered by this Offering Circular is prohibited. By accepting delivery of this Offering Circular each investor agrees to these restrictions.

No representation or warranty, express or implied, is made or given by the Joint Lead Managers, the Trustee or the Agents (or any of their respective affiliates, directors, officers, employees, representatives, advisers, agents or any person who controls any of them) as to the accuracy, completeness or sufficiency of the information contained in this Offering Circular, and nothing contained in this Offering Circular is, or shall be relied upon as, a promise, representation or warranty by the Joint Lead Managers, the Trustee or the Agents (or any of their respective affiliates, directors, officers, employees, representatives, advisers or agents or any person who controls any of them). None of the Joint Lead Managers, the Trustee and the Agents (and their respective affiliates, directors, officers, employees, representatives, advisers and agents and none of the persons who control any of them) has independently verified any of the information contained in this Offering Circular and can give assurance that such information is accurate, truthful or complete.

To the fullest extent permitted by law, none of the Joint Lead Managers, the Trustee and the Agents (and none of their respective affiliates, directors, officers, employees, representatives, advisers and agents and persons who control any of them) accepts any responsibility for the contents of this Offering Circular or for any other statement, made or purported to be made by the Joint Lead Manager or on its behalf in connection with the Issuer, the Guarantor, the issue and offering of the Bonds, or the Guarantee. Each of the Joint Lead Managers, the Trustee and the Agents (and their respective affiliates, directors, officers, employees, representatives, advisers and agents and each person who controls any of them) accordingly disclaims all and any liability whether arising in tort or contract or otherwise which it might otherwise have in respect of this Offering Circular or any such statement. None of the Joint Lead Managers, the Trustee and the Agents (and none of their respective affiliates, directors, officers, employees, representatives, advisers and agents and none of the persons who control any of them) undertakes to review the financial condition or affairs of the Guarantor during the life of the arrangements contemplated by this Offering Circular nor to advise any investor or potential investors in the Bonds of any information coming to the attention of any Joint Lead Manager, the Trustee or any Agent (or any of their respective affiliates, directors, officers, employees, representatives, advisers or agents or any person who controls any of them).

It is expected that the Bonds will, when issued, be assigned a rating of "A–" by Fitch. The rating is not a recommendation to buy, sell or hold securities, does not address the likelihood or timing of prepayment and may be subject to revision, qualification, suspension or withdrawal at any time by the assigning rating organisation. A revision, qualification, suspension or withdrawal of any rating assigned to the Bonds may adversely affect the market price of the Bonds.

This Offering Circular is not intended to provide the basis of any credit or other evaluation nor should it be considered as a recommendation by any of the Issuer, the Guarantor, the Joint Lead Managers, the Trustee or the Agents (or any of their respective affiliates, directors, officers, employees, representatives, advisers or agents or any person who controls any of them) that any recipient of this Offering Circular should purchase the Bonds. Prospective investors should not construe anything in this Offering Circular as legal, business or tax advice. Each potential purchaser of the Bonds should determine for itself the relevance of the information contained in this Offering Circular and its purchase of the Bonds should be based upon such investigations with its own tax, legal and business advisers as it deems necessary.

IN CONNECTION WITH THE ISSUE OF THE BONDS, BOCI ASIA LIMITED AS STABILISATION MANAGER (THE "STABILISATION MANAGER") (OR ANY PERSON ACTING ON BEHALF OF THE STABILISATION MANAGER) MAY OVER-ALLOT SECURITIES OR EFFECT TRANSACTIONS WITH A VIEW TO SUPPORTING THE

MARKET PRICE OF THE BONDS AT A LEVEL HIGHER THAN THAT WHICH MIGHT OTHERWISE PREVAIL. HOWEVER, THERE IS NO ASSURANCE THAT THE STABILISATION MANAGER (OR ANY PERSON ACTING ON BEHALF OF THE STABILISATION MANAGER) WILL UNDERTAKE STABILISATION ACTION. ANY STABILISATION ACTION MAY BEGIN ON OR AFTER THE DATE ON WHICH ADEQUATE PUBLIC DISCLOSURE OF THE TERMS OF THE OFFER OF THE BONDS IS MADE AND, IF BEGUN, MAY BE ENDED AT ANY TIME, BUT IT MUST END NO LATER THAN THE EARLIER OF 30 DAYS AFTER THE ISSUE DATE OF THE BONDS AND 60 DAYS AFTER THE DATE OF THE ALLOTMENT OF THE BONDS. ANY STABILISATION ACTION OR OVER-ALLOTMENT MUST BE CONDUCTED BY THE STABILISATION MANAGER (OR ANY PERSON ACTING ON BEHALF OF THE STABILISATION MANAGER) IN ACCORDANCE WITH ALL APPLICABLE LAWS AND RULES.

In connection with the offering of the Bonds, the Joint Lead Managers and/or their respective affiliates, or affiliates of the Issuer or the Guarantor, may act as investors and place orders, receive allocations and trade the Bonds for their own account and such orders, allocations or trading of the Bonds may be material. These entities may hold or sell such Bonds or purchase further Bonds for their own account in the secondary market or deal in any other securities of the Issuer or the Guarantor, and therefore, they may offer or sell the Bonds or other securities otherwise than in connection with the offering of the Bonds. Accordingly, references herein to the offering of the Bonds should be read as including any offering of the Bonds to the Joint Lead Managers and/or their respective affiliates, or affiliates of the Issuer or the Guarantor, as investors for their own account. Such entities are not expected to disclose such transactions or the extent of any such investment, otherwise than in accordance with any applicable legal or regulatory requirements. If such transactions occur, the trading price and liquidity of the Bonds may be impacted.

Singapore SFA Product Classification: In connection with Section 309B of the SFA and the Securities and Futures (Capital Markets Products) Regulations 2018 of Singapore (the "CMP Regulations 2018"), the Issuer has determined, and hereby notifies all relevant persons (as defined in Section 309A(1) of the SFA), that the Bonds are "prescribed capital markets products" (as defined in the CMP Regulations 2018).

This Offering Circular includes particulars given in compliance with the Rules Governing the Listing of Securities on the Hong Kong Stock Exchange for the purpose of giving information with regard to the Issuer and the Guarantor. The Issuer and Guarantor accept full responsibility for the accuracy of the information contained in this Offering Circular and confirm, having made all reasonable enquiries, that to the best of their knowledge and belief there are no other facts the omission of which would make any statement herein misleading.

Each person receiving this Offering Circular acknowledges that such person has not relied on the Joint Lead Managers, the Trustee or the Agents (or any of their respective affiliates, directors, officers, employees, representatives, advisers or agents or any person who controls any of them) in connection with its investigation of the accuracy of such information or its investment decision, and such person must rely on its own examination of the Issuer, the Guarantor, the Group, and the merits and risks involved in investing in the Bonds. See "*Risk Factors*" below for a discussion of certain factors to be considered in connection with an investment in the Bonds.

PRIIPs REGULATION — PROHIBITION OF SALES TO EEA RETAIL INVESTORS — The Bonds are not intended to be offered, sold or otherwise made available to and should not be offered, sold or otherwise made available to any retail investor in the European Economic Area ("**EEA**"). For these purposes, a retail investor means a person who is one (or more) of: (i) a retail client as defined in point (11) of Article 4(1) of Directive 2014/65/EU (as amended, "**MiFID II**"); or (ii) a customer within the meaning of Directive (EU) 2016/97 (the "**Insurance Distribution Directive**"), where that customer would not qualify as a professional client as defined in point (10) of Article 4(1) of MiFID II. Consequently no key information document required by Regulation (EU) No 1286/2014 (as amended, the "**PRIIPs Regulation**") for offering or selling the Bonds or otherwise making them available to retail investors in the EEA has been prepared and therefore offering or selling the Bonds or otherwise making them available to any retail investor in the EEA may be unlawful under the PRIIPS Regulation.

UK PRIIPs REGULATION — PROHIBITION OF SALES TO UK RETAIL INVESTORS — The Bonds are not intended to be offered, sold or otherwise made available to and should not be offered, sold or otherwise made available to any retail investor in the United Kingdom (the "**UK**"). For these purposes, a retail investor means a person who is one (or more) of: (i) a retail client, as defined in point (8) of Article 2 of Regulation (EU) No 2017/565 as it forms part of domestic law by virtue of the European Union (Withdrawal) Act 2018 (the "**EUWA**"); or (ii) a customer within the meaning of the provisions of the Financial Services and Markets Act 2000 (the "**FSMA**") and any rules or regulations made under the FSMA to implement the Insurance Distribution Directive, where that customer would not qualify as a professional client, as defined in point (8) of Article 2(1) of Regulation (EU) No 600/2014 as it forms part of domestic law by virtue of the EUWA. Consequently no key information document required by the PRIIPs Regulation as it forms part of domestic law by virtue of the EUWA (the "**UK PRIIPs Regulation**") for offering or selling the Bonds or otherwise making them available to retail investors in the UK has been prepared and therefore offering or selling the Bonds or otherwise making them available to any retail investor in the UK may be unlawful under the UK PRIIPs Regulation.

Industry and Market Data

Market data and certain industry forecasts and statistics in this Offering Circular have been obtained from both public and private sources, including market research, publicly available information and industry publications. Although this information is believed to be reliable, it has not been independently verified by the Issuer, the Guarantor, the Joint Lead Managers, the Trustee, the Agents (or any of their respective affiliates, directors, officers, employees, representatives, advisers or agents or any person who controls any of them), and none of the Issuer, the Guarantor, the Joint Lead Managers, the Trustee, the Agents (and none of their respective affiliates, directors, officers, employees, representatives, adviser and agents and none of the persons who control any of them) makes any representation as to the accuracy or completeness of that information. Such information may not be consistent with other information compiled within or outside the PRC. In addition, third party information providers may have obtained information from market participants and such information may not have been independently verified. In making an investment decision, each investor must rely on its own examination of the Issuer, the Guarantor, the Group and the terms of the offering and the Bonds, including the merits and risks involved.

Presentation of Financial Information

This Offering Circular contains the Guarantor's audited consolidated financial information as at and for the years ended 31 December 2019 and 2020 which is derived from its audited consolidated financial statements of the Group as at and for the year ended 31 December 2020 (the "**Audited Financial Statements**") which are included elsewhere in this Offering Circular have been audited by ShineWing Certified Public Accountants LLP ("**ShineWing CPAs**"). The audited consolidated financial statements of the Guarantor were prepared in accordance with the Accounting Standards for Business Enterprises in PRC and all applicable guidance, bulletins and other relevant accounting regulations issued thereafter, as amended from time to time ("**PRC GAAP**").

On 5 July 2017, the Ministry of Finance ("**MOF**") issued the "Accounting Standards for Business Enterprises No. 14 — Revenue (Revised in 2017)" (Caikuai [2017] No. 22)《企業會計準則第14號 — 收入 (2017年修訂)》(財會[2017]22號) (the "**New Revenue Standards**"). Companies that are listed both domestically and abroad and companies that are listed overseas and adopt the International Financial Reporting Standards ("**IFRS**") or PRC GAAP to prepare financial reports are required to implement the new financial instrument standards and new revenue standards from 1 January 2018. Yunnan Copper Co., Ltd. (雲南銅業股份有限公司), Yunnan Chihong Zinc and Germanium Co., Ltd (雲南馳宏鋅鍺股份有限公司), Yunnan Aluminum Co., Ltd. (雲南鋁業股份有限公司) and Yunnan Copper Science & Technology Development Co., Ltd. (雲南銅業科技發展股份有限公司) implemented the New Revenue Standards since 1 January 2020 and as a result reassessed the recognition, measurement, accounting and presentation of main contract revenues. According to the New Revenue Standards, if the recognition and measurement of revenue business before 1 January 2020 is inconsistent with the requirements of the New Revenue Standards, the relevant company should make adjustments in accordance with the requirements of the new income standards. The impact of the implementation of the New Revenue Standards on the relevant items in the balance sheet are listed in Note 5.1.1 "*Changes in Accounting Policies and Accounting Estimates and Corrections of Accounting Errors — Changes in accounting policy — Implementation of the new revenue standard*" to the Audited Financial Statements.

In addition, in order to ensure that the financial statements reflect the Group's economic and business nature more accurately meanwhile in accordance with the "Accounting Standards for Business Enterprises No. 16 — Government Subsidies" revised and issued by MOF (Cai Kuai [2017] No. 15)《企業會計準則第16號 — 政府補助》(財會[2017]15號) (the "**Government Subsidies Standards**") and to take into account the requirements of the international market environment for the main business of the Group, the Group has changed the original government subsidy standard from the gross method to the net method since 1 January 2020. The Group restated the opening balance for the year ended 31 December 2020 of the relevant balance sheet items and the amount incurred in the year ended 31 December 2019 for the income statement items. The impacts of the relevant items are listed in Note 5.1.2 "*Changes in Accounting Policies and Accounting Estimates and Corrections of Accounting Errors — Changes in accounting policy — Changes in government subsidy policies*" to the Audited Financial Statements.

Further, Chinalco Financial Leasing Co., Ltd (中鋁融資租賃有限公司) and Chinalco Commercial Factoring Co., Ltd. (中鋁商業保理有限公司), have increased the overall provision ratio from 1 per cent. to 1.5 per cent., changed the previous provision ratio of risk reserve which was based on 1 per cent. of business assets to 0.5 per cent. of market-oriented business assets, after full analysis of the quality of their business assets. At the same time, in order to meet the regulatory policy requirements of the China Banking and Insurance Regulatory Commission, a general risk reserve was made at 1 per cent. of the balance of risk assets for the year ended 31 December 2020. See Note 5.1.3 "*Changes in Accounting Policies and Accounting Estimates and Corrections of Accounting Errors — Changes in accounting policy — Changes in accounting estimates*" to the Audited Financial Statements.

The Audited Financial Statements were prepared and presented in accordance with PRC GAAP. PRC GAAP differs in certain material respects from IFRS. See "*Description of Certain Differences Between PRC GAAP and IFRS*". Accordingly, potential investors must exercise caution when using such consolidated financial statements to evaluate the Group's financial condition and operations. The Group's historical financial information may not be directly comparable against the Group's financial information as at and for the years ended 31 December 2019 and 2020 included in this Offering Circular. Investors must therefore exercise caution when making comparisons of any such financial figures after 1 January 2020 against the Group's historical financial figures prior to 1 January 2020 and when evaluating the Group's financial condition, results of operations and results.

Exchange Rate Information

The Guarantor's consolidated financial statements are presented in Renminbi. For convenience only and unless otherwise noted, all translations from Renminbi into US dollars in this Offering Circular were made at the rate of RMB6.5250 to US$1.00, based on the noon buying rate as set forth in the H.10 statistical release of the Federal Reserve Bank of New York on 31 December 2020. No representation is made that the Renminbi amounts referred to in this Offering Circular have been, could have been, could be or will be converted into U.S. dollars at any particular rate or at all, and *vice versa*. For further information relating to exchange rates, see "*Exchange Rate Information*" below.

Rounding

In this Offering Circular, where information has been presented in thousands, millions or billions of units, amounts may have been rounded up or down. Accordingly, totals of columns or rows of numbers in tables may not be equal to the apparent total of the individual items and actual numbers may differ from those contained herein due to rounding. References to information in billions of units are to the equivalent of a thousand million units.

Certain Definitions and Conventions

In this Offering Circular, the term "**Group**" refers to Aluminum Corporation of China (中國鋁業集團有限公司) and its subsidiaries and the term "**Guarantor**" or "**Chinalco**" refers to Aluminum Corporation of China (中國鋁業集團有限公司) individually, in each case unless the context otherwise requires. The term "**Issuer**" refers to Chinalco Capital Holdings Limited, an indirect wholly-owned subsidiary of the Guarantor.

In this Offering Circular, unless otherwise specified or the context otherwise requires, references to "**China**" or the "**PRC**" are to the People's Republic of China and, for the purpose of this Offering Circular only, excluding Hong Kong, the Macau Special Administrative Region of the People's Republic of China and Taiwan; and references to "**Hong Kong**" are to the Hong Kong Special Administrative Region of the People's Republic of China. In this Offering Circular, unless otherwise specified or the context otherwise requires, references to "**Renminbi**", "**RMB**" or "**CNY**" are to the lawful currency of the PRC; references to "**Hong Kong dollars**", "**HK dollars**", "**HK$**" or "**HKD**" are to the lawful currency of Hong Kong; and references to "**U.S. dollars**", "**US dollars**" or "**US$**" are to the lawful currency of the United States of America.

DEFINITIONS AND GLOSSARY

"**2016 Bonds**"	the five-year term guaranteed bonds in the aggregate nominal amount of US$800.0 million with an annual interest rate of 4.00 per cent. issued by the Issuer on 25 August 2016.
"**2017 Bonds**"	the five-year term guaranteed bonds in the aggregate nominal amount of US$500.0 million with an annual interest of 4.25 per cent. issued by the Issuer on 21 April 2017.
"**2019 Securities**"	the senior guaranteed perpetual securities in the aggregate nominal amount of US$750.0 million with an initial distribution rate of 4.10 per cent. issued by the Issuer on 11 September 2019.
"**2021 Bonds**"	the five-year term guaranteed bonds in the aggregate nominal amount of US$800 million with an annual interest rate of 2.125 per cent. issued by the Issuer on 3 June 2021.
"**Alcoa**"	Aluminum Company of America.
"**aluminium fabrication**"	the process of converting primary aluminium or recycled aluminium materials into plates, strips, bars, tubes and other fabricated products.
"**American Depositary Receipts**"	a negotiable certificate issued by a U.S. bank representing a specified number of shares (or one share) in a foreign stock that is traded on a U.S. exchange.
"**anode furnace**"	a furnace that refines crude copper into copper anode plates by feeding air to oxidise the impurities in the crude copper and then removing them with heavy oil.
"**Baotou Aluminum**"	Baotou Aluminum Company Limited (包頭鋁業有限公司).
"**bauxite**"	a mineral ore that is principally composed of aluminium.
"**Bayer process**"	a refining process that employs a strong solution of caustic soda at an elevated temperature to extract alumina from bauxite.
"**Bayer-sintering combined process**" and "**Bayer-sintering series process**"	the two methods of refining process developed in China which involve the combined application of the Bayer process and the sintering process to extract alumina from bauxite.
"**Boffa Project**"	the project to develop and explore bauxite in Boffa, Guinea by the Group.
"**CFETS**"	China Foreign Exchange Trading System (中國外匯交易中心).
"**central government**"	the central government of the PRC, including all political subdivisions and instrumentalities thereof, or where the context requires, any of them.

"**Chalco**"	Aluminum Corporation of China Limited (中國鋁業股份有限公司).
"**Chalco Group**"	Chalco and its subsidiaries.
"**Chalco Liupanshui**"	Chalco Liupanshui Hengtaihe Mining Co., Ltd. (中鋁六盤水恒泰合礦業有限公司).
"**Chalco Mining**"	Chalco Mining Co., Ltd. (中鋁礦業有限公司).
"**Chalco Shandong**"	Chalco Shandong Co., Ltd. (中鋁山東有限公司).
"**Chalco Trading**"	China Aluminum International Trading Co., Ltd. (中鋁國際貿易有限公司).
"**Chalco Zhongzhou**"	Chalco Zhongzhou Aluminum Co., Ltd. (中鋁中州有限公司).
"**Chalieco**"	China Aluminum International Engineering Corporation Limited (中鋁國際工程股份有限公司).
"**Chihong Zn&Ge**"	Yunnan Chihong Zinc and Germanium Co., Ltd (雲南馳宏鋅鍺股份有限公司).
"**China**" and the "**PRC**"	the People's Republic of China, which, for the sole purpose of this Offering Circular, does not include Hong Kong, Macau or Taiwan.
"**China Copper**"	China Copper Co., Ltd. (中國銅業有限公司).
"**China Rare Earth & Metals**"	China Rare Earth Co., Ltd. (中國稀有稀土股份有限公司), formerly known as China Rare Earth & Metals Corporation Limited (中國稀有稀土有限公司).
"**China Rare Earth Group**"	China Rare Earth Group Co., Ltd. (中國稀土集團有限公司).
"**Chinalco**" or the "**Guarantor**"	Aluminum Corporation of China (中國鋁業集團有限公司).
"**Chinalco Advanced Manufacturing**"	Chinalco Advanced Manufacturing Co., Ltd. (中國鋁業集團高端製造股份有限公司).
"**Chinalco Commercial Factoring**"	Chinalco Commercial Factoring Co., Ltd. (中鋁商業保理有限公司).
"**Chinalco Finance**"	Chinalco Finance Co., Ltd. (中鋁財務有限責任公司).
"**Chinalco Financial Leasing**"	Chinalco Financial Leasing Co., Ltd (中鋁融資租賃有限公司).
"**Chinalco Central China Copper**"	Chinalco Central China Copper Co., Ltd. (中鋁華中銅業有限公司).
"**Chinalco Kunming Copper**"	Chinalco Kunming Copper Co., Ltd. (中鋁昆明銅業有限公司).

"**Chinalco Luoyang Copper**"	Chalco Luoyang Copper Co., Ltd. (中鋁洛陽銅業有限公司).
"**Chinalco Overseas**"	Aluminum Corporation of China Overseas Holdings Limited (中鋁海外控股有限公司).
"**Chinalco Shenyang**"	Chinalco Shenyang Non-ferrous Metals Processing Co., Ltd (中鋁瀋陽有色金屬加工公司).
"**Circular 2044**"	Notice on Promoting the Reform of the Filing and Registration System for Issuance of Foreign Debt by Enterprises (國家發展改革委關於推進企業發行外債備案登記制管理改革的通知(發改外資[2015]2044號) which became effective on 14 September 2015.
"**CMC**"	Chinalco Mining Corporation International (中鋁礦業國際).
"**continuous casting**"	the process where molten metal is solidified directly into semifinished billets, blooms or slabs for subsequent rolling in finishing mills, bypassing the ingot stage.
"**copper alloys**"	metal alloys that have copper as their principal component.
"**copper fabrication**"	the process of converting raw copper materials into tubes, pipes, plates, sheets, foils and other fabricated products.
"**copper oxides**"	compounds from the two elements: copper and oxygen.
"**copper sulphides**"	a family of chemical compounds and minerals with the formula Cu_xS_y.
"**crude copper**"	impure copper obtained through the thermal treatment of minerals and metallurgical ores and concentrates.
"**deposits**"	as defined in the Chinese National Standard, a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade (or quality), and quantity that there are reasonable prospects for eventual economic extraction; the location, quantity, grade (or quality), continuity and other geological characteristics of which are known, estimated or interpreted from specific geological evidence and knowledge; sub- divided, in order of decreasing geological confidence, measured, indicated, inferred and reconnaissance categories, or categories 111 to 334 as categorised in the Chinese National Standard.
"**Dongdong Coal**"	Shanxi Chengcheng Dongdong Coal Co., Ltd. (陝西澄城董東煤炭有限責任公司).
"**electrolysis**"	a refining process for extracting copper by inserting copper anode plates into electrolytic cells where an electric current passes through a copper-containing electrolyte.

"**Energy-Saving and Emission Reduction Goals**"	the energy-saving and emission reduction goals set out in the 14th Five-Year Plan of China, including a 18 per cent. reduction target for "CO_2 intensity" and 13.5 per cent. reduction target for "energy intensity" from 2021 to 2025.
"**EP**"	Engineering and procurement.
"**EPC**"	Engineering, procurement, and construction.
"**Gansu Huayang**"	Gansu Huayang Mining Development Company Limited (甘肅華陽礦業開發有限責任公司).
"**GDP**"	gross domestic product.
"**Group**"	the Guarantor and its subsidiaries.
"**Guangxi Rare Earth**"	Chinalco Guangxi Non-ferrous Rare Earth Development Co., Ltd (中鋁廣西有色稀土開發有限公司).
"**Guizhou Huajin**"	Guizhou Huajin Aluminum Co., Ltd. (貴州華金鋁業有限公司).
"**Guizhou Huaren**"	Guizhou Huaren New Materials Co., Ltd. (貴州華仁新材料有限公司).
"**Guizhou Yuneng**"	Guizhou Yuneng Mining Co., Ltd. (貴州渝能礦業有限責任公司).
"**Huize mine**"	the lead and zinc mine owned by Chihong Zn&Ge, which is located in Huzie County, Yunnan Province.
"**IFRS**"	the International Financial Reporting Standards, which include standards and interpretations promulgated by the International Accounting Standards Board (IASB), and the International Accounting Standards (IAS) and interpretations issued by the International Accounting Standards Committee (IASC).
"**industrial sulphuric acid**"	sulphuric acid used for industrial and manufacturing purposes.
"**ingot**"	metal that has been cast into a shape suitable for further processing.
"**Inner Mongolia Huayun**"	Inner Mongolia Huayun New Materials Co., Ltd. (內蒙古華雲新材料有限公司).
"**Jiangsu Rare Earth**"	Chinalco Jiangsu Rare Earth Co. Ltd. (中鋁稀土江蘇有限公司).
"**Jinding Zinc**"	Yunnan Jinding Zinc Co., Ltd. (雲南金鼎鋅業有限公司).
"**Jinding Zinc Group**"	Jinding Zinc and its subsidiaries.

"JORC Code"	Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, effective from December 2004.
"Lanping mine"	The lead and zinc mine owned by Jinding Zinc, which is located in Lanping Country, Yunnan Province.
"Lanzhou Aluminum"	Lanzhou Aluminum Co., Ltd. (蘭州鋁業股份有限公司).
"Liancheng branch"	Lanzhou Liancheng Longxing Aluminum Company Limited (蘭州連城隴興鋁業有限責任公司).
"London Metal Exchange"	the London Metal Exchange Limited.
"matte"	molten metal sulfide that is formed during copper smelting.
"MIIT"	the Ministry of Industry and Information Technology (中華人民共和國工業和信息化部).
"MOF"	the Ministry of Finance of the People's Republic of China.
"MOFCOM"	Ministry of Commerce of the People's Republic of China (中華人民共和國商務部).
"National Social Security Fund"	the National Social Security Fund of the PRC (全國社會保障基金).
"NDRC"	National Development and Reform Commission of the People's Republic of China (中華人民共和國國家發展和改革委員會).
"NI 43-101"	National Instrument 43-101, a mineral resource classification scheme used for the public disclosure of information relating to mineral properties in Canada.
"Ningxia Energy"	Chalco Ningxia Energy Group Co., Ltd. (中鋁寧夏能源集團有限公司) (formerly Ningxia Electric Power Group Co., Ltd. (寧夏發電集團有限責任公司)).
"non-ferrous metals"	a metal or alloy that does not contain iron in appreciable amounts.
"Northeast Light Alloy"	Northeast Light Alloy Co., Ltd (東北輕合金有限責任公司).
"Northwest Aluminum"	Northwest Aluminum Company (西北鋁業有限責任公司).
"NPC"	the National People's Congress of the PRC (中國全國人民代表大會).
"ore-dressing Bayer process"	a refining process Chalco developed to increase the aluminatosilica ratio of bauxite.

"**PBOC**"	the People's Bank of China (中國人民銀行).
"**PC**"	Procurement and construction.
"**PPP**"	Public private partnership.
"**PRC GAAP**"	Accounting Standards for Business Enterprises in China.
"**PRC government**"	the government of the PRC, including all governmental subdivisions (including provincial, municipal and other regional or local government entities).
"**primary aluminium**"	a widely used metal and a key raw material in aluminium fabrication.
"**pure copper**"	copper with a 99.9 per cent. purity.
"**Qinghai Energy**"	Qinghai Province Energy Development (Group) Co., Ltd., (青海省能源發展(集團)有限責任公司).
"**raw copper**"	a widely used metal and a key raw material in copper fabrication.
"**Rio Tinto**"	Rio Tinto plc, a company incorporated in England and Wales, the shares of which are listed on the London Stock Exchange and the New York Stock Exchange.
"**Rio Tinto Group**"	a dual-listed company with listings on both the London Stock Exchange under Rio Tinto and on the Australian Securities Exchange under the name Rio Tinto Limited. The dual-listed company structure grants shareholders of both companies the same proportional economic interests and ownership rights in the consolidated Rio Tinto Group, in such a way as to be equivalent to all shareholders of the two companies actually being shareholders in a single entity.
"**RMB", "Renminbi**" and "**CNY**"	the lawful currency of the PRC.
"**SAFE**"	State Administration of Foreign Exchange of the PRC (國家外匯管理局).
"**SASAC**"	State-owned Assets Supervision and Administration Commission of the State Council (國務院國有資產監督管理委員會), a special commission of the PRC directly under the State Council that is responsible for managing and drafting laws for state-owned enterprises.
"**Selwyn Project**"	the project to develop and explore lead-zinc mine located in Selwyn, Ontario, Canada.

"**Shandong Huayu**"	Shandong Huayu Alloy Material Co., Ltd. (山東華宇合金材料有限公司).
"**Shanghai Metal Exchange**"	the Shanghai Metal Exchange (上海有色金屬交易中心).
"**Shanghai Futures Exchange**"	the Shanghai Futures Exchange (上海期貨交易所).
"**Shanghai Stock Exchange**"	the Shanghai Stock Exchange (上海證券交易所).
"**Shanxi Huaxing**"	Shanxi Huaxing Aluminum Co., Ltd. (山西華興鋁業有限公司).
"**Shanxi Jiexiu**"	Shanxi Jiexiu Xinyugou Coal Industry (Group) Co., Ltd. (山西介休鑫峪溝煤業(集團)有限公司).
"**Shanxi New Materials**"	Chalco Shanxi New Materials Co., Ltd. (中鋁山西新材料有限公司).
"**Shanxi Other Mines**"	seven of the Group's jointly-operated mines, including Shangtan mine, Jindui mine, Shicao mine, Nanpo mine, Xishan mine, Niucaogou mine and Sunjiata mine in Shanxi Province that became the mining areas of the new mine of the Group in 2010.
"**Shanxi Zhongrun**"	Shanxi Chinalco Huarun Co., Ltd. (山西中鋁華潤有限公司).
"**ShineWing CPAs**"	ShineWing Certified Public Accountants LLP.
"**Shining Prospect**"	Shining Prospect Pte. Ltd.
"**SAT**"	the State Administration of Taxation (國家稅務總局).
"**Shenzhen Stock Exchange**"	the Shenzhen Stock Exchange (深圳證券交易所).
"**Simandou Project**"	the project to develop and operate the Simandou iron ore mine located in Guinea, West Africa.
"**sintering process**"	a refining process employed to extract alumina from bauxite by mixing ground bauxite with supplemental materials and burning the mixture in a coal-fired kiln.
"**smelting**"	the electrolytic process used to produce molten aluminium from alumina.
"**solvent extraction process**"	a refining process that dissolves copper ores, refined copper ores or copper containing calcine in a suitable solvent, and then extracting copper through electro-winning.
"**Southwest Aluminum**"	Southwest Aluminum (Group) Co., Ltd (西南鋁業(集團)有限責任公司).

"State Administration of Nonferrous Metals Industry"	State Administration of Non-ferrous Metals Industry (國家有色金屬工業局), the enterprise that was subsequently restructured into the "Three Non-ferrous Metals Corporations of China".
"State Council"	State Council of the PRC (中華人民共和國國務院).
"Subscription Agreement"	a subscription agreement entered into among the Issuer, the Guarantor and the Joint Lead Managers on or about 16 February 2022.
"thermal extraction process"	a refining process that mixes copper ores with melting agents at a temperature of 1,100 degrees Celsius, and then extracting copper with quartz sand, anode furnaces and electrolysis.
"tonne"	the metric tonne, a unit of weight, that is equivalent to 1,000 kilogrammes or 2,204.6 pounds.
"Toromocho Project"	CMC's wholly-owned copper project situated in the core of the Morococha mining district in central Peru.
"Xinghua Technology"	Chinalco Shanxi Jiaokou Xinghua Technology Ltd. (中鋁山西交口興華科技有限公司).
"Yiliang mine"	the lead and zinc mine owned by Chihong Zn&Ge, which is located in Yiliang County, Yunnan Province.
"Yunnan Aluminum"	Yunnan Aluminum Co., Ltd. (雲南鋁業股份有限公司).
"Yunnan Copper"	Yunnan Copper Co., Ltd. (雲南銅業股份有限公司).
"Yunnan Copper Industry"	Yunnan Copper Industry (Group) Co., Ltd. (雲南銅業(集團)有限公司).
"Yunnan Copper Science & Technology Development"	Yunnan Copper Science & Technology Development Co., Ltd. (雲南銅業科技發展股份有限公司).
"Yunnan Metallurgical"	Yunnan Metallurgical Group Co. Ltd. (雲南冶金集團股份有限公司).
"Yunnan Metallurgical Group"	Yunnan Metallurgical and its subsidiaries.
"Yunnan SASAC"	the State-owned Assets Supervision and Administration Commission of Yunnan Provincial People's Government.
"Zhengzhou Institute"	Chalco Zhengzhou Research Institute of Non-ferrous Metal Co., Ltd. (中國鋁業鄭州有色技術研究院有限公司).
"Zunyi Alumina"	Chalco Zunyi Alumina Co., Ltd. (中國鋁業遵義氧化鋁有限公司).

FORWARD-LOOKING STATEMENTS

The Issuer and the Guarantor have made certain forward-looking statements in this Offering Circular regarding, among other things, the Group's financial condition, future expansion plans and business strategy. These forward-looking statements are based on the Group's current expectations about future events. Although the Issuer and the Guarantor believe that these expectations and projections are reasonable, such forward-looking statements are inherently subject to risks, uncertainties and assumptions, including, among other things:

- the Group's ability to successfully implement the Group's business plans and strategies;
- future developments, trends and conditions in the industry and markets in which the Group operate;
- the Group's business prospects;
- the Group's capital expenditure plans;
- the actions and developments of the Group's competitors;
- the Group's financial condition and performance;
- capital market developments;
- the Group's dividend policy;
- the regulatory environment of the non-ferrous metal industry, particularly the aluminium and copper industries in China;
- any changes in the laws, rules and regulations of the central and local governments in the PRC and other relevant jurisdictions and the rules, regulations and policies of the relevant governmental authorities relating to all aspects of the Group's business;
- changes in political, economic, legal and social conditions in China, including the specific policies of the PRC central and local governments affecting the region where the Group operates, which affect the availability and cost of financing, production capacity, pricing and volume of the Group's products;
- changes or volatility in interest rates, foreign exchange rates, equity prices or other rates or prices, including those pertaining to the PRC and the industry and markets in which the Group operate;
- various business opportunities that the Group may pursue; and
- macroeconomic measures taken by the PRC government to manage economic growth.

The words "anticipate", "believe", "estimate", "expect", "intend", "plan" and similar expressions are intended to identify a number of these forward-looking statements. The Group undertakes no obligation to update or revise any forward-looking statements whether as a result of new information, future events or otherwise. In light of these risks, uncertainties and assumptions, the forward-looking events discussed in this Offering Circular may not occur and the Group's actual results could differ materially from those anticipated in these forward-looking statements.

These forward-looking statements speak only as at the date of this Offering Circular. The Group expressly disclaims any obligation or undertaking to release publicly any updates or revisions to any forward-looking statement contained herein to reflect any change in their expectations with regard thereto or any change of events, conditions or circumstances, on which any such statement was based.

CONTENTS

SUMMARY

The summary below is only intended to provide a limited overview of information described in more detail elsewhere in this Offering Circular. As it is a summary, it does not contain all of the information that may be important to investors and terms defined elsewhere in this Offering Circular shall have the same meanings when used in this summary. Prospective investors should therefore read this Offering Circular in its entirety.

THE GROUP

The Group is a leading diversified and vertically integrated producer of non-ferrous metals in China with a primary focus on alumina, primary aluminium, copper, lead-zinc and various rare earth metals. Chinalco believes that:

- the Group is the largest supplier of electrolytic aluminium and alumina globally;
- the Group ranks first in terms of overall competitiveness among copper enterprises in the PRC for the year ended 31 December 2020;
- the Group has the largest lead-zinc reserves in China, which ranks the fourth largest globally; and
- the Group occupies a dominant market position in the rare earth metals industry with operations covering the complete industry chain and it has the capacity to drive industry consolidation.

The Group principally engages in exploration and mining of mineral resources, refining, smelting, fabrication and trading of non-ferrous metals, mainly bauxite, alumina, primary aluminium, copper, lead-zinc and rare earth metals. In addition, the Group also derives revenue from other services including engineering and technical services, mineral resources development, overseas investment and financial services.

Established in 2001, Chinalco is a directly supervised state-owned core enterprise of SASAC, with 90 per cent. of its equity interest held by SASAC and the rest held by the National Social Security Fund. The Group also owns China's first alumina plant, first electrolytic aluminium plant and its first aluminium processing plant. Three of its subsidiaries focusing on aluminium, copper and rare earth were bestowed "National Level" status. As at 31 December 2020, the Group had an issued share capital of RMB25.20 billion and a total asset value of RMB632.40 billion. The Group has operations in over 20 countries and regions, including over 30 provinces, cities and autonomous regions in China, and as at 31 December 2020, the Guarantor had approximately 500 subordinate entities worldwide. According to *Fortune Magazine*, Chinalco has been a Fortune Global 500 company for 13 consecutive years since 2008 and was ranked 217th among the Fortune Global 500 in 2020. As at 5 January 2022, Chinalco controlled six listed companies in the PRC with a total market capitalisation of approximately RMB207 billion.

In 2018, China Copper, which was then wholly owned by the Guarantor, entered into a transfer agreement in respect of the equity interest in Yunnan Metallurgical, pursuant to which Yunnan SASAC agreed to transfer its 51 per cent. equity interest in Yunnan Metallurgical to China Copper without consideration. The acquisition of Yunnan Metallurgical by the Group was completed at the end of 2018 with the financial positions of Yunnan Metallurgical consolidated into the audited consolidated balance sheet of the Guarantor as at 31 December 2018. The results of operation of Yunnan Metallurgical were not consolidated into the audited consolidated income statement of the Guarantor for the year ended 31 December 2018 but have been consolidated into the audited consolidated income statement of the Guarantor since 2019. As at 31 December 2020, the Guarantor owned approximately 69.32 per cent. of the equity interest in China Copper. In 2018, China Copper also acquired the entire equity interest of Jinding Zinc, a company primarily engaged in zinc and lead business, the financial position and results of operation of which have been consolidated into the Group since January 2019.

The Group's principal lines of business include the following:

- ***Aluminium business:*** The Group's aluminium business is principally conducted by Chalco and Yunnan Aluminum, with its aluminium fabrication business through the Guarantor and its various subsidiaries.

  - Chalco is a leading enterprise in the non-ferrous metal industry, and in terms of comprehensive scale, it ranked among the top enterprises in the global aluminium industry. Chalco has been listed on the Hong Kong Stock Exchange since December 2001 (stock code: 2600), on the New York Stock Exchange (by way of American Depositary Receipts) since December 2001 (ticker symbol: ACH) and on the Shanghai Stock Exchange since April 2007 (stock code: 601600).

  - Yunnan Aluminum is a company listed on the Shenzhen Stock Exchange (stock code: 000807) that primarily engages in bauxite mining, aluminium production, smelting, fabrication and carbon production. The Group acquired Yunnan Aluminum through the acquisition of Yunnan Metallurgical at the end of 2018.

  The Group's aluminium business principally involves bauxite mining, the production and sale of alumina, primary aluminium and aluminium alloy products, the operation of coal and electricity businesses, trading of non-ferrous metal products as well as a logistics business. As at 31 December 2020, the Group's smelting capacity in respect of aluminium oxide and electrolytic aluminium and its processing capacity in respect of aluminium reached 22,000 kilotonnes, 7,970 kilotonnes and 1,840 kilotonnes, respectively. The aluminium business is the Group's largest business line, accounting for 62.83 per cent. and 59.22 per cent. of the Group's operating revenue for the years ended 31 December 2019 and 2020, respectively.

- ***Copper business:*** The Group's copper business is principally conducted by China Copper. China Copper has four principal subsidiaries in this segment, being Yunnan Copper Industry, Chinalco Luoyang Copper, CMC and Yunnan Metallurgical.

  - Yunnan Copper Industry is a leading copper producer in China engaging in the production of high-purity copper cathode, copper wire bar for electrical purposes, industrial sulphuric acid, gold ingots, silver ingots, round copper wire for electrical purposes, bluestone and the recycling of various metals such as gold, silver, aluminium, bismuth, tin, platinum and palladium. It is also the controlling shareholder of Yunnan Copper, which was listed on the Shenzhen Stock Exchange in June 1998 (stock code: 000878).

- Chinalco Luoyang Copper is an influential non-ferrous metal producer. Chinalco Luoyang Copper has productions lines with line(s) specialised in copper/copper alloy fabrication and in aluminium/aluminium alloy and magnesium/magnesium alloy fabrication.

- CMC is designed to be one of the Group's core overseas platforms for the future acquisition, investment, development and operation of non-ferrous and non-aluminium mineral resources and projects. It owns the Toromocho Project in Central Peru, one of the largest copper mines in the world.

- Yunnan Metallurgical is a leading company in the non-ferrous industry in China. Yunnan Metallurgical is the controlling shareholder of two listed companies, namely, Chihong Zn&Ge and Yunnan Aluminum. The Yunnan Metallurgical Group also engages various copper-related businesses including copper trading, copper export and import, copper exploration and mining.

The Group's copper business principally involves copper mining, copper refining and production and copper fabrication.

- ***Lead-zinc business:*** The Group's lead and zinc business is principally conducted by Chihong Zn&Ge and Jinding Zinc. Key to the Group's strategy in its lead-zinc business is the acquisition of Yunnan Metallurgical, the controlling shareholder of Chihong Zn&Ge.

    - Chihong Zn&Ge is a company listed on the Shanghai Stock Exchange (stock code: 600497) with a leading position in the PRC lead-zinc industry and a fully integrated business line covering mining, concentration, metallurgy, refinery, trading, research and development. Chihong Zn&Ge owns Huize mine and Yiliang mine, two lead-zinc mines with top grades in the world. The Selwyn Project operated by Chihong Zn&Ge, with an estimated lead-zinc mine deposit of approximately 26.9 million tonnes, is one of the world's largest lead-zinc projects.

    - Jinding Zinc mainly engages in the non-ferrous metals fabrication industry. Jinding Zinc owns the largest lead and zinc mine — Lanping mine, of Asia, whose deposit amounts to 9.95 million tonnes as at 31 December 2020.

- ***Rare earth metals business:*** The Group's rare earth metals business is principally conducted by China Rare Earth & Metals, which produces and sells a wide range of rare earth products, such as titanium, molybdenum, tungsten, bismuth, tin, nickel and cobalt. As at 31 December 2020, the Group's smelting capacity in respect of rare earth metals reached 17.2 kilotonnes.

- ***Engineering and technical services business:*** The Group's engineering and technical services business is principally conducted through Chalieco. Chalieco was listed on the Hong Kong Stock Exchange in July 2012 (stock code: 2068) and on the Shanghai Stock Exchange in August 2018 (stock code: 601068) and is a leading technology, engineering services and equipment provider in the non-ferrous metals industry in the PRC and provides fully integrated engineering solutions covering the complete value chain of the non-ferrous metals industry.

- ***Other businesses:*** The Group also runs a number of ancillary businesses, which support its principal businesses, including mineral resource development, overseas investment and financial services.

For the years ended 31 December 2019 and 2020, the Group recorded an operating revenue of RMB356.82 billion and RMB367.02 billion, respectively. As at 31 December 2019 and 2020, the Group's total assets amounted to RMB652.35 billion and RMB632.40 billion, respectively.

The following table sets forth the Group's operating revenue breakdown by business line for the periods indicated:

	For the year ended 31 December			
Principal business lines	**2019**		**2020**	
	(RMB million)	**%**	**(RMB million)**	**%**
Aluminium	224,170.37	62.83	217,347.89	59.22
Copper[1]	133,169.79	37.32	152,902.92	41.66
Rare Earth Metals	4,121.69	1.16	4,110.92	1.12
Engineering and Technical Services	31,059.79	8.70	23,025.95	6.27
Others	12,849.58	3.60	4,445.29	1.21
Elimination	48,554.11	13.61	34,813.06	9.49
Total	356,817.11	100	367,019.91	100

(1) Operating revenue of the lead-zinc business is included in that of the copper business.

The following table sets forth the Group's gross profit and gross profit margin by business line for the periods indicated:

	For the year ended 31 December			
	2019		**2020**	
Principal business lines	**Gross profit**	**Gross profit margin**	**Gross profit**	**Gross profit margin**
	(RMB million)	**%**	**(RMB million)**	**%**
Aluminium	17,082	8.98	19,518	10.49
Copper[1]	12,572	9.44	13,070	8.55
Rare Earth Metals	376	9.12	437	10.63
Others	6,640	14.75	7,118	12.32
Elimination	159	0.98	1,093	3.20
Total	36,511	10.24	39,050	10.65

(1) Gross profit of the lead-zinc business is included in that of the copper business.

COMPETITIVE STRENGTHS

- A prominent leader of China's non-ferrous metals industry
- A robust developer and executor of China's natural resources strategy
- Diversified product portfolio with fully integrated value chain
- Strategic player in China's non-ferrous metals industry, fully supporting key strategic sectors
- Highly experienced management team and advanced corporate governance system
- Continuously improving core competitiveness and resilience to cyclic changes

BUSINESS STRATEGIES

The Group aims to become an internationally leading enterprise in the non-ferrous metals industries with sustainable growth potential and international competitiveness, a custodian for mineral resources and materials of strategic importance to the nation, and a market leader in terms of industry innovation and green development. To this end, the Group initiated its "11336 Strategy", which refers to:

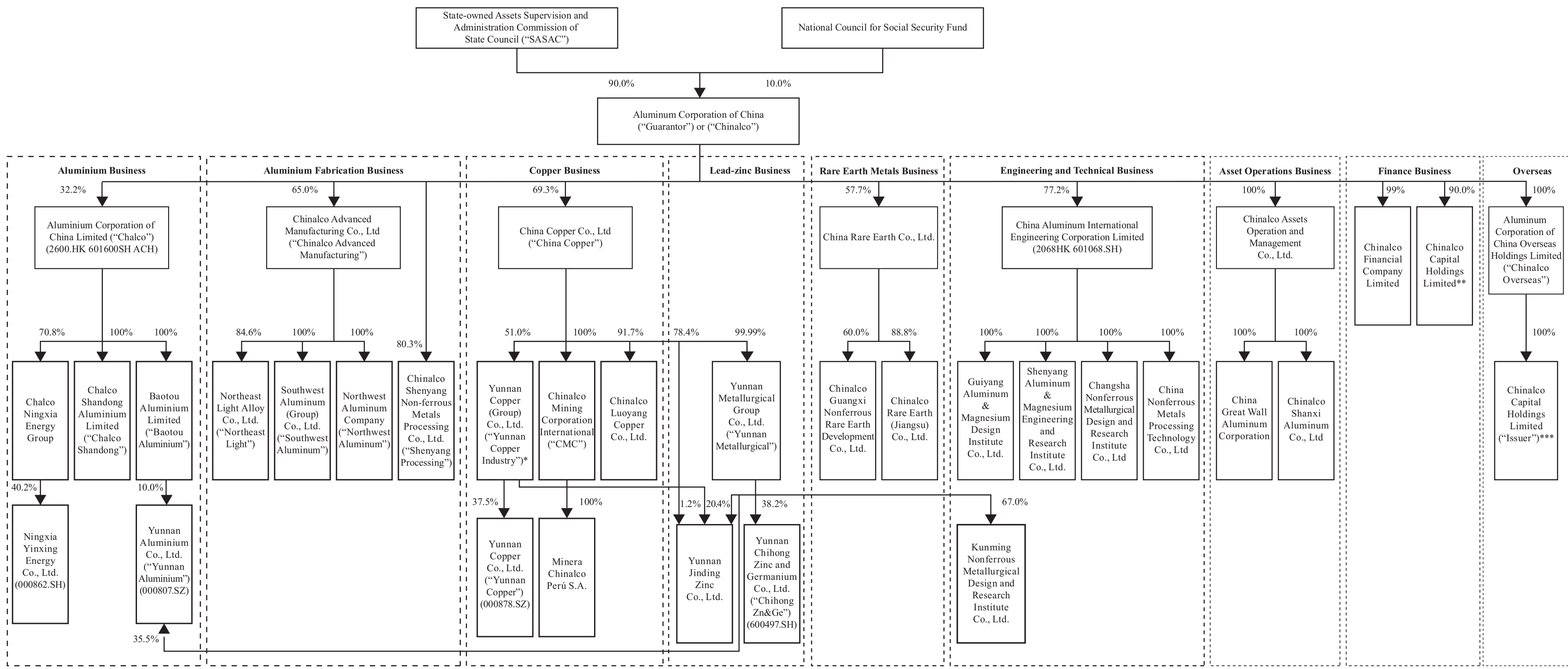
- one overall target of building an internationally leading enterprise in the non-ferrous metals industries with global competitiveness;
- one overall strategy of positioning itself as the frontrunner of China's non-ferrous metals industries, the main force in China's stable supply of strategic minerals and resources, and the leader of innovation and green development in the industry;
- three "engines" of development, namely, technology and innovation, data empowerment, and green and low carbon development;
- three critical "paths" which the Group will take to achieve its goals, namely, prioritising the development of strategic resources, strengthening and optimising core businesses, and cultivating emerging businesses; and
- six core capabilities, namely, the capabilities of value creation, pioneering innovation, green development, intelligent operation, human resource development and guaranteeing industry security.

THE ISSUER

The Issuer was incorporated as a company with limited liability on 28 June 2016 under the laws of the British Virgin Islands. The registered office of the Issuer is at the offices of Intertrust Corporate Services (BVI) Limited, Ritter House, Wickhams Cay II, Road Town Tortola VG1110, British Virgin Islands. As at the date of this Offering Circular, the Issuer is authorised to issue a maximum of 50,000 shares of one class of shares of par value U.S.$1.00 and the Issuer has 1,000 shares in issue.

SIMPLIFIED CORPORATE STRUCTURE

The following chart sets forth a simplified corporate structure of the Group as at 31 December 2020:



* *Yunnan Copper Industry is 51 per cent. held by China Copper and 49 per cent. held by Yunnan Metallurgical.*

** *Chinalco Capital Holdings Limited (中鋁資本控股有限公司) is a PRC-incorporated company that primarily engages in the finance business of the Group.*

*** *The Issuer (Chinalco Capital Holdings Limited) is a company incorporated with limited liability in the British Virgin Islands*

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1 *Note: percentages of shareholding in this chart are calculated based on shareholdings of persons acting in concert.*

THE ISSUE

The following contains some summary information about the Bonds and is qualified in its entirety by the remainder of this Offering Circular. Some of the terms described below are subject to important limitations and exceptions. Words and expressions defined in "Terms and Conditions of the Bonds" and "Summary of Provisions Relating to the Bonds in Global Form" shall have the same meanings in this summary. For a comprehensive description of the terms and conditions of the Bonds, see the section entitled "Terms and Conditions of the Bonds" of this Offering Circular.

Issuer	Chinalco Capital Holdings Limited.
Guarantor	Aluminum Corporation of China (中國鋁業集團有限公司).
Guarantee	The Guarantor will unconditionally and irrevocably guarantee the due payment of all sums expressed to be payable by the Issuer under the Bonds and the Trust Deed. The obligations of the Guarantor under the Guarantee shall, save for such exceptions as may be provided by applicable law and subject to Condition 4(a) of the Terms and Conditions of the Bonds, at all times rank at least equally with all its other present and future unsecured and unsubordinated obligations.
Issue	US$600,000,000 aggregate principal amount of 2.95 per cent. Guaranteed Bonds due 2027.
Issue Price	98.517 per cent.
Form and Denomination	The Bonds will be issued in registered form in the specified denomination of US$200,000 and integral multiples of US$1,000 in excess thereof.
Interest	The Bonds will bear interest on their outstanding principal amount from and including 24 February 2022 at the rate of 2.95 per cent. per annum, payable semi-annually in arrear in equal instalments of US$14.75 per US$1,000 in principal amount of the Bonds on 24 February and 24 August in each year.
Issue Date	24 February 2022.
Maturity Date	24 February 2027.

Status	The Bonds, when issued, will constitute direct, unsubordinated, unconditional and (subject to Condition 4(a) of the Terms and Conditions of the Bonds) unsecured obligations of the Issuer and shall at all times rank *pari passu* and without any preference or priority among themselves. The payment obligations of the Issuer under the Bonds shall, save for such exceptions as may be provided by applicable law and subject to Condition 4(a) of the Terms and Conditions of the Bonds, at all times rank at least equally with all its other present and future unsecured and unsubordinated obligations.
Negative Pledge	The Bonds will contain a negative pledge provision as further described in "*Terms and Conditions of the Bonds — Negative Pledge and Relevant Indebtedness*".
Events of Default	The Bonds will contain certain events of default provisions as further described in "*Terms and Conditions of the Bonds — Events of Default*".
Taxation	All payments of principal, premium (if applicable) and interest by or on behalf of the Issuer or the Guarantor in respect of the Bonds or under the Guarantee shall be made free and clear of, and without withholding or deduction for or account of, any present or future taxes, duties, assessments or governmental charges of whatever nature imposed, levied, collected, withheld or assessed by or within any Relevant Jurisdiction, or any political subdivision or authority therein or thereof having power to tax, unless such withholding or deduction is required by law. Where such withholding or deduction is made by the Issuer or the Guarantor, as the case may be, by or within the PRC up to and including the Applicable Rate (as defined in the Terms and Conditions of the Bonds), the Issuer shall, or, as the case may be, the Guarantor shall, subject to the limited exceptions specified in "*Terms and Conditions of the Bonds — Taxation*", pay such additional amounts as will result in receipt by the holders of the Bonds of such amounts as would otherwise have been received by them had no such withholding or deduction been required.
Final Redemption	Unless previously redeemed, or purchased and cancelled, the Bonds will be redeemed at their principal amount on the Maturity Date.

Redemption for Taxation Reasons	The Bonds may be redeemed at the option of the Issuer in whole, but not in part, at their principal amount, together with interest accrued to but excluding the date fixed for redemption, at any time on giving not less than 30 nor more than 60 days' notice to the Bondholders and in writing to the Trustee and the Principal Paying Agent, in the event of certain changes affecting taxes of any Relevant Jurisdiction or any political subdivision or any authority thereof or therein having power to tax, or any change in the application or official interpretation of such laws or regulations (including a judgment or order of a court of competent jurisdiction), as further described in "*Terms and Conditions of the Bonds — Redemption and Purchase — Redemption for Taxation Reasons*".
Redemption for Relevant Events	At any time following the occurrence of a Change of Control or a No Registration Event (each a "**Relevant Event**"), a Bondholder will have the right, at such Bondholder's option, to require the Issuer to redeem all, but not some only, of such Bondholder's Bonds on the Put Settlement Date at a redemption price equal to 101 per cent. (in the case of a redemption for a Change of Control) or 100 per cent. (in the case of a redemption for a No Registration Event) of their principal amount, together with accrued interest to, but excluding, the Put Settlement Date. Please see "*Terms and Conditions of the Bonds — Redemption and Purchase — Redemption for Relevant Events*".
Redemption at Make Whole Price at the Option of the Issuer	The Issuer may at any time and from time to time redeem the Bonds, in whole but not in part, upon giving not less than 30 nor more than 60 days' notice (a "**Make Whole Redemption Notice**"), at a Make Whole Price as of, and accrued and unpaid interest, if any, to (but excluding), the redemption date specified in the Make Whole Redemption Notice, as further described in "*Terms and Conditions of the Bonds — Redemption and Purchase — Redemption at Make Whole Price at the Option of the Issuer*".
Redemption at par at the Option of the Issuer	The Issuer may, on giving not less than 30 nor more than 60 days' notice to the Bondholders in accordance with Condition 16 (which notice shall be irrevocable) and in writing to the Trustee and the Principal Paying Agent, redeem the Bonds in whole, but not in part, at any time on or after 24 January 2027, at 100 per cent. of their principal amount together with any interest accrued to but excluding the date fixed for redemption. Please see "*Terms and Conditions of the Bonds — Redemption and Purchase — Redemption at par at the Option of the Issuer*".

Clearing Systems	The Bonds will be represented initially by interests in the Global Certificate, which will be registered in the name of a nominee of, and deposited on the Issue Date with, a common depositary for Euroclear and Clearstream. Interests in the Global Certificate will be shown on, and transfers thereof will be effected only through, records maintained by Euroclear and Clearstream. Except as described in the Global Certificate, individual certificates for the Bonds will not be issued in exchange for interests in the Global Certificate.
Governing Law	English law.
Jurisdiction	The courts of Hong Kong will have exclusive jurisdiction to settle any disputes arising out of or in connection with the Bonds, the Agency Agreement, the Trust Deed and the Deed of Guarantee.
Trustee	Bank of Communications Trustee Limited.
Principal Paying Agent and Transfer Agent	Bank of Communications Co., Ltd. Hong Kong Branch.
Registrar	Bank of Communications Co., Ltd. Hong Kong Branch.
Listing	Application will be made to the Hong Kong Stock Exchange for the listing of, and permission to deal in, the Bonds by way of debt issues to Professional Investors only.
Further Issues	The Issuer may from time to time without the consent of the Bondholders create and issue further bonds having the same terms and conditions as the Bonds in all respects (or in all respects except for the issue date, the issue price, the first payment of interest on them, the timing for the Post-Issuance Filing with the NDRC and the timing for completion of the Cross-Border Security Registration) and so that such further issue shall be consolidated and form a single series with the outstanding Bonds, as further described in Condition 13 of the Terms and Conditions of the Bonds.
Use of Proceeds	See the section entitled "*Use of Proceeds*".
ISIN	XS2435557959.
Common Code	243555795.
Legal Entity Identifier of the Issuer	5493003PX4GYVUD3CQ19.

SUMMARY FINANCIAL INFORMATION OF THE GUARANTOR

The following tables set forth the summary consolidated financial information of the Guarantor as at the dates and for the periods indicated. The summary audited consolidated financial information as at and for the years ended 31 December 2019 and 2020 set forth below is derived from the Guarantor's audited consolidated financial statements as at and for the year ended 31 December 2020, which have been audited by ShineWing CPAs. The information set out below should be read in conjunction with, and is qualified in its entirety by reference to, such audited consolidated financial statements of the Guarantor, including the notes thereto.

On 5 July 2017, MOF issued the "Accounting Standards for Business Enterprises No. 14 — Revenue (Revised in 2017)" (Caikuai [2017] No. 22) 《企業會計準則第14號 — 收入（2017年修訂）》（財會[2017]22號）, namely the New Revenue Standards. Companies that are listed both domestically and abroad and companies that are listed overseas and adopt IFRS or PRC GAAP to prepare financial reports are required to implement the new financial instrument standards and new revenue standards from 1 January 2018. Yunnan Copper, Chihong Zn&Ge, Yunnan Aluminum and Yunnan Copper Science & Technology Development implemented the New Revenue Standards since 1 January 2020 and as a result reassessed the recognition, measurement, accounting and presentation of main contract revenues. According to the New Revenue Standards, if the recognition and measurement of revenue business before 1 January 2020 is inconsistent with the requirements of the New Revenue Standards, the relevant company should make adjustments in accordance with the requirements of the new income standards. The impact of the implementation of the New Revenue Standards on the relevant items in the balance sheet are listed in Note 5.1.1 "Changes in Accounting Policies and Accounting Estimates and Corrections of Accounting Errors — Changes in accounting policy — Implementation of the new revenue standard" to the Audited Financial Statements.

In addition, in order to ensure that the financial statements reflect the Group's economic and business nature more accurately meanwhile in accordance with the "Accounting Standards for Business Enterprises No. 16 — Government Subsidies" revised and issued by MOF (Cai Kuai [2017] No. 15) 《企業會計準則第16號 — 政府補助》(財會[2017]15號）, namely the Government Subsidies Standards and to take into account the requirements of the international market environment for the main business of the Group, the Group has changed the original government subsidy standard from the gross method to the net method since 1 January 2020. The Group restated the opening balance for the year ended 31 December 2020 of the relevant balance sheet items and the amount incurred in the year ended 31 December 2019 for the income statement items. The impacts of the relevant items are listed in Note 5.1.2 "Changes in Accounting Policies and Accounting Estimates and Corrections of Accounting Errors — Changes in accounting policy — Changes in government subsidy policies" to the Audited Financial Statements.

Further, Chinalco Financial Leasing and Chinalco Commercial Factoring, have increased the overall provision ratio from 1 per cent. to 1.5 per cent., changed the previous provision ratio of risk reserve which was based on 1 per cent. of business assets to 0.5 per cent. of market-oriented business assets, after full analysis of the quality of their business assets. At the same time, in order to meet the regulatory policy requirements of the China Banking and Insurance Regulatory Commission, a general risk reserve was made at 1 per cent. of the balance of risk assets for the year ended 31 December 2020. See Note 5.1.3 "Changes in Accounting Policies and Accounting Estimates and Corrections of Accounting Errors — Changes in accounting policy — Changes in accounting estimates" to the Audited Financial Statements.

The Audited Financial Statements were prepared and presented in accordance with PRC GAAP. PRC GAAP differs in certain material respects from IFRS. See "Description of Certain Differences Between PRC GAAP and IFRS". Accordingly, potential investors must exercise caution when using such consolidated financial statements to evaluate the Group's financial condition and operations. The Group's historical financial information may not be directly comparable against the Group's financial information as at and for the years ended 31 December 2019 and 2020 included in this Offering Circular. Investors must therefore exercise caution when making comparisons of any such financial figures after 1 January 2020 against the Group's historical financial figures prior to 1 January 2020 and when evaluating the Group's financial condition, results of operations and results

The Guarantor's consolidated financial statements were prepared and presented in accordance with PRC GAAP. PRC GAAP differs in certain material respects from the IFRS. See "Description of Certain Differences Between PRC GAAP and IFRS". Accordingly, potential investors must exercise caution when using such consolidated financial statements to evaluate the Group's financial condition and results of operations.

SUMMARY CONSOLIDATED INCOME STATEMENT INFORMATION

	For the year ended 31 December	
Items	**2020**	**2019**
	RMB (audited)	
1. Total Operating Revenue	**367,019,908,218.41**	**356,817,106,715.58**
Including: Revenue	366,631,576,744.45	356,425,316,870.71
Interest income	362,040,832.93	368,537,507.47
Premiums earned		
Fee and commission income	26,290,641.03	23,252,337.40
2. Total Operating Costs	**361,401,433,511.82**	**354,494,041,954.88**
Including: Cost of sales	327,581,643,972.77	319,914,673,905.36
Interest expenses	180,059,341.86	95,164,521.79
Service charge and commission fee	7,329,612.09	3,978,913.65
Surrender value		
Net claims paid		
Net appropriation for insurance contracts reserves		
Dividend expenses for policyholders		
Reinsurance expenditures		
Taxes and surcharges	3,478,539,441.25	3,084,698,076.80
Selling expenses	3,618,023,611.58	3,930,770,377.27
Administrative expenses	10,110,261,302.25	10,288,513,902.25
Research and development expenses	3,142,165,984.74	2,631,903,347.96
Financial expenses	13,283,410,245.28	14,544,338,909.80
Including: Interest expense	13,060,803,191.57	15,001,485,573.31
Interest income	1,095,531,367.89	866,464,477.28
Foreign exchange losses, net (gains expressed with "–")	483,483,450.29	–85,822,610.22
Others		
Add: Other income	373,301,818.91	760,530,249.68
Investment income (losses expressed with "–")	7,615,769,386.61	11,881,499,797.22
Including: Investment income from associates and joint ventures	380,141,819.19	702,426,162.04
Gains from derecognition of financial assets measured at amortized costs		
Foreign exchange gains (losses expressed with "–")	–26,801,570.10	7,212,713.52
Gains on hedge of a net position (losses expressed with "–")		
Profit/(loss) from changes in fair value (losses expressed with "–")	26,651,908.01	–22,719,490.94
Credit impairment losses (losses expressed with "–")	–1,908,110,123.49	–1,177,026,880.35
Asset impairment losses (losses expressed with "–")	–4,958,658,877.97	–6,827,342,821.26
Gains on disposal of assets (losses expressed with "–")	140,082,476.36	–1,519,723,037.69

Items	For the year ended 31 December	
	2020	2019
	RMB (audited)	
3. Operating profit (losses expressed with "–")	**6,880,709,724.92**	**5,425,495,290.88**
Add: Non-operating income	868,449,368.81	729,257,815.37
Including: Government grants	293,492,149.47	264,004,756.04
Less: Non-operating expenses	966,022,526.29	1,093,179,184.41
4. Total profits (total losses expressed with "–")	**6,783,136,567.44**	**5,061,573,921.84**
Less: Income tax expenses	2,595,164,922.38	2,036,767,762.10
5. Net profit (net losses expressed with "–")	**4,187,971,645.06**	**3,024,806,159.74**
A. Classified by ownership		
Net profits attributable to owners of the Parent Company	2,214,061,930.57	1,887,624,556.07
*Minority interests	1,973,909,714.49	1,137,181,603.67
B. Classified by continuing and discontinued operations		
Net profit from continued operations	4,187,971,645.06	3,024,806,159.74
Net profit from discontinued operations		
6. Other comprehensive income net of income tax	**–10,087,545,985.96**	**2,068,900,717.56**
Attributable to owners of the parent	–8,892,482,255.59	2,060,816,674.23
A. Items that cannot be reclassified subsequently to profit or loss	–27,679,078.93	846,544.65
1. Remeasurement of defined benefit liability/(asset)	–2,088,428.40	–16,311,536.74
2. Other comprehensive income cannot be reclassified to profit or loss under equity method	–803,854.61	
3. Change in fair value of other equity instruments	–24,786,795.92	17,158,081.39
4. Change in fair value of the enterprise's own credit risk		
5. Others		
B. Items that may be reclassified subsequently to profit or loss subsequently:	–8,864,803,176.66	2,059,970,129.58
1. Other comprehensive income can be reclassified to profit or loss under equity method	–632,787.25	93,499,204.56
2. Debt instrument measured at fair value through other comprehensive income — Changes in fair value		
3. Gains or losses on changes in fair value of available-for-sale financial assets	9,546,582.43	103,299,371.58
4. Other comprehensive income from reclassification of financial assets		
5. Gains or losses on reclassification of held-to-maturity investments to available-for-sale financial assets		
6. Debt instrument measured at fair value through other comprehensive income — Credit loss allowance		
7. The effective portion of gains or losses on cash flow hedges	–265,722,482.97	–21,017,968.78
8. Foreign currency financial statements translation differences	–8,607,994,488.87	1,889,081,763.70
9. Others		–4,892,241.48
*Attributable to non-controlling interests	–1,195,063,730.37	8,084,043.33
7. Total comprehensive income:	**–5,899,574,340.90**	**5,093,706,877.30**
Attributable to owners of the parent company	–6,678,420,325.02	3,948,441,230.30
*Attributable to minority interests	778,845,984.12	1,145,265,647.00

SUMMARY CONSOLIDATED BALANCE SHEET INFORMATION

Items	As at 31 December 2020	2019
	RMB (audited)	
Current assets:		
Monetary funds	48,787,804,494.63	51,787,474,584.71
Settlement reserves		
Loans to banks and other financial institutions		100,000,000.00
Financial assets held for trading	177,069,820.52	3,648,235,426.06
Financial assets measured at fair values through profit or loss	419,994,097.62	521,300,342.42
Derivative financial assets	20,997,596.76	9,396,579.34
Notes receivable	1,839,215,235.24	2,252,286,019.68
Accounts receivable	19,608,209,220.09	19,101,875,907.72
Receivables financing	5,401,381,367.75	2,671,341,115.53
Advances to suppliers	4,286,774,502.97	5,105,555,583.10
Insurance Premium receivable		
Reinsurance accounts receivable		
Reinsurance reserves receivable		
Other receivables	9,426,643,267.64	12,863,235,474.68
Including: Dividends receivables	602,188,142.35	344,361,420.69
Financial assets purchased under reverse repurchase agreements		
Inventories	51,905,013,913.97	52,653,952,981.74
Including: Raw materials	16,246,974,157.79	15,588,423,603.54
Merchandise (Finished goods)	11,361,568,087.49	11,470,768,279.08
Contract assets	7,280,336,107.50	12,991,002,767.06
Assets held for sale		
Non-current assets due within one year	3,528,946,949.91	63,613,182.97
Other current assets	7,700,071,439.10	7,328,146,483.52
Total current assets	**160,382,458,013.70**	**171,097,416,448.53**
Non-current assets:		
Loans and advances	46,295,000.00	44,055,000.01
Debt investments		
Financial assets available-for-sale	114,738,129,049.62	120,822,756,950.71
Other debt investments		
Held-to-maturity investments		1,203,755,623.65
Long-term receivables	6,184,570,894.94	4,003,634,911.72
Long-term equity investments	27,140,450,745.57	28,401,699,717.40
Other equity instrument investments	1,267,485,649.10	1,948,786,663.87
Other non-current financial assets	54,858,959.00	53,571,500.00
Investment properties	3,908,164,492.22	3,998,216,955.46
Fixed assets	205,694,923,407.26	192,683,468,320.04
Including: Cost	350,322,521,380.94	330,600,829,481.36
Accumulated depreciation	131,899,134,438.10	122,358,320,156.60
Provision for fixed assets impairment	16,808,725,171.66	15,880,827,649.82
Construction in progress	18,335,601,702.85	34,385,586,365.23
Bearer biological assets		
Oil and gas assets		
Right-of-use assets	1,545,952,094.56	3,982,291,693.75
Intangible assets	57,692,150,494.99	58,767,125,122.75
Development expenditures	553,573,398.18	361,376,500.71
Goodwill	11,374,160,062.33	11,387,689,552.88
Long-term prepaid expenses	1,856,362,466.09	1,916,971,694.89
Deferred tax assets	4,365,905,948.70	4,553,251,701.38
Other non-current assets	17,263,262,229.97	12,738,418,836.94
Including: Specifically reserved assets		
Total non-current assets	**472,021,846,595.38**	**481,252,657,111.39**
Total assets	**632,404,304,609.08**	**652,350,073,559.92**

Items	As at 31 December	
	2020	2019
	RMB (audited)	
Current liabilities:		
Short-term loans	91,491,438,773.21	95,882,938,394.81
Borrowings from central bank		
Loans from banks and other financial institutions	650,000,000.00	1,100,000,000.00
Financial liabilities held for trading	44,563,787.86	71,429,707.82
Financial liabilities measured at fair values through profit or loss	129,214,479.29	18,291,901.26
Derivative financial liabilities	503,481,937.72	51,919,229.17
Note payables	14,557,736,392.24	14,012,858,904.32
Account payables	38,188,978,014.99	39,866,876,704.69
Advances from customers	2,117,614,830.66	2,655,265,877.05
Contract liabilities	4,552,183,008.70	3,986,608,796.61
Financial assets sold under repurchase agreements	2,159,700,000.00	1,681,679,687.53
Deposits from customers and interbank deposits	86,985,458.55	220,823,194.09
Funds from securities trading brokerage business		
Funds from securities underwriting business		
Employee benefits payable	2,348,142,157.26	2,817,293,892.38
Including: Salary payable	519,011,571.04	988,994,863.88
Welfare expense payable	111,490,558.53	99,819,509.17
#Including: Bonus and welfare fund		
Tax and surcharge payable	2,720,902,236.35	2,331,629,217.04
Including: Tax payable	2,629,687,724.80	2,294,060,044.53
Other payables	16,845,011,874.84	22,324,508,913.24
Including: Dividends payable	1,219,019,645.19	1,504,807,816.98
Fees and commissions payable	15,314,413.22	13,409,179.81
Reinsurance accounts payable		
Liabilities held for sale		
Non-current liabilities due within one year	34,324,615,336.53	41,257,986,854.11
Other current liabilities	27,600,865,934.73	37,396,179,526.30
Total current liabilities	**238,336,748,636.15**	**265,689,699,980.23**
Non-current liabilities:		
Insurance contract reserves		
Long-term borrowings	115,821,513,170.92	83,191,378,056.09
Bonds payable	36,815,553,929.35	48,794,139,866.28
Including: Preference shares		
Perpetual debts		
Lease liabilities	115,380,703.60	123,259,823.96
Long-term payables	2,669,454,902.03	4,860,004,469.58
Long-term employee benefits payable	1,440,309,472.10	1,788,560,828.96
Provisions	3,674,558,437.06	3,500,114,803.77
Deferred income	681,113,943.81	2,236,783,907.01
Deferred tax liabilities	5,043,151,516.51	5,032,392,035.76
Other non-current liabilities	261,329,784.76	510,194,799.17
Including: Specifically reserved funds		
Total non-current liabilities	**166,522,365,860.14**	**150,036,828,590.58**
Total liabilities	**404,859,114,496.29**	**415,726,528,570.81**

Items	As at 31 December 2020	As at 31 December 2019
	RMB (audited)	
Owner's equity (or Shareholders' equity):		
Paid-in capital (or share capital)	25,200,000,000.00	25,200,000,000.00
State-owned capital	25,200,000,000.00	25,200,000,000.00
Capital from state-owned entities		
Collective capital		
Private capital		
Foreign invested capital		
#Less: capital redemption		
Paid-in capital (or share capital), net	25,200,000,000.00	25,200,000,000.00
Other equity instruments	118,570,114,193.43	120,574,567,264.14
Including: Preference shares		
Perpetual debts	118,570,114,193.43	120,574,567,264.14
Capital reserve	27,085,820,206.91	25,474,948,904.89
Less: Treasury shares		
Other comprehensive income	(6,216,875,244.69)	2,675,607,010.90
Including: Foreign currency translation difference	(6,996,538,056.85)	1,611,456,432.02
Special reserves	413,500,075.44	345,837,366.53
Surplus reserves	1,419,398,973.78	1,419,398,973.78
Including: Statutory surplus reserve	1,419,398,973.78	1,419,398,973.78
Discretionary surplus reserve		
#Reserve fund		
#Profit Enterprise development fund		
#Return for investment by profit		
General Risk Preparation	555,812,147.09	470,108,755.23
Retained Earnings	(58,291,159,719.00)	(55,088,265,770.48)
Total owners' equity (or shareholders' equity) attributable to the parent	**108,736,610,632.96**	**121,072,202,504.99**
*Minority interests	118,808,579,479.83	115,551,342,484.12
Total owners' (or shareholders') equity	**227,545,190,112.79**	**236,623,544,989.11**
Total liabilities and owners' (or shareholders') equity	**632,404,304,609.08**	**652,350,073,559.92**

RISK FACTORS

An investment in the Bonds is subject to a number of risks. Investors should carefully consider all of the information in this Offering Circular and, in particular, the risks described below, before deciding to invest in the Bonds. The following describes some of the significant risks that could affect the Issuer, the Guarantor, the Group and the value of the Bonds. Some risks may be unknown to the Issuer, the Guarantor and the Group and other risks, currently believed to be immaterial, could in fact be material. Any of these could materially and adversely affect the business, financial condition, results of operations and prospects of the Issuer, the Guarantor and the Group. The market price of the Bonds could decline due to any of these risks, and investors may lose part or all of their investment. This Offering Circular also contains forward-looking statements that involve risks and uncertainties. The actual results of the Issuer, the Guarantor or the Group could differ materially from those anticipated in these forward-looking statements as a result of certain factors, including the risks described below and elsewhere in this Offering Circular. The Guarantor and the Group may be affected materially by requirements and restrictions that arise under PRC laws, regulations and government policies in nearly all aspects of its business in the PRC.

RISKS RELATING TO THE GROUP'S PRINCIPAL BUSINESS LINES

The Group's businesses are vulnerable to downturns in the general economy and industries in which the Group operates or which the Group serves. A reduction in demand or supply could materially and adversely affect the Group's business, financial condition and results of operations.

Demand for the Group's primary products of alumina, primary aluminium, copper, lead-zinc and various rare earth metals depends on the general economy and level of activity and growth in the industries which the Group serves, such as aviation, aerospace, shipbuilding, automobile manufacturing, electronics, machinery, construction and other industries of national strategic importance. Development of the relevant industries is subject to various factors, including but not limited to market fluctuations of the prices of commodities, macroeconomic policies, general political or economic conditions, technological development, government investment plans, fluctuations in global production capacity and consumer spending, many of which are beyond the Group's control. Unfavourable global financial or economic conditions, including but not limited to the recent U.S.-Sino trade tensions, could materially and adversely affect the Group's sales volumes.

In addition, concerns over inflation, increasing energy costs, overcapacity of the aluminium and other metals industries in which the Group operates, geopolitical issues, trade tensions, the availability and cost of credit, unemployment, diminishing consumer confidence, declining asset values, capital market volatility and liquidity issues have created difficult operating conditions for the Group in the past few years and the impact may remain in the future.

For example, since 2018, there were continuing trade tensions between the U.S. and China, resulting in increased tariffs and escalating tensions between the two countries. In January 2020, the two parties signed the China-U.S. phase-one economic and trade agreement. Since then, the PRC government and the U.S. government have granted tariff exemptions on certain goods. However, it is still unclear when future phase negotiations between the two countries will begin and whether there will be further trade agreements following such negotiations. It is also unclear if future disputes will occur or the two countries will be able to negotiate the issues to restore a mutually beneficial economic and trade cooperation. Future actions or escalations by either the U.S. government or the PRC government could have a material adverse effect on the business environment in general, global, Chinese and/or U.S. economic conditions and the stability of global, Chinese and/or U.S. financial markets, which in turn, may adversely affect the Group's business, financial condition and results of operations.

Furthermore, the PRC government has, from time to time, adjusted its monetary, fiscal and other policies and measures to ensure stable economic growth and to reduce overcapacity in certain industries or markets. As a result, the global as well as China's economy and the particular industry in which the Group operates or which it serves may grow at a pace slower than expected or even experience a downturn. For example, the global crisis in financial services and credit markets in 2008 caused a slowdown in the growth of the global economy. Although the global and China's economies have largely recovered, there is no assurance that any such recovery is sustainable. In addition, macroeconomic events since 2011, such as the easing of monetary policy by various governments worldwide, the sovereign debt crisis in Europe, the withdrawal of the United Kingdom from the European Union and the aforementioned U.S.-Sino trade tensions, have had an adverse effect on the global and Chinese economy. Furthermore, the global outbreak of the Coronavirus Disease 2019 (COVID-19) and the efforts to contain it have negatively impacted the global economy and financial markets, causing a global recession in 2020. Uncertainties about future economic conditions make it challenging for the Group to forecast its results of operations, make business decisions and identify risks that may affect its business.

Volatility in the prices of alumina, primary aluminium, copper, lead-zinc and the various rare earth metals which the Group produces and trades could adversely affect the Group's business, financial condition and results of operations.

The prices of the major products of the Group, primarily including alumina, primary aluminium, copper, lead-zinc and various rare earth metals, have experienced fluctuations in response to the changing resource availability, government policies, costs of production, trade disputes with target markets, global and regional economic conditions, demand in end markets for products in which the commodities are used, technological developments, including commodity substitutions, fluctuations in global production capacities and the level of global inventories, many of which are beyond the Group's control.

The Group prices its products by referencing international and market prices in China. For example, from 2011 to 2016, as a result of the sovereign debt crisis in the Eurozone and the slowdown of economic growth in China, the market prices of alumina and copper have decreased. Since 2017, due to changes in the production and supply structure, increases in commodity prices and the economic growth in China, market prices of alumina and copper increased gradually. However, in 2020, the global outbreak of the COVID-19 pandemic, trade frictions and intensified geopolitical tensions have resulted in weakness in the global macroeconomy, increased uncertainties affecting world economic growth, and continuous increase in downward pressure. In the context of the macroeconomic environment in China and abroad, except for certain metals of which the prices have risen due to their outstanding industrial advantages, the prices of other varieties, including aluminium, have shifted downward. There is no assurance that there will be no significant decrease in prices of the Group's key products in the future. Any significant decrease in prices of the Group's key products may materially and adversely affect the Group's businesses, financial condition and results of operations.

The Group relies heavily on its raw material suppliers, which exposes the Group to fluctuations of the prices and supplies of raw materials.

The major raw materials for the Group's business include, among other things, bauxite and copper ores. In order not to deplete its own mineral resources, the Group relies on external raw material suppliers in China and overseas.

The prices of raw materials that the Group needs could be affected by a number of factors, including supply and demand in market, changes in the import taxes and duties of China, geopolitical conditions and economic conditions in China, global economic conditions and changes to environmental and regulatory requirements in China and/or in other parts of the world. Any significant increase in the costs of the Group's raw materials may increase its cost of goods and sales and hence negatively affect its profit margin and, more generally, its businesses, financial condition, results of operations and prospects. A reduction in, or lack of availability of, raw materials or interruptions in the supply chain could also affect the Group's profitability to the extent that it is required to pay higher prices for, or is unable to secure adequate supplies of, the necessary raw materials. If any supplier of raw material to the Group ceases or limits production, raises prices of its products or sells its products to other buyers, the Group's production may be adversely affected and the Group may incur significant extra costs, including capital costs, for finding reliable and affordable alternative raw material suppliers. The Group may also experience significant production delays while locating new supply sources. There is no assurance the Group will be able to locate such alternative suppliers at favourable prices or at all. If the Group is unable to locate alternative suppliers or pass on all or a portion of the increased cost of raw materials to its customers, it could materially and adversely affect the Group's businesses, financial condition, results of operations and prospects.

The Group's operations consume substantial amounts of electricity and the Group's profitability may decline if energy costs rise or if its energy supplies are interrupted.

The Group's operations consume substantial amounts of electricity. Although the Group generally expects to meet the power requirements from a combination of internal and external sources, its results of operations may be materially and adversely affected by the following:

- significant increases in electricity costs; or

- curtailment of the operation of one or more refineries or smelters due to the Group's inability to extend energy supply contracts upon their expiration.

Cost of electricity is the principal cost in the Group's production of primary aluminium, copper, zinc and lead. The Group expects that China's economy will continue to grow and, as a result, the Group expects the demand for and prices of electricity to increase accordingly. Thus, the results of operations of the Group could be materially and adversely affected. In addition, China's regulatory authorities have in recent years announced an increasing number of measures to reduce carbon emissions in China, including the introduction of pilot city carbon emissions trading schemes and other programmes aimed at carbon emissions reduction. As coal-fired power remains the principal power source in China, more stringent emission standards often lead to higher production cost of electricity which directly translates into higher electricity prices. There is no assurance that existing and new emission standards will not further drive up the electricity prices in China which could adversely affect the Group's aluminium and copper operations.

In addition, interruptions in power supply may result in costly production shutdowns, increased costs associated with restarting production and the suspension of production in progress. A sudden loss of power, if prolonged, can cause damage to or the destruction of production equipment and facilities. In such an event, the Group may need to expend significant capital and resources to repair or replace the affected production equipment to restore its production capacity. Various regions across China have experienced shortages and disruptions of electricity supply, especially during peak demand periods such as in the summer or during severe weather conditions. In 2021, power shortages and power rationing policies across China have led to slowed productions or closure of production lines in various industries. There is no assurance that the Group's operations will not suffer from shortages or disruptions in electrical power and any occurrence of which could have a material and adverse impact on the Group's business, financial condition and results of operations.

The industries in which the Group operates are heavily regulated and changes in China's regulations and policies on such industries may materially and adversely affect the Group's businesses, financial condition and results of operations.

The Group is one of the key players in the non-ferrous industry in China. The PRC government may exert significant influence on the non-ferrous industry in China by implementing industry policies and other economic measures, such as those relating to credit and financing, land use, governmental approval of new projects, environmental protection, technological and capacity requirements of production facilities and foreign investment. These industry policies and economic measures may significantly reduce the level of construction activities and capital investments in China's non-ferrous industry, which in turn could materially and adversely affect the Group's businesses, financial condition and results of operations.

The PRC government has implemented a series of policies and regulations designed to prevent or curb overcapacity in, and to enhance the production efficiency and global core competency of, China's non-ferrous metals industry. The Ministry of Industry and Information Technology (中華人民共和國工業和信息化部) ("**MIIT**") officially issued the "Development Plan of Non-ferrous Metal Industry (2016–2020)" (《有色金屬工業發展規劃(2016-2020年)》) which mainly focused on promoting the transformation and upgrading of non-ferrous metals industry and created new competitive advantages. In February 2020, MIIT issued the "Regulatory Conditions for the Aluminium Industry" (《鋁行業規範條件》), which introduced higher admission standards for the guidance and regulation of industry development. On 6 October 2013, the State Council issued "Guiding Opinions on Resolving Serious Production Overcapacity Conflicts" 《關於化解產能嚴重過剩矛盾的指導意見》, focusing on restraining the overexpansion of production capacity, banning projects of building new capacity, rectifying illegal production and encouraging technology improvements. On 13 December 2013, NDRC and MIIT jointly issued the "Notice of Implementing Tiered Tariff Policies for Electrolytic Aluminium Enterprises" (《關於電解鋁企業用電實行階梯電價政策的通知》), which intended to leverage different electricity prices to retire obsolete production capacity, reduce the over-consumption of resources and promote the structural adjustment of China's aluminium industry. On December 2016, the State Council promulgated the "Catalogue of Investment Projects Subject to Government Approval (2016)" (《政府核准的投資項目目錄(2016年本)》), prohibiting the filing of any increased production capacity by any means in electrolytic aluminium industry and other industries suffering severe overcapacity. In addition, the NDRC also issues the "Guiding Catalogue for Adjustment in the Structure of Industries" (《產業結構調整指導目錄》) from time to time in order to formulate development plans for non-ferrous metal industries in China, including the copper industry. Any significant change in the government policies related to the copper industry could also adversely affect the Group's operations. On the other hand, the transformation of China's non-ferrous metals industry may result in limitations on the expansion of production scale, reductions in investments in additional production capacity and uncertainties associated with business reorganisations and consolidations, which could present significant challenges for the Group's business.

These laws, regulations and governmental policies relating to China's non-ferrous metals industry are subject to changes which may impose significant costs or limitations on the way the Group conducts or expands its business, such as those affecting the extent to which the Group can engage in, or charge fees for, specific businesses. The changes in the laws, regulations and other governmental policies may have significant impact on the Group's business, and the Group may not be able to adapt to such changes on a timely basis. Moreover, there may be uncertainties regarding the interpretation and application of new laws, regulations and other governmental policies. Failure to comply with the applicable laws, regulations and other governmental policies may result in fines, restrictions on the Group's activities or other adverse consequences, which could materially and adversely affect the Group's business, financial condition and results of operations.

Failure to maintain optimal utilisation of the Group's alumina, primary aluminium and refined copper production facilities will adversely affect the Group's gross and operating margins.

For the years ended 31 December 2019 and 2020, the Group expanded the production capacity by upgrading or remoulding some of its alumina, primary aluminium and refined copper production facilities. However, the Group's primary aluminium production may be adversely affected by the administrative policies and orders implemented by the local governments to fulfil China's Energy-Saving and Emission Reduction Goals. Also see "— *Risks relating to the Group's principal business lines — The Group is subject to administrative policies and orders relating to China's Energy-Saving and Emission Reduction Goals that could adversely affect the Group's production of alumina and aluminium*".

Furthermore, the Group expects its production capacity expansion in recent years to increase the Group's overall operating costs, in particular, depreciation and amortisation costs. If the Group is able to maintain a satisfactory facility utilisation level and increase its output, the Group's production capacity expansion will enable the Group to reduce its unit costs through economies of scale, as fixed costs will be spread over a higher volume of output units. Conversely, under-utilisation of the Group's existing and newly acquired or constructed production facilities may increase the Group's marginal production costs and prevent the Group from realising the intended economic benefits of the Group's expansion. In addition, considering the sustained weak primary aluminium pricing environment and deterioration in primary aluminium prices which could not be offset through decreases in the Group's costs, the Group has implemented flexible production arrangements for certain alumina and primary aluminium production facilities since 2013. In addition, the Group abandoned certain primary aluminium and alumina production facilities with an aggregate annual designed production capacity of approximately 157,500 and 30,000 tonnes, respectively for the year of 2014. In recent years, the Group continued to close down unproductive facilities, transform and upgrade selected companies under the support of favourable policies.

The Group has also increased its external purchases of alumina and primary aluminium for trading purposes to capitalise on fluctuating market prices and to enhance resource planning to achieve cost savings in production. The increase in the Group's external purchases has not resulted in a proportionate decrease in fixed costs such as leases and depreciation of plant, property and equipment. Given the Group's high proportion of fixed costs, failure to maintain historical utilisation rates may adversely affect the Group's gross margin and operating margin.

The production of alumina consumes substantial amounts of coal, and the Group's operations may be adversely affected if the Group is unable to procure sufficient coal or if coal prices rise significantly.

The Group relies heavily on coal as its energy and fuel source for its production of alumina and copper. For example, as the Group increases its alumina refining capacity, its consumption of coal will increase accordingly. If there are shortages of coal, constraints on coal transportation or for any other reasons, the Group may be forced to reduce its production output or suspend its alumina refining operations, which could materially and adversely affect the Group's financial condition and results of operations. Although the Group has acquired equity interest in a number of coal mines, the Group expects to continue to rely substantially on third-party coal suppliers for the supply of coal. In addition, the Group expects the price of coal to increase as China's economy continues to grow. In 2021, there were significant increases in the price of coal in China. If the Group is unable to pass on increases in coal prices to its customers or offset price increases through productivity improvements, its operating margin, financial condition and results of operations could be adversely affected.

The Group's aluminium, copper, lead-zinc and rare earth metals businesses face intensifying competition.

The Group's principal business lines, the aluminium, copper, lead-zinc and rare earth metals businesses, face increasing competition from both domestic and international producers. The Group's principal competitors are domestic smelters, some of which are consolidating and expanding their production capacities. These smelters compete with the Group's aluminium, copper, lead-zinc and rare earth metals operations on the basis of cost, quality and pricing. In addition, the Group faces increasing competition from international alumina and primary aluminium suppliers as a result of the elimination of tariffs on imports of primary aluminium and alumina into China.

Increasing competition in the Group's key product markets may reduce the Group's selling prices or sales volumes of aluminium, copper, lead-zinc and rare earth metals products, which will have a material adverse effect on the Group's financial condition and results of operations. If the Group is unable to price its products competitively, maintain or increase its current market share in the relevant Chinese markets or otherwise maintain its competitiveness, the Group's financial condition, results of operations and profitability could be materially and adversely affected.

The Group's profitability and operations could be adversely affected if the Group is unable to obtain a steady supply of bauxite and copper ore at competitive prices.

Historically, the price for bauxite, the Group's most important raw material for alumina production, has been volatile. The Group obtains bauxite for its operations from its own mines and external suppliers. The extent to which the Group procures bauxite from each of these sources affects the security of the Group's supply or cost of bauxite. The supply of bauxite could be affected by various factors, including geographic conditions of bauxite mines, government policies, market prices and competition, many of which are beyond the Group's control. The Group relies on overseas suppliers to obtain a portion of bauxite the Group uses for production. Indonesia used to be a major source of the Group's imported bauxite. As a result of the ban imposed by the Government of Indonesia on the exportation of unprocessed bauxite and nickel, since January 2014, the Group was not able to export the bauxite produced by its bauxite mines in Indonesia for the use of the Group's alumina refineries in China, and the Group's operation of bauxite mining in Indonesia has been suspended since September 2014.

In addition, the Group's results of operations may be affected by increases in the cost of other raw materials and other key inputs such as energy. If the Group is unable to obtain a steady supply of key raw materials at competitive prices, the Group's financial condition and results of operations could be materially and adversely affected.

The Group is subject to the uncertainties surrounding its resources and reserves estimates of minerals and metals, and the volume and grade of ore it produces may not conform to current estimates.

The estimates of the Group's resources and reserves of minerals and metals are based on a number of assumptions in accordance with relevant industry standards. There can be no assurance that the Group's resources and reserves of minerals and metals will be recovered in the quantities, qualities or yields presented in this Offering Circular. Resources and reserves estimates of minerals and metals are inherently prone to variability. They involve expressions of judgment with regard to the presence and grade of ore bodies and the ability to extract and process the ores economically. These judgments are based on a variety of factors, such as knowledge, experience and industry practice. The accuracy of these estimates may be affected by many factors, including the quality of the drilling, sampling results of the ore bodies, analysis of the drilling samples, the procedures adopted and the experience of the persons making the estimates.

Ore mined may differ from the estimates of resources or reserves of minerals and metals in various aspects, such as quality, volume, overburden strip ratio, mining costs or processing costs. In addition, ores may not ultimately be extracted at a profit. The Group records its mineral resources located in China according to the Chinese National Standard. The Group may record its mineral resources located overseas according to other international resource reporting standards, such as the JORC Code and NI 43-101, in compliance with local laws and regulations. The amount of mineral resources located overseas has been converted to conform to the Chinese National Standard when calculating the consolidated amount of mineral resources at the Group level. However, there is no assurance that such conversion is accurate because different resource reporting standards may not be comparable.

If the Group encounters mineralisation or geological or mining conditions different from those estimated based on historical drillings, samplings and similar examinations, the Group may have to adjust its mining plans in a way that could materially and adversely affect its businesses, financial condition and results of operations and reduce the estimated amount of resources and reserves available for production and expansion plans. In addition, the development period estimated by the Group may differ from the actual development cycle due to various reasons such as unexpected difficulty in mineral resources development and development procrastination. The aforesaid differences in the resources development projects invested in by the Group will affect the operational results and future development of the Group's relevant operations.

The bauxite and copper ore reserve data on which the Group bases its production, revenue and expenditure plans are estimates that the Group has developed internally and may prove inaccurate. There are numerous uncertainties inherent in estimating quantities and qualities of reserves, including many factors beyond the Group's control. If these estimates are inaccurate or the indicated tonnages are not recovered, the Group's business, financial condition, and results of operations may be materially and adversely affected.

The Group's mining operations have limited mine life cycles and eventual closure of these operations will entail costs and risks regarding ongoing monitoring, rehabilitation and compliance with environmental standards.

The Group's existing mining operations in China and overseas have limited mine life cycles and will eventually be depleted. The Group needs to perform certain procedures to remedy and rehabilitate the environmental and social impact its mining operations have had on local communities and the environment. Remediation, rehabilitation, closure and removal of the Group's facilities will incur various costs and are subject to various risks. The key costs and risks for mine closures are, but are not limited to, (i) long-term management of permanent engineered structures and acid rock drainage; (ii) closure in accordance with local or international environmental standards; (iii) orderly retrenchment of employees and third-party contractors; and (iv) relinquishment of the site with associated permanent structures and community development infrastructure and programmes to new owners. There is no assurance that such closure of mines will be successful and without any delays or additional costs, in which case the Group may be subject to increased costs, penalties or other legal or administrative actions, damage to reputation, even suspension and cancellation of mining permits, the occurrence of which would cause a material and adverse effect to the Group's businesses, financial condition and results of operations.

Failure to discover new reserves or resources, maintain or enhance existing reserves or resources, develop new mining operations or expand the Group's current mining operations could negatively affect the Group's businesses, financial condition and results of operations.

Mining exploration is unpredictable in nature. The success of any mining exploration programme depends on various factors, many of which are beyond the Group's control. Due to the unpredictable and speculative nature of the mining industry, there is no assurance that any exploration programme that the Group is currently undertaking or may undertake in the future will result in the discovery of valuable reserves or resources. For example, in January 2017, the Group ceased a copper ore exploration project with Rio Tinto plc ("**Rio Tinto**") after six years of exploration. There is no assurance that reported resources can be converted into reserves. Furthermore, actual results upon production may differ from those anticipated at the time of discovery. To access additional reserves in explored areas, the Group will need to successfully complete development projects, including but not limited to extending existing mines and developing new mines. There are a number of uncertainties inherent in the development and construction of any new mine or an extension of an existing mine, including but not limited to (i) the availability and timing of necessary governmental approvals; (ii) the timing and cost necessary to construct mining and processing facilities; (iii) the availability and cost of labour, utilities, auxiliary materials and other supplies and the accessibility of transportation and other infrastructure; (iv) the availability of funds to finance construction and production activities and (v) opposition from local communities and social groups as well as government authorities. There is no assurance that any future exploration activities or development projects will extend the life of the Group's existing mining operations or result in any new economic mining operations and such failure may have a material adverse effect on the Group's businesses, financial condition and results of operations.

The Group may experience a shortage of reliable and adequate transport capacity for its products. Any disruption in transportation of its products or any material increase in transportation costs could have a material adverse effect on its businesses, financial condition and results of operations.

The Group's operations require reliable transportation of raw materials and supplies to the Group's refining and smelting sites and finished products to its customers. The Group's alumina, primary aluminium, copper, lead-zinc and rare earth metals products are delivered to the Group's customers primarily by railway or trucks. There is no assurance that the Group will always enjoy sufficient transportation capacity or the transportation of the Group's products will not experience interruption in the future. Furthermore, natural disasters may cause interruption to the transportation system, which could in turn affect the transportation of its products. In addition, any changes in fuel prices or fuel supply may be unpredictable and beyond the Group's control. There is no assurance that a shortage of fuel will not occur in the future. Any surge in fuel prices or shortage of fuel supply may lead to increases in the Group's operating and transportation costs. If the Group is unable to make timely deliveries due to logistical and transportation disruptions, or transfer the increased costs to its customers, the Group's production, reputation and results of operations may be adversely affected.

Any failure to maintain an effective quality control system for the Group's production and other operational activities could have a material adverse effect on the Group's businesses, financial condition and results of operations.

The quality of the Group's services and products is critical to the success of its businesses. In order to continue the success of its businesses, the Group must maintain an effective quality control system for its production and other operational activities. The effectiveness of quality control system depends significantly on a number of factors, including the Group's ability to ensure that its employees adhere to its quality control policies and guidelines. Any failure or deterioration of the Group's quality control systems could result in defects in its projects or products, which in turn may subject the Group to contractual, product liability and other claims. Any such claims, regardless of whether they are ultimately successful, could cause the Group to incur significant costs, harm its business reputation and result in significant disruption to its operations. Furthermore, if any such claims were ultimately successful, the Group could be required to pay substantial monetary damages or penalties, which could have a material adverse effect on the Group's businesses, financial condition and results of operations.

The Group is subject to administrative policies and orders relating to China's Energy-Saving and Emission Reduction Goals that could adversely affect the Group's production of alumina and aluminium.

Since 2012, guided by Xi Jinping thought on eco-civilisation and committed to the new development philosophy, China has made the response to climate change a higher priority in state governance. It has steadily reduced the intensity of its carbon emissions, reinforced the effort to achieve its nationally determined contributions, and maximized its drive to mitigate climate change. It has adopted green and low-carbon approaches in its economic and social development, and worked to build a modernised country in which humanity and nature coexist in harmony. At the general debate of the 75th Session of the United Nations General Assembly on 22 September 2020, President Xi Jinping announced that China would scale up its nationally determined contributions by adopting more vigorous policies and measures, strive to peak carbon dioxide emissions before 2030, and achieve carbon neutrality before 2060. China is taking pragmatic actions towards these goals.

The Group is subject to administrative energy-saving and emission reduction policies and orders carried out by the central and provincial governments in accordance with China's Energy-Saving and Emission Reduction Goals. On 28 February 2020, MIIT issued the "Regulatory Conditions for the Aluminium Industry", which sets forth various standards for existing and new projects, including standards for environment protection, energy consumption, and utilisation of resources. In order to meet these standards, the Group may be required to update its equipment and improve its technology, which could delay its production or result in additional costs and expenses. The occurrence of any of the foregoing could have an adverse effect on the Group's business, results of operations and financial condition.

If the Group fails to accurately estimate the overall risks or costs of contracts, or the time needed to complete the relevant projects under such contracts, the Group may experience cost overruns, schedule delays, lower profitability or even losses on projects under such contracts when it executes such contracts.

The Group's estimates of the costs for completing a project are subject to a number of assumptions, including future economic conditions, cost and availability of labour and raw materials, subcontractors' performance, facility utilisation rates, and construction and technical standards to be applied to the project. However, these assumptions may prove to be inaccurate. To a certain extent, the Group is exposed to raw material price fluctuation risks in some projects, depending on the terms agreed in specific contracts. In addition, delays caused by inclement weather, technical issues and an inability to obtain the requisite permits and approvals, as well as other variations and risks inherent in the performance of contracts, may cause the Group's actual overall risks and costs to differ substantially from its original estimates irrespective of the buffers the Group may build into its bids for increases in labour, raw materials and other costs. Cost overruns can result in a lower-than-expected profit or a loss on a project.

Similarly, the Group may be unable to complete a project in accordance with the schedule set forth in the relevant contract. A project can be delayed for a number of reasons, including those relating to market conditions, policies and regulations of China and other relevant jurisdictions, availability of funding, disputes with business partners, technology and equipment suppliers and other contractors, employees, local governments and communities, natural disasters, power and other energy supplies, and availability of technical or human resources. The Group's overseas engineering and construction contracting projects may also be affected by factors such as any adverse changes in the relations between China and relevant foreign governments, war or other significant adverse developments in international relations.

While most of the Group's contracts contain price adjustment clauses to cover increases in the costs of raw materials, changes in design or work scope, or other specific factors that would cause an interruption of construction and an increase in the cost, such as a lack of water or electricity supply, there is no guarantee that such measures are sufficient to protect the Group from the risk of cost overruns. From time to time, the Group may need to perform extra work as a result of the project owner changing the design for non-technical reasons after the design plan is confirmed. This may result in disputes over whether the work performed is beyond the scope of work included in the original project specifications, or over what price the customer should pay for the extra work. Even when the customer agrees to pay for the extra work, the Group may be required to advance the cost of such work for a lengthy period of time until the change in design is approved and funded by the owner. In addition, any delay caused by the extra work may impact the progress of the Group's projects and its ability to meet specific contract milestone dates. The Group may also incur costs due to changes in design not approved by the project owner or contract disputes. There is no guarantee that the Group will be able to recover the cost of the extra work in full or at all, which may lead to business disputes, or may otherwise adversely affect the Group's business, financial condition, results of operations and prospects. Moreover, the performance of extra work may cause delays in the Group's other project commitments and may have a negative impact on the Group's ability to meet the specified deadlines of its other projects.

There is no guarantee that the Group will not encounter cost overruns or delays in its current and future projects. If such cost overruns or delays occur, the Group's costs could exceed its budget or the Group could be required to pay liquidated damages in accordance with the terms of its contracts with a consequent reduction in, or elimination of, profits on its contracts.

The Group's operations require certain permits, licences and certificates, the loss of which could significantly hinder the Group's businesses and operations.

The Group is required to obtain and maintain valid permits, licences and certificates from various government authorities in order to conduct its businesses. The Group must comply with the restrictions and conditions imposed by various levels of governmental agencies to maintain its permits, licences and certificates. If the Group fails to comply with any of the regulations or to satisfy any of the conditions required for the maintenance of its permits, licences and certificates, investigations by the relevant authorities may ensue, which could result in negative publicity, fines and proceedings being brought and such permits, licences and certificates could be temporarily suspended or even revoked, rejected upon renewal or delayed for renewal, upon expiry of their original terms. Any non-compliance by the Group could materially and adversely impact the Group's reputation, businesses, financial condition and results of operations. The Group's qualification to conduct its various businesses may also be adversely impacted.

The PRC government at various levels and governmental authorities in the jurisdictions where the Group conducts its business may conduct routine or special inspections, examinations, inquiries and audits of the Group. The Group may be subject to suspension or revocation of its relevant permits, licences or certificates, or fines or other penalties due to any non-compliance discovered as a result of such inspections, examinations, inquiries and audits, which could adversely affect the Group's reputation, businesses, financial conditions and results of operations.

The Group is subject to litigation risks.

In the ordinary course of business, claims involving project owners, customers, suppliers and subcontractors may be brought against the Group and by the Group in connection with its operations. See, for example, the proceedings disclosed in Note 9.1 "*Contingencies — Pending litigation*" to the Audited Financial Statements. If any member of the Group is found to be liable on any of the claims, it would have to incur a charge against earnings to the extent a reserve had not been established for the matter in its accounts, or to the extent the claims were not sufficiently covered by its insurance coverage. Both claims brought against the Group and by the Group, if not resolved through negotiations, are often subject to lengthy and expensive litigation or arbitration proceedings, and claims against the Group may also result in freeze of or restrictions on the Group's bank deposits or other assets during such lengthy legal proceedings. Charges associated with claims brought against the Group and write-downs associated with claims brought by the Group could have a material adverse impact on the Group's business, financial condition, results of operations and cash flow. Moreover, legal proceedings resulting in judgments or findings against the Group may harm its reputation and damage its prospects for future contract or business awards.

RISKS RELATING TO THE GROUP'S OPERATIONS AND FINANCIAL PERFORMANCE

The Group may not achieve or sustain profitability in the future.

The Group achieved net profits of RMB3.0 billion and RMB4.2 billion in the years ended 31 December 2019 and 2020 respectively. The Group incurred net losses in the past. Its profitability depends on how it increases operational efficiency, reduces marginal manufacturing costs, adjusts strategic focus, and optimises business processes, and there is no assurance that it will achieve or sustain profitability in the future.

The Group expects that it will continue relying on bank and other borrowings as well as debt financing to fund its business operations. The Group's borrowing costs and access to the debt capital markets depend significantly on the Group's credit standing. Further increase in net current liabilities and significant increase in capital expenditures may result in a deterioration of the Group's credit standing, which could increase the Group's borrowing costs and limit the Group's access to the capital markets, which in turn, could reduce the Group's earnings and adversely affect the Group's liquidity.

The Group's businesses and operations require significant capital resources on an ongoing basis. Any failure to obtain sufficient funding may limit the Group's ability to engage in desired activities and grow its business, and may materially and adversely affect the Group's businesses, financial condition, results of operations, growth prospects and expansion plans.

The Group incurred substantial capital expenditures to upgrade and expand its production capacity and will continue to do so in the foreseeable future. For the years ended 31 December 2019 and 2020, the Group's capital expenditures, for acquiring fixed assets, intangible assets and long-term assets amounted to RMB22.0 billion and RMB21.2 billion respectively. However, the Group cannot guarantee that it will not change its investment policies and reduce investment activities in the future. The Group also may need additional capital for debt servicing, working capital, other investments, potential acquisitions and joint ventures and other general corporate purposes. There is no assurance that cash generated from the Group's operations will be sufficient to fund its future development and expansion. The availability of external funding is subject to various factors, including governmental approvals, market conditions, credit availability, interest rates and the performance of each of the businesses the Group operates. To the extent that additional financing proves to be unavailable at acceptable terms or at all when needed, the Group may be compelled to either restructure the transaction or abandon the investment or acquisition plan or cut down the cash outflow from investment activities and, as a result, its businesses, financial condition, results of operations, growth prospects and expansion plans may be materially and adversely affected.

The unqualified audit opinions included in the Group's financial statements contain emphasised matters.

The Group's financial statements as at and for the year ended 31 December 2020 included an unqualified audit opinion from ShineWing CPAs with emphasised matters. The matters emphasised were as follows: as at 31 December 2020, as Rio Tinto's single largest shareholder, the Group held approximately 183 million shares in Rio Tinto through its subsidiary Shining Prospect Pte. Ltd ("**Shining Prospect**"), which were recorded on the Group's balance sheet with a book value of approximately RMB101.75 billion due to the long-term nature of the Group's investments in Rio Tinto, which was approximately RMB12.98 billion more than the market value of the Group's equity interest in Rio Tinto of approximately RMB88.77 billion, based on the closing price of Rio Tinto's stock at the same date.

The emphasised matters indicate significant uncertainties associated with the accounting treatment of the Group's equity investment in Rio Tinto which the auditor considers to be important enough to warrant a mention in its audit report but without qualifying its opinion. As at 31 December 2020, the Group's net assets amounted to RMB227.5 billion. There is no assurance that the Group's independent auditor will not change its view and consider that the Group's investment in Rio Tinto should be recorded as fair market value of the securities, or the Group's investment intention towards Rio Tinto will not change, in which case, the book value of the Group's investment in Rio Tinto could decrease significantly, which could materially adversely affect the Group's financial position, ability to comply with provisions of its financing documents, results of operations and profitability.

Certain historical line items of the Guarantor's audited consolidated financial information as at and for the years ended 31 December 2019 and 2020 has been adjusted.

On 5 July 2017, MOF issued the "Accounting Standards for Business Enterprises No. 14 — Revenue (Revised in 2017)" (Caikuai [2017] No. 22) 《企業會計準則第14號 — 收入(2017年修訂)》財會[2017]22號）, namely the New Revenue Standards. Companies that are listed both domestically and abroad and companies that are listed overseas and adopt IFRS or PRC GAAP to prepare financial reports are required to implement the new financial instrument standards and new revenue standards from 1 January 2018. Yunnan Copper, Chihong Zn&Ge, Yunnan Aluminum and Yunnan Copper Science & Technology Development implemented the New Revenue Standards since 1 January 2020 and as a result reassessed the recognition, measurement, accounting and presentation of main contract revenues. According to the New Revenue Standards, if the recognition and measurement of revenue business before 1 January 2020 is inconsistent with the requirements of the New Revenue Standards, the relevant company should make adjustments in accordance with the requirements of the new income standards. The impact of the implementation of the New Revenue Standards on the relevant items in the balance sheet are listed in Note 5.1.1 "*Changes in Accounting Policies and Accounting Estimates and Corrections of Accounting Errors — Changes in accounting policy — Implementation of the new revenue standard*" to the Audited Financial Statements.

In addition, in order to ensure that the financial statements reflect the Group's economic and business nature more accurately meanwhile in accordance with the "Accounting Standards for Business Enterprises No. 16 — Government Subsidies" revised and issued by MOF (Cai Kuai [2017] No. 15) 《企業會計準則第16號 — 政府補助》(財會[2017]15號）, namely the Government Subsidies Standards and to take into account the requirements of the international market environment for the main business of the Group, the Group has changed the original government subsidy standard from the gross method to the net method since 1 January 2020. The Group restated the opening balance for the year ended 31 December 2020 of the relevant balance sheet items and the amount incurred in the year ended 31 December 2019 for the income statement items. The impacts of the relevant items are listed in Note 5.1.2 "*Changes in Accounting Policies and Accounting Estimates and Corrections of Accounting Errors — Changes in accounting policy — Changes in government subsidy policies*" to the Audited Financial Statements.

Further, Chinalco Financial Leasing and Chinalco Commercial Factoring, have increased the overall provision ratio from 1 per cent. to 1.5 per cent., changed the previous provision ratio of risk reserve which was based on 1 per cent. of business assets to 0.5 per cent. of market-oriented business assets, after full analysis of the quality of their business assets. At the same time, in order to meet the regulatory policy requirements of the China Banking and Insurance Regulatory Commission, a general risk reserve was made at 1 per cent. of the balance of risk assets for the year ended 31 December 2020. See Note 5.1.3 "*Changes in Accounting Policies and Accounting Estimates and Corrections of Accounting Errors — Changes in accounting policy — Changes in accounting estimates*" to the Audited Financial Statements

As such, the Group's historical financial information may not be directly comparable against the Group's financial information as at and for the years ended 31 December 2019 and 2020 included in this Offering Circular. Investors must therefore exercise caution when making comparisons of any such financial figures after 1 January 2020 against the Group's historical financial figures prior to 1 January 2020 and when evaluating the Group's financial condition, results of operations and results.

There can be no assurance that there would be no future adjustments of the Group's financial information in future accounting periods, or that such adjustments in the future would not have a material impact on the Group's financial condition or profitability.

The Group has a significant amount of indebtedness and may incur substantial additional indebtedness in the future, which could adversely affect the Group's financial position and plans for future expansion.

The Group has relied, and expects to continue to rely, on both short-term and long-term borrowings to fund a significant portion of its capital requirements. As at 31 December 2019 and 2020, the Group had approximately RMB293.31 billion and RMB301.05 billion, respectively, of total debt (including short-term loans, long-term loans due within one year, long-term borrowings and bonds payable). As at the same dates, the Group's total liabilities to total assets ratio was 63.73 per cent. and 64.02 per cent., respectively and the Group had total liabilities of approximately RMB415.7 billion and RMB404.9 billion, respectively. The level of both long-term and short-term borrowings may also continue to increase in the future as the Group continues to use external borrowings to fund its capital expenditures.

The Group's substantial indebtedness and high level of net current liabilities could cause serious consequences, including, but not limited to, limiting its ability to repay outstanding debt; making it more vulnerable to adverse economic and industry conditions; forcing the Group to dedicate a substantial portion of cash flow from its operations to service and repay its debts, thereby reducing its cash flow available for working capital, capital expenditures and other general corporate purposes; limiting its flexibility in planning for or reacting to the changes in the Group's businesses and the industry; causing it to be less competitive as compared to its competitors that have less debt; and limiting its ability to borrow more funds in the future and/or increasing the Group's financing costs. The Group's ability to meet its payment and other obligations under its outstanding debt depends on the Group's ability to generate cash flows in the future or to refinance such debt. There is no assurance that its business will generate sufficient cash flows from operations to satisfy its obligations under the Group's outstanding debt and to fund other liquidity needs. If the Group is not able to generate sufficient cash flows to meet such obligations, the Group may need to refinance or restructure its debt, reduce or delay capital investments, or seek additional equity or debt financing. A shortage of financing, or a reduction in cash generated from financing activities, could in turn impose limitations on the Group's ability to plan for, or react effectively to, changing market conditions or to expand through organic and acquisitive growth, thereby reducing the Group's competitiveness. There is no assurance that future financing will be available in amounts or on terms acceptable to it, if at all.

Additionally, as the Group relies on borrowings to meet a substantial part of its capital expenditure requirements, it is exposed to interest rate risk. For the years ended 31 December 2019 and 2020, the Group's interest expenses amounted to RMB15.0 billion and RMB13.1 billion, respectively. The interest rates on the Group's borrowings may be affected by various factors, including market factors and changes in national economic policies. Any significant increase in interest rates will result in a substantial increase in its interest expenses, which may materially and adversely affect its business, financial condition, results of operations and expansion plans.

In addition, the Group's outstanding indebtedness contained a number of financial and other covenants. As a result, the Guarantor or its subsidiaries' ability to raise additional funds in the future through issuing debt securities outside China or to create or have any guarantee or indemnity in respect of any indebtedness which is issued outside China may be limited. This may have a material adverse impact on the Group's business expansion and prospects.

The Group's failure to successfully manage its business expansion could have a material adverse effect on the Group's results of operations and prospects.

The Group has invested in business expansions that are in line with its development strategy, through organic growth, acquisitions and joint ventures. Besides continuing to expand its existing business lines, the Group may, from time to time and when it deems appropriate, expand into new industries which it believes have synergies with its existing operations. For example, the Group entered into the rare earth metals industry in 2011 to diversify its business lines and product mix. By the end of 2018, the Group acquired Yunnan Metallurgical and Jinding Zinc which granted the Group access to non-ferrous mineral resources of Yunnan province. The Group's expansion has used, and will continue to place substantial demand on, the Group's resources. In addition, managing the Group's growth and integration of new business lines will require the Group to, among other things:

- comply with the laws, regulations and policies governing the Group's expansion, including obtaining timely approval for the construction or expansion of production facilities as required under PRC law;
- maintain adequate control on the expansion or upgrade projects of its current business or the Group's expansion into new business lines to prevent, among other things, project delays or cost overruns;
- attract, train and motivate members of the Group's management and qualified employees to support successful business expansion;
- gain market acceptance for new products and services and establish relationships with new customers and suppliers;
- achieve sufficient utilisation of new production facilities to recover costs;
- manage relationships with employees, customers and business partners during the course of the Group's business expansion and integration of new businesses;
- access debt, equity or other capital resources to fund the Group's business expansion, which may divert financial resources otherwise available for other purposes;
- divert significant management attention and resources from the Group's other businesses; and

- strengthen the Group's operational, financial and management controls, particularly over those newly acquired subsidiaries of the Group, to maintain the reliability of the Group's reporting processes.

Any difficulty in meeting the foregoing or similar requirements could significantly delay or otherwise constrain the Group's ability to implement its expansion plans, or result in failure to achieve the expected benefits of the combination, acquisition or write-offs of acquired assets or investments, which in turn would limit the Group's ability to increase operational efficiency, reduce marginal manufacturing costs or otherwise strengthen the Group's market position. Failure to obtain the intended economic benefits from the business expansion could adversely affect the Group's business, financial condition and results of operations. The Group may also experience mixed results from its expansion plans in the short term.

In addition, there is no assurance that the Group will be able to identify attractive acquisition targets, negotiate acquisitions on favourable terms, obtain necessary governmental approvals or investments, if applicable, accurately estimate the mineral resources and reserves of these acquisition targets or obtain the necessary funding to complete such acquisitions on commercially acceptable terms or at all. Acquisitions may result in the incurrence and inheritance of debts and other liabilities, assumption of potential legal liabilities in respect of the acquired businesses and incurrence of impairment charges related to goodwill and other intangible assets, any of which could adversely affect the Group's businesses, financial condition and results of operations. In particular, if any of the acquired businesses fails to perform as the Group expects, the Group may be required to recognise a significant impairment charge, which may materially and adversely affect its businesses, financial condition and results of operations. As a result, there can be no assurance that the Group will be able to achieve the strategic purpose of any acquisition, the desired level of operational integration or the Group's investment return target.

The Group's historical consolidated financial information is not indicative of its current or future financial position and results of operations.

By the end of 2018, the Group acquired Yunnan Metallurgical and Jinding Zinc. Although the Group's audited financial statements as at and for the year ended 31 December 2018 (the "**2018 Audited Financial Statements**") had consolidated the financial position of the Yunnan Metallurgical Group, such financial statements did not consolidate the financial position of the Jinding Zinc Group. In addition, the 2018 Audited Financial Statements did not consolidate the results of operations of the Yunnan Metallurgical Group and the Jinding Zinc Group. The Yunnan Metallurgical Group's results of operations and the Jinding Zinc Group's financial position and results of operations were consolidated into the Group's consolidated financial statements as at and for the year ended 31 December 2019. In addition, the Group's historical financial information may not be directly comparable against the Group's financial information as at and for the years ended 31 December 2019 and 2020 included in this Offering Circular due to adjustment. See also "*Risk Factors — Certain historical line items of the Guarantor's audited consolidated financial information as at and for the years ended 31 December 2019 and 2020 has been adjusted.*"

The Group's historical consolidated financial information is not indicative of its current or future financial position and results of operations. Potential investors must exercise caution and make their own assessments when using the Group's financial information prior to 1 January 2019 to evaluate the Group's financial condition and results of operations and the perceived risk associated with an investment in the Bonds.

The Group's joint ventures and strategic investments may not be successful.

The Group has non-controlling interests in a number of joint ventures. Although the Group has not been materially constrained by the nature of the Group's ownership interests, there is no assurance that the Group's joint venture partners will not exercise their veto power or their controlling influence over any of the Group's joint ventures in a way that will hinder the Group's corporate objectives and reduce any anticipated cost savings or revenue enhancement resulting from these joint ventures. In addition, whether or not the Group maintains operational control in such joint ventures, such arrangements necessarily involve special risks and the Group's joint venture partners may:

- have economic or business interests or goals that are inconsistent with or opposed to those of the Group;
- exercise veto rights so as to block actions that the Group believes to be in the Group's or the joint venture's best interests;
- take action contrary to the Group's policies or objectives with respect to the investments; or
- as a result of financial or other difficulties, be unable or unwilling to fulfil their obligations under the joint venture or other agreements, such as contributing capital to expansion or maintenance projects.

The Guarantor's voting interests in its subsidiaries may be diluted.

The Guarantor's subsidiaries may from time to time need additional capital to achieve their expansion plans or other business objectives, and may issue additional shares or other equity securities to meet their capital needs. The Guarantor may be unable to, or choose not to, subscribe for the securities offered in any such additional issuances by such subsidiaries. If the Guarantor fails to subscribe for additional equity securities of a subsidiary on a *pro rata* basis consistent with the Guarantor's existing shareholding in such subsidiary, the Guarantor's equity interest in such subsidiary will be diluted. A dilution in the Guarantor's equity interest in a subsidiary would reduce the Guarantor's share of the profits earned by such subsidiary, which may materially and adversely affect the Group's businesses, financial condition and results of operations. If the Guarantor reduces its ownership significantly, it may cause its representation on such subsidiary's board of directors to be reduced, or otherwise reduce the Guarantor's ability to influence or direct the operations of that subsidiary.

The Group's hedging strategy may not always be effective.

In order to mitigate the risks related to commodity price fluctuations and potential losses, certain members of the Group hedge their inventory not already contracted for sale through futures commodity derivative contracts, either on the Shanghai Futures Exchange or the London Metal Exchange. For example, the Group hedges physical positions using future contracts for the estimated payable metal with the expectation that the relative value of these two commodities will change in a similar way. If, however, the relative value of the two commodities changes in a direction or manner that the Group does not anticipate, it may suffer a loss in those commodity positions. There is no assurance that the Group's hedging strategy and activities will be effective. Any significant loss in the Group's hedging positions may result in a margin call and a subsequent increase in the margin balance, exposing the Group to greater liquidity risk. In the event of disruptions in the commodity exchanges or markets in which the Group engages in these hedging transactions, the Group's ability to manage commodity price risk may be adversely affected. Any occurrence of the foregoing events could materially and adversely affect the Group's business, financial condition and results of operations.

The Group is subject to inventory risks.

As at 31 December 2020, the Group's inventory amounted to approximately RMB51.9 billion, primarily comprising raw materials of RMB16.2 billion, products in process of RMB22.5 billion and finished goods of RMB11.4 billion.

Having an appropriate level of finished goods inventory is crucial in meeting volatile market demand and an appropriate level of raw materials inventory is pivotal in minimising the effect of the volatility of raw materials prices. A significant amount of inventory primarily consists of bauxite, alumina and copper concentrates that are essential to the Group's operations. However, any sudden decrease in the market demand and the corresponding unanticipated drop in the sales of the relevant goods or any failure of the Group in successfully maintaining the flexibility in its raw materials supply arrangements could cause the Group's inventory to accumulate or depreciate in value, which may adversely affect the Group's businesses, financial condition and results of operations. The Group reviews its inventory from time to time and makes provisions when it deems necessary. As at 31 December 2020, the Group had RMB1.5 billion of provisions for inventory impairment. A significant depreciation of the Group's inventory value may exceed its provisions and could materially and adversely affect the Group's businesses, financial condition and results of operations.

The Group may have difficulties in monitoring and deploying internal control measures with respect to its business operations in an effective and timely manner because of its large number of subsidiaries and their broad range of businesses.

The development of the Group's management and internal control measures has largely coincided with the expansion of its businesses. Some of the Group's internal control and coordinating measures relating to its operations may not be implemented satisfactorily throughout the Group because of its large group structure, comprising approximately 500 entities as at 31 December 2020, a broad range of businesses and a large and widely dispersed mid-level management team. As a result, competition often arises among the Group's subsidiaries, and the Group may from time to time encounter difficulties in monitoring compliance with its internal control policies and procedures, the relevant laws and regulations by its subsidiaries, managerial staff and other employees. In addition, the Group conducts its overseas operations in many countries and jurisdictions, and may be governed by different laws, regulations, business practices and conventions. The Group's unfamiliarity with these foreign laws and regulations or the Group's inability to effectively manage the activities of its overseas subsidiaries, joint ventures or third parties could expose the Group to legal risks and liabilities, including corrupt business practices. Accordingly, as the Group streamlines the operations of the Group's various subsidiaries and operations, the Group aims to continue to strengthen its management and internal control mechanisms to address such integration issues, through various measures such as the integrated management of the Group's financial data, risk management, consolidation of internal resources and a uniform information system. However, the Group cannot guarantee that it will be able to implement internal control mechanisms that will promptly and adequately respond to its expanded scope of operations, nor can the Group guarantee that its employees will not, in their personal capacity, act in such a way that contravenes the Group's internal control procedures.

The Group is subject to extensive environmental, safety and health laws and regulations.

Mining and resources companies, such as the Group, are subject to extensive environmental, safety and health laws and regulations in the various jurisdictions in which they operate, as well as international standards. These regulations and standards establish limits and conditions on the Group's ability to conduct its operations and govern, among other things, extraction, mineral processing, use and conservation of water resources; air emissions; water treatment and discharge; regulatory and community reporting; clean-up of contamination; community health; and the generation, transportation, storage and disposal of solid and hazardous wastes. The implementation of the "Environmental Protection Law of the PRC" (《中華人民共和國環境保護法》), "Production Safety Law of the PRC" (《中華人民共和國安全生產法》), "Law on the Prevention and Control of Environment Pollution Caused by Solid Wastes of the PRC" (《中華人民共和國固體廢物污染環境防治法》) and "Laws on Prevention and Control of Atmospheric Pollution Law of the PRC" (《中華人民共和國大氣污染防治法》), imposes higher requirements on the environmental protection ability of an enterprise. As the Group's production and operations involve coal and non-coal mines, construction, dangerous chemicals and other high-risk activities, any safety or environmental accident may have a material adverse impact on the financial condition and the reputation of the Group.

The Group's business activities discharge waste water, generate gas emissions and produce hazardous substances at its mines, refineries and smelter plants, and therefore the Group incurs costs to comply with environmental safety and health laws and regulations. Given the magnitude, complexity and continuous amendments to these laws and regulations, the cost of compliance with environmental laws and regulations has been and is expected to continue to be substantial. The Group could face fines, penalties and other sanctions, clean-up costs, and third-party claims for personal injury or property damage, suffer reputational damage, or be required to install costly pollution control equipment or to modify or suspend operations, as a result of actual or alleged violations of environmental laws and regulations or the terms of the Group's operation permits. Members of the Group received and will continue to receive ecological environmental protection inspection from the central government or its local counterparts from time to time. During some of the past inspections (including the one in February 2021 conducted by the environment inspection group of the central government), the relevant authority identified weaknesses with the relevant companies' ecological environment management and incidents with environmental pollution and such companies were required to rectify the issues identified.

In addition, failure to comply with local or international environmental laws and standards may also result in penalties or fines, suspension or revocation of the Group's relevant licences or permits, termination of government contracts or suspension of the Group's operations. The Group's ability to obtain and maintain permits and to successfully operate in particular communities may be adversely impacted by real or perceived effects on the environment or human health and safety associated with the Group's mining and mineral processing activities. For example:

- In March 2014, the Group's subsidiary, CMC, received a notification from the Environmental Evaluation and Audit branch of the Peruvian Ministry of Environment for alleged non-compliance with Peruvian environmental laws relating to certain water discharges at the Toromocho Project and, as a result, CMC suspended its commissioning operations at the processing plant of the project. CMC held discussions with the local environmental authorities regarding the water discharges, which were determined to be caused by the monsoon season and inclement weather condition, and carried out a remedial project to optimise and improve its water discharge system on-site. Following the inspection by local environmental authorities in April 2014, the commissioning work at the mining operation of the Toromocho Project resumed.

- In November 2016, another subsidiary of the Group, Shanxi Huaxing Aluminum Co., Ltd. (山西華興鋁業有限公司, "**Shanxi Huaxing**") accidentally discharged effluent to a main contributory of the Yellow River in Shanxi Province. The discharge was caused by a leak in the tank for holding compressed molten desilicificated alumina. Shanxi Huaxing has launched a pollution emergency plan subsequent to the occurrence of the leakage incident. Immediately after the incident, Shanxi Huaxing undertook measures including sealing off the crack in the storage tank and temporarily storing the molten alumina in an emergency tank, cleaning up the residue in the drainage system, improving emergency tank facilities, improving pollution emergency plan and carrying out emergency drills. Shanxi Huaxing also carries out regular inspection to detect potential risks relating to production facilities such as tanks, containers and pipelines with the aim of preventing similar leakage from happening again. Due to the incident, Shanxi Huaxing was fined for RMB50,000 by the Environmental Bureau of Xing county. In addition to the leakage incident, the Zhongzhou, Henan and Baotou branches of the Guarantor discharged excessive amounts of pollutants in violation of applicable pollutant discharge regulations. The Group has implemented various remedial actions including upgrading production facilities, improving production process and upgrading its level of environmental protection management in order to comply with the relevant pollutant discharge regulations.

- In November 2017, Chalco Lanzhou branch was fined by the local environment authorities due to its failure to conduct the application registration for storage of residues generated from overhaul of electrobath according to relevant requirements. Chalco started the rectification process in December 2017 and completed as requested through a series of measures, including, among others, relocation of the non-compliantly-stowed overhaul residues to plants in compliance with applicable requirements, construction at the Lanzhou branch of a production line with environmentally-sound treatment of overhaul residues which began operation in March 2018, restoration of the sites previously used to store overhaul residue by Lanzhou branch and improving internal management measures on solid waste treatment by including more stringent requirements.

Mining and mineral processing operations generate waste rock and tailings. The impact of dust generation, breach, leakage or failure of a waste rock or tailings storage facility can be significant. An incident at the Group's operations could lead to, among others, obligations to remediate environmental contamination and claims for property damage and personal injury from adjacent communities. Major incidents at other companies' operations could result in governments, tightening regulatory requirements and restricting mining and related activities.

Environmental laws and regulations are continually changing and are generally becoming more stringent. Changes to the Group's environmental compliance obligations or operating practices could adversely affect its rate of production and revenue. Variations in laws and regulations, assumptions made to estimate liabilities, standards or operating procedures, more stringent emission or pollution thresholds or controls, or the occurrence of unanticipated conditions, may require operations to be suspended or permanently closed and could increase the Group's expenses and provisions. For example, the PRC regulatory authorities have in recent years announced increasing number of measures to reduce carbon emissions in China, including introducing pilot city carbon emissions trading schemes and other programs aimed at carbon emissions reduction. There is no assurance that existing and new emission standards will not curtail the Group's metal production or further drive up the electricity prices in China, which could adversely affect the Group's results of operations and financial condition.

Mining and mineral processing activities are increasingly required to operate in a sustainable manner and to provide benefits to affected communities. Opposition from local community, political or environmental groups as well as regulatory authorities with respect to development or construction of mining projects or refineries could increase development costs, hinder the Group's development plans and harm the Group's reputation.

As a result of public concern over the perceived risks of mining and mineral processing activities, multinational mining and resources corporations, such as the Group, face increasing public scrutiny of their activities.

The Group's mining activities, in particular, are under pressure to demonstrate that, while they seek a satisfactory return on investment for shareholders, human rights are respected and other social partners, including host communities, local government authorities and more broadly the countries or cities in which they operate also benefit from their commercial activities. Such pressures tend to be particularly focused on companies whose activities are perceived to have, or have, a high impact on their social and physical environment. The potential consequences of these pressures and the adverse publicity in cases where companies are believed not to be creating sufficient social and economic benefit may result in additional operating costs, reputational damage, active community opposition, allegations of human rights abuses or even legal or regulatory actions.

Existing and proposed mining and mineral processing operations of the Group are often located at or near existing towns and villages, natural water courses and other infrastructure of the local community. Relocation and resettlement of local residents as well as the disputes over appropriate compensation often lead to community protest and adverse publicity. In addition, as the impacts of dust generation, waste storage and water pollution from mining and mineral processing activities may be directly adverse to those communities or result in adverse changes in the supply or quality of water, there is a risk of community protests, regulatory sanctions or ultimately the withdrawal of community and government support. In China, protests from local residents over a number of industrial projects, such as in the chemical and nuclear industries that are perceived to have a detrimental impact on the local environment, have increased during recent years and resulted in delay or cancellation of several development plans.

There is no assurance that the Group or its affiliates or partners will not fail to manage community relationships appropriately, especially for the Group's overseas mining projects. Opposition from the local community, political or environmental groups as well as regulatory authorities with respect to development or construction of mining projects or mineral refineries could increase development costs and cause delays, interruptions or even cancelations of the Group's development plans and harm the Group's reputation.

The Group's overseas expansion exposes it to political and economic risks, commercial instability and events beyond the Group's control in the countries in which it operates and plans to operate.

The Group is currently undertaking or has undertaken a number of overseas projects, including bauxite mining projects in Laos, Indonesia and Guinea and the Toromocho mining project in Peru, which require significant capital expenditure. For example, in 2020, the Group completed the construction of the Boffa Project, a project for the construction and development of a bauxite mine located in Boffa, Guinea. In addition, the Group also sells products to overseas customers, including those located in Southeast Asia, Europe, South America and Africa.

There is no assurance that its overseas expansion or investments will be successful or that it will not suffer foreign exchange losses in connection with the Group's overseas investment. For example, in April 2019, the Laos government cancelled the exploration rights of the bauxite mines held by Lao Service Mining Co., Ltd., in which the Group held approximately 60 per cent. of the equity interest, as it had not continuously carried out related activities in the past years.

Foreign governments may also set quotas on the amount of mining resources from their countries. Furthermore, operations in the overseas markets also expose the Group to a number of risks, including expropriation and nationalisation of its assets in foreign countries, civil unrest, acts of terrorism, war, or other armed conflict; natural disasters; inflation, currency fluctuations, devaluations and conversion restrictions; confiscatory taxation or other adverse tax policies; governmental activities that limit or disrupt markets, restrict payments or limit the movement of funds; governmental activities that may result in the deprivation of contractual rights; lack of a well-developed legal system that makes it difficult to enforce the Group's contractual rights; and governmental activities that may result in the inability to obtain or retain licences required for operations. There is no assurance that the Group will not encounter similar restrictions which may adversely affect the supply of bauxite for its alumina production. In addition, the Group's overseas business is subject to the risk of political and economic instability associated with these countries.

The Group is subject to risks associated with changes in preferential government incentives.

The Group enjoys a number of government support and preferential treatments due to its close and enduring relationship with the PRC government as well as its leading position, such as preferential tax treatment, as well as financial and policy support in relation to discount government loans, state-owned capital operation, national infrastructure investment, industrial restructuring and upgrading, scientific research and development projects, foreign direct investments and overall utilisation of mineral resources. There can be no assurance that the current favourable policies or the various incentives available to the Group will not be withdrawn or revoked by the PRC government. If the favourable government policies and incentives are reduced or are no longer available in the future, the results of operations of the Group in the future may be materially and adversely affected.

The Group's businesses involve inherent risks and occupational hazards, which could damage the Group's reputation, subject it to liability claims and cause substantial costs to the Group.

The Group's businesses involve inherent risks and occupational hazards. For instance, under its mining operations for the aluminium, copper, lead-zinc and rare earths metals businesses, the Group engages or may engage in certain inherently risky and hazardous activities, including, among others, operations at height or on dangerous terrains, underground excavation and construction, use of heavy machinery, mining, and handling of flammable and explosive materials and the Group is therefore subject to risks associated with these activities, including, among others, geological catastrophes, toxic gas and liquid leakages, equipment failures, industrial accidents, fire, explosions and underground water leakages. Additionally, the Group is exposed to operational risks associated with industrial or engineering activities, such as maintenance problems or equipment failures. These risks and hazards have in some cases resulted in personal injury and fatal casualties, damage to or destruction of properties or production facilities, and pollution and other environmental damage. For example, on 22

June 2016, as part of demolition work at one of the Group's alumina plants in Henan Province, the contractor commissioned by the Group suffered an accident resulting in the death of 13 workers and light injuries of six workers due to the illegal operation of its third-party contractor. The Group has since carried out safety investigation and formulated contractor safety control policies and measures. Besides, the Group suffered four other accidents which led to the death of four employees from June to December 2016. Any of these consequences, to the extent they are significant, could result in business interruption, possible legal liability and damage to the Group's business reputation and corporate image. Although the Group carries insurance in line with the customary practice in China, there is no assurance that the insurance taken on by the Group is sufficient, in which case, the Group's results of operations may be materially and adversely affected.

Failure to protect the intellectual property rights of the Group may materially and adversely affect its businesses, financial condition and results of operations and the Group may be exposed to infringement or misappropriation claims by third parties.

As at 31 December 2020, the Group has 7,693 effective patents (including 3,101 inventions) in total. There is no assurance that the steps the Group has taken to protect its intellectual property rights are adequate to prevent or deter infringement or other misappropriation of its intellectual property. Any significant infringement of the Group's brand name or other intellectual properties could weaken its competitive position and have an adverse effect on the Group's operations. To protect the Group's intellectual property rights, the Group may have to commence legal proceedings against any misappropriation or infringement. However, there is no assurance that the Group will prevail in such proceedings. The Group may be subject to litigation or other proceedings involving the allegations of violations of intellectual property rights of third parties. The defence of such litigation or other proceedings can be both costly and time-consuming. An adverse determination in any such litigation or proceedings to which the Group may become a party could materially and adversely affect the Group's businesses, financial condition and results of operations.

The Group's operations depend on its research and development capabilities, which may not always produce positive results.

The Group's ability to, for example, improve its mining capabilities, undertake high value-added projects and launch new products depends largely on its research and development capabilities. However, research and development programmes require considerable human resources, time and capital investment and the benefits of any such investment may not yield immediate tangible benefits. There can be no assurance that the Group's research and development efforts will be effective. Even if such efforts are successful, the Group may be unable to apply such new technologies to products in ways that are accepted by customers.

If the Group is unable to maintain or enhance its research and development capabilities, the Group may be disadvantaged against its competitors both domestically and overseas, thereby adversely affecting its businesses, financial condition, results of operations and future development. The Group is often engaged to undertake large scale, complicated projects that requires it to develop or adopt new technology, which could put a strain on its research and development resources. The use of new technology may also result in experimental failures, increased costs and unstable conditions, which may adversely affect the profitability of some of the Group's project.

The Group is exposed to foreign exchange fluctuations.

The Group conducts part of its business overseas and it has made and will continue to make significant investments in overseas projects, repay offshore indebtedness and purchase raw materials and equipment from outside of China. In addition, aluminium and copper products are principally priced and sold in U.S. dollars; therefore, a portion of the Group revenue is denominated in U.S. dollars while production costs are largely incurred in Renminbi. In addition, the Group's foreign exchange-denominated assets and liabilities are expected to increase as the Group further expands its overseas businesses. The Group is therefore subject to risks associated with foreign currency exposures, primarily with respect to U.S. dollars.

Changes in the value of foreign currencies against the Renminbi could increase the Group's Renminbi costs for, or reduce the Group's Renminbi revenues from, its foreign operations, or affect the prices of its exported products and the prices of its imported equipment and materials. Any increased costs or reduced revenues as a result of foreign currency fluctuations could adversely affect the Group's profits and margins. The fluctuation of foreign exchange rates also affects the value of the Group's monetary and other assets and liabilities denominated in foreign currencies.

The value of the Renminbi is subject to changes in the PRC governmental policies and to international economic and political developments. Pursuant to reforms of the exchange rate system announced by the PBOC on 21 July 2005, Renminbi-to-foreign currency exchange rates are allowed to fluctuate within a narrow and managed band against a basket of foreign currencies, rather than being effectively linked to the U.S. dollar. The PBOC announced on 15 March 2014 that Renminbi was allowed to fluctuate daily against the U.S. dollar by up to two per cent. above or below the central parity rate published by PBOC since 17 March 2014.

In August 2015, the PBOC lowered the daily mid-point trading price of the Renminbi significantly against the U.S. dollar for three times. The currency devaluation of the Renminbi was intended to bring it more in line with the market by taking market signals into account. Renminbi depreciated significantly against the U.S. dollar following this August 2015 announcement by the PBOC. In 2016, Renminbi experienced further fluctuation in value against the U.S. dollar. With an increased floating range of the Renminbi's value against foreign currencies and a more market-oriented mechanism for determining the midpoint exchange rates, the Renminbi may further appreciate or depreciate significantly in value against the U.S. dollar or other foreign currencies in the long-term. Any significant appreciation of the Renminbi against the U.S. dollar or other foreign currencies may result in the decrease in the value of the Group's foreign currency denominated assets. Conversely, any significant depreciation of the Renminbi may adversely affect the value of the Group's businesses. In addition, there are limited instruments available for the Group to reduce the Group's foreign currency risk exposure. All of these factors could materially and adversely affect the Group's business, financial condition and results of operations. The PRC government may adopt further reforms of its exchange rate system, including making the Renminbi freely convertible in the future. There can be no assurance that the Renminbi will not experience significant appreciation or depreciation against the U.S. dollar or any foreign currencies in the future.

The Group is exposed to significant uncertainty with regard to its cash flows and earnings due to the volatile and unpredictable exchange rates movement.

The Group is subject to risks normally associated with cross-border transactions and the Group's export products have been and may become subject to anti-dumping or countervailing duty proceedings.

The Group generates its revenues from exports of certain non-ferrous metals and minerals products to foreign jurisdictions. Such foreign jurisdictions to which the Group makes export sales may take restrictive measures, including, among others, anti-dumping duties and other non-tariff barriers, to protect their own markets. A recent example would be the ongoing tariffs imposed as a result of the U.S.-Sino trade tensions, which could have ongoing impact on the Group's business activities. The Group's sales in major overseas markets may be adversely affected by increases in or new impositions of anti-dumping duties, countervailing duties, quotas or tariffs imposed on the Group's exports. Further increases in or new imposition of anti-dumping duties, countervailing duties, quotas or tariffs on the Group's sales in these markets could adversely affect the exports to these regions in the future. By virtue of its transactions with parties outside China, the Group will be subject to the risks normally associated with cross-border business transactions and activities. The Group also will be exposed to the risk of changes in social, legal, political and economic conditions in the foreign jurisdictions to which it exports. In particular, unexpected changes in regulatory requirements, tariffs and other trade barriers and price or exchange controls could limit the Group's operations and make the repatriation of profits difficult.

The Group's investment and operations in certain countries or dealing with certain persons that are subject to OFAC and other economic sanctions may harm the Group's reputation.

Certain members of the Group undertake and may choose to continue to undertake in the future, dealings, investments and operations outside of China, including in countries or with persons that are on the sanctions list published and administrated by the Office of Foreign Assets Control (the "**OFAC**") within the United States Department of the Treasury, European Union or subject to other international economic sanctions. The sanction laws of the U.S. and other jurisdictions have been evolving and changing frequently and there can be no assurance that the Guarantor and its subsidiary or affiliates will not be subject to any sanctions due to their dealings, investments and operations in such countries or with such persons.

The Group faces counterparty risks.

While the Group generally sells its goods and provides services to reputable customers and evaluates the customers' credit in accordance with its internal risk management criteria, such as their credit history and likelihood of default, it has limited access to information about its customers and the Group may encounter difficulties in the collection of receivables in certain countries with which the Group has less experience. As at 31 December 2019 and 2020, the Group had accounts receivable of RMB19.10 billion and RMB19.61 billion respectively. The levels of the Group's accounts receivable may also continue to increase in the future if its customers experience credit difficulties. There is no assurance that all of the Group's customers will fully perform their obligations under their respective contracts with the Group, and the deterioration of any customers' credit or payment conditions may result in those customers defaulting on their contractual obligations, which could materially and adversely affect the Group's businesses, financial condition and results of operations.

The Group is exposed to risks associated with entering into contracts with PRC and foreign governmental entities and other public organisations, and its performance may be significantly affected by government spending on infrastructure and other projects.

The Group's customers include agencies or entities owned or otherwise controlled by the PRC and foreign governments. To the extent these projects are funded by the PRC and foreign governments, they are subject to delays or changes as a result of the changes in the governments' budgets or for other policy considerations. The governments' spending on infrastructure and other projects has historically been, and will continue to be, cyclical in nature and vulnerable to fluctuations in the economic conditions and changes in the government's policies. Also, the Group has entered into and will continue to enter into major contracts or other arrangements with foreign governments or their controlled entities in connection with their overseas investments and business operations. The Group therefore has significant exposure to the risks associated with contracting with public organisations.

In addition, disputes with governmental entities and other public organisations could potentially lead to contract termination if these remain unresolved or such disputes may take a considerably longer period of time to resolve than disputes with counterparties in the private sector, and payments from these entities and organisations may be delayed as a result. Such entities and organisations may claim sovereign immunity as a defence to any claims the Group may have against them. They may also from time to time require the Group to change its equipment or other performance terms or direct it to reconfigure processes or purchase specific equipment for relevant projects or transactions or undertake additional obligations or change other contractual terms, thereby subjecting the Group to additional costs. Changes in governmental budgets and policies relating to the Group's projects or transactions could also result in delays in project or delivery completion, adverse changes to such projects or transactions or a withholding of, or delay in, payments to it. Government agencies generally exercise significant discretion in the performance of their contracts with the Group. If a governmental entity or other public organisation terminates or fails to renew a contract with the Group, the Group's business activities and plans may be hampered and its business and financial performance may be materially and adversely affected as well.

The Group may be exposed to claims in relation to the unsatisfactory performance of third-party service providers, and disputes with business partners may also adversely affect its businesses.

The Group relies on third-party service providers for certain services, including but not limited to mining infrastructure construction, logistics services and warehouse management. Therefore, the Group is exposed to the risk that its third-party service providers may fail to perform their obligations, which may adversely affect the Group's business operations. In addition, from time to time, the Group cooperates with business partners to develop its businesses, including acquiring strategic mining resources or businesses that complement its own business line. Furthermore, the Group operates certain mining projects through joint venture arrangements and may enter into further joint ventures in the future along with the expansion of its operations. The Group may have disputes with these business partners or joint venture partners over various aspects, such as performance of each party's obligations, scope of each party's responsibilities, product quality and logistics services. If such disputes cannot be settled in a timely manner, the Group's financial condition and businesses may be adversely affected.

Failure to hire and retain management executives, technicians and other qualified personnel could adversely affect the Group's business and prospects.

The growth of the Group's business operations is dependent upon the continued service of its senior management team. The industry experience, expertise and contributions of the Group's executives and other members of its senior management are essential to the Group's continued success. The Group will require an increasing number of experienced and competent executives in the future to implement the Group's growth plans. If the Group were to lose the services of any of its key management members and were unable to recruit and retain personnel with equivalent qualifications at any time, the management and growth of the Group's businesses could be adversely affected.

Competition for qualified personnel in general is intense in China and other markets where the Group operates its businesses. The Group cannot guarantee that it will be able to maintain an adequate skilled labour force necessary for it to execute its projects or to perform other corporate activities, nor can the Group guarantee that staff costs will not increase as a result of a shortage in the supply of skilled personnel. If the Group fails to attract and retain personnel with suitable managerial, technical or marketing expertise or to maintain an adequate labour force on a continuous basis, its business operations could be adversely affected and its future growth and expansions may be inhibited.

The Group was subject to certain negative findings by the National Audit Office of the People's Republic of China.

In accordance with the requirements of the National Audit Law of the PRC (《中華人民共和國審計法》), the National Audit Office of China (中華人民共和國審計署) (the "**National Audit Office**") carried out an audit into the Guarantor's financial revenue and capital expenditure situation for the financial year ended 31 December 2014. The audit scope covered the Guarantor and 4 subsidiaries of the Guarantor, including Chalco and Yunnan Copper.

The findings of the National Audit Office were published on 29 June 2016, and the report published by the National Audit Office identified four main deficiency areas relating to the governance and management of the Group: (i) financial management and accounting issues; (ii) major decisions made by the Group and management of the Group; (iii) the difficulties in the potential development of the Guarantor; and (iv) the probity of the business dealings of the Guarantor.

Chalco released an announcement on 29 June 2016 stating that remedial actions have been undertaken or are being undertaken to rectify the problems identified by the National Audit Office, and the Group believes that the findings by the National Audit Office will not have a material adverse impact on the business or operations of the Guarantor. The Guarantor will continue to improve its business decision-making risk awareness and continue to strengthen internal control and governance systems to ensure that the Guarantor is in compliance with all applicable laws and regulations.

The Group may not be able to detect and prevent fraud or other misconduct committed by its employees, representatives, agents, customers or other third parties.

The Group may be exposed to fraud or other misconduct committed by its employees, representatives, agents, customers or other third parties that could subject it to litigation, financial losses and sanctions imposed by governmental authorities, as well as affect its reputation. This misconduct could include:

- hiding unauthorised or unsuccessful activities, resulting in unknown and unmanaged risks or losses;
- intentionally concealing material facts, or failure to perform necessary due diligence to identify potential risks which are material to the Group in deciding whether to make investments or dispose of assets;
- improperly using or disclosing confidential information;
- engaging in improper activities such as accepting or offering bribes;
- misappropriation of funds;
- conducting transactions that exceed authorised limits;
- engaging in misrepresentation or fraudulent, deceptive or otherwise improper activities;
- engaging in unauthorised or excessive transactions to the detriment of the Group's customers; or
- otherwise not complying with applicable laws or the Group's internal policies and procedures.

The Group's internal control procedures are designed to monitor its operations and ensure overall compliance. However, such internal control procedures may not be able to identify all incidents of non-compliance or suspicious transactions in a timely manner, if at all. Furthermore, it is not always possible to detect and prevent fraud and other misconduct, and the precautions the Group takes to prevent and detect such activities may not be effective. There is no assurance that fraud or other misconduct will not occur in the future. If such fraud or other misconduct does occur, it may cause negative publicity as a result, and could have a material and adverse effect on the Group's reputation, businesses, financial condition and results of operations.

As at the date of this Offering Circular, certain officials or former officials of the Group are or have been subject to investigations by PRC authorities. An investigation by the Communist Party's Central Commission for Discipline Inspection in late 2014 led to the arrest and dismissal of the Group's then general manager on charges of bribery. Such former general manager was sentenced by the Intermediate Court of Tieling City to a prison sentence of 16 years in December 2016. In May 2021, the Communist Party's Central Commission for Discipline Inspection announced that the director of the Group's inspection office was subject to investigation for misconduct. In August 2021, the Communist Party's Central Commission for Discipline Inspection announced that a vice president of China Copper was subject to investigation for misconduct. There can be no assurance that there will be no investigations in the future by the relevant PRC authorities on the Group's officers and employees, or that if they are investigated, they will not be found to be non-compliant with laws and regulations, which may subject the Group to disciplinary or other actions imposed by government or regulatory authorities, and the Group's reputation, business and financial condition may be materially and adversely affected. The Group also cannot predict the outcome, or the impact, of such investigation or whether any investigation will be extended to or targeted at the Group, the Guarantor or any of their respective officers and employees or whether there will be any press speculation or adverse publicity on any such investigation or the possibilities of such investigation.

Failure to comply with the restrictions and covenants in the Group's debt agreements could adversely affect the Group's businesses, financial condition and results of operations.

If the Guarantor or any of its subsidiaries is unable to comply with the restrictions and covenants in its current or future debt obligations and other agreements, there could be a default under the terms of such obligations or agreements. In the event of a default under these agreements, the holders of the debt could terminate their commitments to lend to the Guarantor or its subsidiaries, accelerate repayment of the debt and declare all outstanding amounts due and payable or terminate the agreements. Furthermore, some of the debt agreements which the Guarantor or its subsidiaries have entered into may contain cross-acceleration or cross-default provisions. As a result, default by the Guarantor or its subsidiaries under any of such agreements may cause the acceleration of repayment of not only such debt but also other debt, including the Bonds, or result in a default under other debt agreements. If any of these events occur, there is no assurance that the assets and cash flows of the Group would be sufficient to repay in full all of the debts as they become due, or that the Group would be able to find alternative financing on terms that are favourable or acceptable to the Group. In addition, in the course of securing bank loans, the Group may pledge the shares of certain Group entities to third party lenders. In the event of a default under such agreements, the relevant third-party lenders may enforce such share pledges and this may result in a change in ownership of certain subsidiaries of the Group to the relevant third party lenders, which may have a material and adverse effect on the Group's business, financial condition and results of operations.

The COVID-19 pandemic has had a negative impact on worldwide economic activity and the Group's operations and may have an ongoing impact on the Group's business.

Since December 2019, the outbreak of COVID-19 has widely affected China and other countries and territories in the world. Measures for combating the outbreak, including quarantine of infected and suspect cases, lockdown of cities with high risks of infection, cancellation of trains and flights and other restrictions on travel and business operations, have resulted in disruptions in the Group's supply chain, transportation chain and shortage of staff, which adversely affected the Group's operations in early 2020. While the government continues to take stringent measures to prevent any potential resurgence of new COVID-19 cases, since the second quarter of 2020, many restrictions in China have been lifted and the level of business activities have been restoring in response to the significant decrease of new reported cases. As a result, the Chinese economy has been recovering rapidly. In addition, vaccinations are gradually expected to become more widely available worldwide. However, the above-mentioned prevention and control measures may continue globally in the near or longer term.

Furthermore, the global spread of COVID-19 and the emergence of new variants of COVID-19 have adversely affected the global economy and resulted in significant volatility in financial markets and the prices of and the demand for the commodities that the Group produces and trades. Government measures taken in response to the COVID-19 pandemic, including quarantine and shelter in place orders, as well as other indirect effects that the COVID-19 pandemic is having on global economic activity, have resulted in some degree of global economic downturn and demand shocks for the Group's commodities, which initially led to significantly lower prices.

Although there was certain recovery in the prices of some products that the Group provides due to various factors, including control of the COVID-19 pandemic and resumption of domestic production in the PRC and the actual or anticipated decreases in supply as a result of disruptions to global mining operations, the outbreak of COVID-19 pandemic at the beginning of 2020 had a great impact on the production and operation of the Group and there remains uncertainty of its future impact on the Group's industrial activities. Future spread of COVID-19, including in areas where the Group's industrial assets are located, may result in greater risk of exposure to employees, and the Group may respond by curtailing, rescheduling or suspending operations, construction or development at these assets or be required to do so by the relevant authorities. The Group's customers or suppliers may seek to release themselves from their contractual obligations by claiming that the ongoing pandemic, and government responses, constitute a force majeure event. Moreover, the COVID-19 pandemic has also led to disruption and volatility in the global capital markets, which could the Group's ability to access the capital markets.

The impact of the COVID-19 pandemic on the Group's business going forward will depend on a range of factors which it is not able to accurately predict, including the duration and scope of the pandemic, the geographies impacted, the impact of the pandemic on economic activity and the nature and severity of measures adopted by governments.

The Group is exposed to inclement weather and climatic conditions, severe contagious disease, acts of terrorism or war, and adverse work environments in China and overseas.

A significant amount of the Group's business activities is conducted outdoors and could be materially and adversely affected by weather and climatic conditions. The Group also operates in areas that are under the threat of ice storms, floods, earthquakes, landslides, mudslides, sandstorms, contagious disease or drought. Acts of war and terrorist attacks, including those in foreign jurisdictions in which the Group has operations, may cause damage or disruption to the Group and its employees, subcontractors, operations, equipment, facilities and markets, any of which could impact the Group's public image, revenues and cost of sales. The outbreak of any severe contagious disease such as SARS in 2003, the H1N1 Influenza in 2009, Ebola in 2014 or COVID-19 in 2020 could also result in interruption of the Group's business. During periods of curtailed activity, the Group may continue to incur operating expenses, but the Group's revenue from operations may be delayed or reduced. Such events could also have severe effects on the overall business sentiment and environment in China and the world, and may in turn lead to a slower economic growth in China's economy or the global economy, which may have a material and adverse effect on the Group's businesses, operating results and financial condition.

In addition, the Group conducts some of its operations under a variety of geographical and other conditions, including on difficult terrain, under harsh site conditions, in busy urban centres where delivery of materials and availability of labour may be affected, and on sites which may previously have been exposed to environmental hazards. Such conditions may result in personal injuries or fatalities or have a negative effect on the Group's work performance and efficiency.

Public information on the Group may be limited and corporate disclosure and accounting standards in China differ from IFRS.

The Guarantor is a private company incorporated in the PRC and is not listed on any stock exchange. There may be less publicly available information about the Guarantor than is regularly made available by public companies in certain other jurisdictions. In addition, the consolidated financial statements of the Guarantor are prepared and presented in accordance with PRC GAAP. Each investor should consult its own professional advisers for an understanding of the differences between PRC GAAP and IFRS and/or between PRC GAAP and other generally accepted accounting principles, and how those differences might affect the financial information contained herein.

There has been increased scrutiny of PRC public accountants, and there can be no assurance that there will not be further negative news about the Group's independent auditors.

The Group's current independent auditors, ShineWing CPAs, were previously investigated by CSRC in connection with its provision of audit services to certain PRC companies. As a result of such investigations, CSRC has issued several warning notices to ShineWing CPAs in relation to its violation of rules in the course of providing audit service for certain companies' initial public offering and annual report as well as its failure to exercise due diligence, conduct sufficient procedures or provide adequate explanation in providing audit service for certain companies' annual reports or during the course of the relevant company's initial public offering. In addition, ShineWing CPAs has received a notice of rectification due to issues with its practice quality and quality control.

As confirmed by ShineWing CPAs, the abovementioned investigations and administrative actions do not (i) disqualify ShineWing CPAs from participating in the offering of the Bonds as auditors of the Group, (ii) have any impact on ShineWing CPAs' unqualified audit opinion for the Guarantor's consolidated financial statements as at and for the years ended 31 December 2019 and 2020; or (iii) have any impact on ShineWing CPAs' ability to provide services to the Guarantor and the Group. The companies involved in the administrative sanctions and regulatory actions above were all unrelated to the Group and the audit work performed for the Group is not affected by the above incidents and the audit reports included elsewhere in this Offering Circular remain valid and effective. The auditors who participated in the audit of the Group's historical financial statements were not the subject of, or involved in, the above administrative, regulatory actions and litigations. ShineWing CPAs has further confirmed that it has taken the required rectification measures for all the above matter cited. ShineWing CPAs also confirmed that its ability to provide comfort letters and the qualification of the auditors participating in this offering are not affected by such administrative, regulatory actions and litigations.

However, there is no assurance that there will not be new investigations or administrative measures taken by relevant regulatory authorities or potential litigation proceedings initiated against ShineWing CPAs in the future, nor can there be any assurance that further negative news about ShineWing CPAs would not have a material and adverse effect on the Group. Prospective investors should consider these factors prior to making any investment decision.

RISKS RELATING TO THE PRC

Changes in the PRC's economic, political and social conditions as well as governmental policies could affect the Group's businesses, financial condition and results of operations.

China's economy differs from the economies of most developed countries in many respects, including the economic structure, level of government involvement, control of capital investment, control of foreign exchange and allocation of resources. China's economy has been transitioning from a planned economy to a more market-oriented economy. For the past three decades, the PRC government has implemented economic reform measures to emphasise the utilisation of market forces in economic development. Economic reform measures, however, may be adjusted, modified or applied inconsistently from industry to industry or across different regions of the country. As a result, the Group may not continue to benefit from all, or any, of these measures. In addition, the Group cannot predict whether changes in the PRC's political, economic and social conditions, laws, regulations and policies will have any adverse effect on the Group's current or future businesses, financial condition and results of operations.

China has been one of the world's fastest emerging economies in terms of GDP growth in recent years. However, China may not be able to sustain such a high growth rate. In order to maintain the sustainable growth of the economy, the PRC government from time to time implements various macroeconomic and other policies and measures, including but not limited to contractionary or expansionary policies and measures to promote stable economic conditions. In an effort to stimulate the growth of the Chinese economy, the PRC government has implemented and may continue to implement various monetary, fiscal or other economic measures to expand investments in infrastructure projects, increase liquidity in the credit markets and encourage employment. However, there is no assurance of the effectiveness of such monetary, fiscal or other economic measures. Recently, investors have been concerned about the global economic outlook, including trade tensions between the United States and the PRC and their imposition of tariffs on goods from the other country, the level of growth in the PRC and economic recovery in the United States, all of which have adversely affected the global economy in general. If the Chinese economy experiences a slowdown or even a downturn, the Group may experience a reduction in production output or cancellation of new projects and demand for alumina, primary aluminium, copper, lead-zinc and rare earth metals as well as engineering and technical services may grow at a lower than expected rate or otherwise decrease. Furthermore, the Group cannot guarantee that it is able to make timely adjustments to its business and operational strategies so as to capture and benefit from the potential business opportunities presented to the Group as a result of the changes in the economic and other policies of the PRC government. Also see "*Risks relating to the Group's principal business lines — The Group's businesses are vulnerable to downturns in the general economy and industries in which the Group operates or which the Group serves. A reduction in demand or supply could materially and adversely affect the Group's business, financial condition and results of operations*". Moreover, unfavourable financing and other economic conditions for the industries that the Group serves could negatively impact the Group's customers and their ability or willingness to fund capital expenditures in the future or pay for past services.

The PRC government's pilot plan to replace business tax with value-added tax ("VAT") may subject the Group to more taxes, which could adversely affect the Group's business, results of operations and prospects.

Pursuant to the PRC Provisional Regulations on Business Tax (《中華人民共和國營業税暫行條例》), taxpayers providing taxable services falling under the category of service industry in China are required to pay a business tax at a normal tax rate of 5 per cent. of their revenues. In November 2011, MOF and the State Administration of Taxation ("**SAT**") promulgated the Pilot Plan for Imposition of Value-Added Tax to Replace Business Tax (《營業税改徵增值税試點方案》). Pursuant to this pilot plan and relevant subsequent notices, from 1 January 2012, VAT gradually replaced business tax in the transport and post industry, telecom industry and some of the modern service industries in China. Under the pilot plan, a VAT rate of 6 per cent. applies to certain modern service industries. On 23 March 2016, the Ministry of Finance and SAT promulgated the Circular on Comprehensively Promoting the Pilot Programme of the Collection of Value-Added Tax to Replace Business Tax (《關於全面推開營業税改徵增值税試點的通知》) ("**Circular 36**"). Pursuant to Circular 36, starting from 1 May 2016, the VAT pilot programme will cover construction industry, real estate industry, finance industry and life service industry on a nation-wide basis. Although the VAT pilot programme is mainly intended to reduce double taxation under the business tax system, the Group may be subject to more taxes under the VAT pilot programme in connection with the Group's operations and activities in China, which could adversely affect the Group's business, results of operations and prospects.

The Group's labour costs may increase for reasons such as the implementation of the PRC Labour Contract Law or inflation in the PRC.

The amended "Labour Contract Law of the PRC" (《中華人民共和國勞動合同法》) became effective on 1 July 2013. It imposes more stringent requirements on employers in relation to entry into fixed-term employment contracts and dismissal of employees. Pursuant to the Labour Contract Law of the PRC, the employer is required to make compensation payment to a fixed-term contract employee when the term of their employment contract expires, unless the employee does not agree to renew the contract even though the conditions offered by the employer for renewal are the same as or are better than those stipulated in the current employment contract. In general, the amount of compensation payment is equal to the monthly wage of the employee multiplied by the number of full years that the employee has worked for the employer. A minimum wage requirement has also been incorporated into the Labour Contract Law of the PRC. In addition, unless otherwise prohibited by the Labour Contract Law or objected to by the employees themselves, the employer is also required to enter into non fixed-term employment contracts with employees who have previously entered into fixed-term employment contracts for two consecutive terms.

In addition, under the "Regulations on Paid Annual Leave for Employees" (《職工帶薪年休假條例》), which became effective on 1 January 2008, employees who have worked continuously for more than one year are entitled to paid annual leave ranging from 5 to 15 days, depending on the length of the employees' work time. Employees who consent to waive such vacation at the request of employers shall be compensated an amount equal to three times their normal daily salaries for each vacation day being waived. Under the "National Leisure and Tourism Outline (2013–2020)" (《國民旅遊休閒綱要(2013–2020年)》) which became effective on 2 February 2013, all workers must receive paid annual leave by 2020. As a result of the Labour Contract Law of the PRC, the "Regulations on Paid Annual Leave for Employees" and the "National Leisure and Tourism Outline (2013–2020)", the Group's labour costs (inclusive of those incurred by contractors) may increase. Further, under the Labour Contract Law of the PRC, when an employer terminates its PRC employees' employment, the employer may be required to compensate them for such amount which is determined based on their length of service with the employer, and the employer may not be able to efficiently terminate non fixed-term employment contracts without cause. In the event the Group decides to significantly change or decrease its workforce, the Labour Contract Law of the PRC could adversely affect its ability to effect these changes in a cost effective manner or in the manner that the Group desires, which could result in an adverse impact on the Group's businesses, financial condition and results of operations.

Further, if there is a shortage of labour or for any reason the labour cost in the PRC rises significantly, the costs of production of the Group's products are likely to increase. This may in turn affect the selling prices of the products, which may then affect the demand of such products and thereby adversely affect the Group's sales and financial condition. Increase in costs of other components required for production of the products may cause similar adverse effects, particularly if the Group is unable to identify and employ other appropriate means to reduce the costs of production. In such circumstances, the profit margin may decrease and the financial results may be adversely affected.

The PRC legal system has inherent uncertainties that could limit the legal protection available to investors.

PRC laws and regulations govern the Group's operations in China. The Group and most of its operating subsidiaries are organised under PRC laws. China's legal system is based on written statutes. Prior court decisions may be cited for reference but have limited precedential value unless otherwise provided by the Supreme Court. Since the late 1970s, China has promulgated laws and regulations dealing with economic matters, such as the issuance and trading of securities, shareholder rights, foreign investment, corporate organisation and governance, commerce, taxation and trade.

However, many of these laws and regulations, particularly with respect to the financial services industry, are relatively new and evolving, are subject to different interpretations and may be inconsistently implemented and enforced. In addition, only limited volumes of published court decisions may be cited for reference, and such cases have limited precedential value as they are not binding on subsequent cases. These uncertainties relating to the interpretation, implementation and enforcement of China's laws and regulations and a system of jurisprudence that gives only limited precedential value to prior court decisions can affect the legal remedies and protections available to investors, and can adversely affect the value of your investment.

For example, interpretation of the Circular 2044 promulgated by the NDRC may involve significant uncertainty, which may adversely affect the enforceability and/or effective performance of the Bonds. The Circular 2044 is silent on the legal consequences of non-compliance with the post-issue registration requirements. There is also no assurance that the post-issue registration of the issuance of the Bonds with the NDRC can be completed by the Guarantor or that the registration with the NDRC will not be revoked or amended in the future or that future changes in PRC laws and regulations will not have a negative impact on the performance or validity and enforceability of the Bonds in the PRC. Potential investors of the Bonds are advised to exercise due caution when making their investment decisions.

In particular, the industries in which the Group operates are highly regulated. Many aspects of the Group's business depend upon the receipt of the relevant government authority's approvals and permits. As China's legal system and China's financial services industry develop, changes in such laws and regulations, or in their interpretation or enforcement, could materially adversely affect the Group's business, financial condition or results of operations.

In addition, inflation in the PRC increased in recent years. Inflation in the PRC increases the costs of labour and the costs of raw materials the Group must purchase for production. Rising labour costs may increase the Group's operating costs and partially erode the cost advantage of the Group's PRC-based operations and therefore negatively impact the Group's profitability.

Additional procedures may be required to be taken to bring English law governed matters or disputes to the Hong Kong courts. There is also no assurance that the PRC courts will recognise and enforce judgments of the Hong Kong courts in respect of English law governed matters or disputes.

The Terms and Conditions of the Bonds and the transaction documents are governed by English law, whereas parties to these documents have submitted to the exclusive jurisdiction of the Hong Kong courts. In order to hear English law governed matters or disputes, Hong Kong courts may require certain additional procedures to be taken. On 14 July 2006, the Supreme People's Court of the PRC and the Hong Kong government signed the "Arrangement on Reciprocal Recognition and Enforcement of Judgments in Civil and Commercial Matters by the Courts of the Mainland and the Hong Kong Special Administrative Region Pursuant to Choice of Court Agreements between Parties Concerned" (《關於內地與香港特別行政區法院相互認可和執行當事人協議管轄的民商事案件判決的安排》) (the "**Arrangement**"), which is still in full force and effect as at the date of this Offering Circular and will be replaced by and become invalid when the "Arrangement on Reciprocal Recognition and Enforcement of Judgments in Civil and Commercial Matters by the Courts of the Mainland and Hong Kong" (《關於內地與香港特別行政區法院相互認可和執行民商事案件判決的安排》) (the "**New Arrangement**"), which was signed on 18 January 2019, comes into effect. Pursuant to the New Arrangement, if the parties have already signed the choice of court agreement in writing under the Arrangement before the New Arrangement enter into force, the Arrangement shall still apply. Under the Arrangement, where any designated People's Court of the Mainland or any designated Hong Kong court has made an enforceable final judgment requiring payment of money in a civil and commercial case pursuant to a choice of court agreement in writing by the parties, any party concerned may apply to the relevant People's Court of the Mainland or Hong Kong court for recognition and enforcement of the judgment. However, the rights under the Arrangement are limited and the outcome and effectiveness of any action brought under the Arrangement may still be uncertain.

However, recognition and enforcement of a Hong Kong court judgment could be refused if the PRC courts consider that the enforcement of such judgment is contrary to the social and public interest of the PRC. While it is expected that the PRC courts will recognise and enforce a judgment given by Hong Kong courts governed by English law, there can be no assurance that the PRC courts will do so for all such judgments as there is no established practice in this area. Compared to other similar debt securities issuances in the international capital markets where the relevant holders of the debt securities would not typically be required to submit to an exclusive jurisdiction, the Bondholders will be deemed to have submitted to the exclusive jurisdiction of the Hong Kong courts, and thus the Bondholders' ability to initiate to claim outside of Hong Kong will be limited.

Investors may experience difficulties in effecting service of legal process and enforcing judgments against the Guarantor and its management.

The Guarantor is an enterprise incorporated under the laws of the PRC and a substantial portion of its assets and its subsidiaries are located in the PRC. In addition, most of the Guarantor's directors, supervisors and executive officers reside within the PRC and the assets of the Guarantor's directors and officers may be located within the PRC. As a result, it may not be possible to effect service of process within the United States or elsewhere outside the PRC upon most of the Guarantor's directors, supervisors and executive officers, including with respect to matters arising under the U.S. federal securities laws or applicable state securities laws. Moreover, the PRC does not have treaties providing for the reciprocal enforcement of judgments of courts with the United States, the United Kingdom, Japan or most other western countries. In addition, Hong Kong has no arrangement for the reciprocal enforcement of judgments with the United States. As a result, recognition and enforcement in the PRC or Hong Kong of judgments of a court in the United States, the United Kingdom and any of the other jurisdictions mentioned above may be difficult or impossible.

Government control of currency conversion could affect the Group's ability to obtain foreign currencies and pay interest to holders of the Bonds in foreign currencies.

Majority of the Group's revenue is denominated in Renminbi, which is also its reporting currency. Renminbi is not a freely convertible currency. A portion of the Group's cash may be required to be converted into other currencies, particularly U.S. dollars, in order to meet its foreign currency needs, including cash payments on declared dividends, if any, on its Bonds.

However, the PRC government may restrict future access to foreign currencies for current account transactions at its discretion. If this were to occur, the Group might not be able to pay interest to the holders of its Bonds in foreign currencies. On the other hand, foreign exchange transactions under capital account in the PRC continue to be not freely convertible and require the approval of the NDRC, MOFCOM, SAFE and other competent authorities. These limitations could affect the Group's ability to obtain foreign currencies through equity financing, or to obtain foreign currencies for capital expenditures.

Future fluctuations in the value of the Renminbi could have a material adverse effect on the Group's financial condition and results of operations.

While the Group generates most of its revenue in China, it also sells metal products in the international markets and provides engineering and technical services to overseas customers. A portion of the Group's revenue, expenses and bank borrowings is denominated in Hong Kong dollars, U.S. dollars, Euro and other foreign currencies, although its functional currency is the Renminbi. As a result, fluctuations in exchange rates, particularly between the Renminbi, Hong Kong dollar and U.S. dollar, could affect the Group's profitability and may result in foreign currency exchange losses of its foreign currency-denominated assets and liabilities.

The exchange rate of the Renminbi against the U.S. dollar and other currencies fluctuates and is affected by, among other things, changes in China's and international political and economic conditions and the PRC government's fiscal and currency policies. Since 1994, the conversion of the Renminbi into foreign currencies, including the Hong Kong dollar and U.S. dollar, has been based on rates set daily by the PBOC based on the previous business day's inter-bank foreign exchange market rates and exchange rates in global financial markets. From 1994 to 20 July 2005, the official exchange rate for the conversion of the Renminbi to U.S. dollars was generally stable. On 21 July 2005, the PRC government adopted a more flexible managed floating exchange rate system to allow the value of the Renminbi to fluctuate within a regulated band that is based on market supply and demand with reference to a basket of currencies. On 19 June 2010, the PBOC announced that the PRC government would reform the

Renminbi exchange rate regime and increase the flexibility of the exchange rate. In August 2019, the PBOC on 5 August 2019 set the Renminbi's daily reference rate above 7 per U.S. dollar for the first time in over a decade amidst an uncertain trade and global economic climate.

There remains significant international pressure on the PRC government to adopt a more flexible currency policy, which could result in further appreciation or depreciation of the Renminbi against the U.S. dollar. There can be no assurance that the Renminbi will not experience significant appreciation or depreciation against the U.S. dollar in the future. As to risk of devaluation of Renminbi against the U.S. dollar, see "*Risk Factors — The Group is exposed to foreign exchange fluctuations*" for more information.

Currently, the Group has entered into several hedging transactions to mitigate its exposure to foreign exchange risk. However, it cannot be assumed that any significant increase in the value of the Renminbi against foreign currencies would not reduce the value of its foreign currency-denominated revenue and assets.

RISKS RELATING TO THE BONDS AND THE GUARANTEE

The Bonds and the Guarantee are unsecured obligations.

The Bonds and the Guarantee are unsecured obligations of the Issuer and the Guarantor, respectively. The repayment of the Bonds and payment under the Guarantee may be adversely affected if:

- the Issuer or the Guarantor enters into bankruptcy, liquidation, reorganisation or other winding-up proceedings;
- there is a default in payment under the Issuer's or the Guarantor's future secured indebtedness or other unsecured indebtedness; or
- there is an acceleration of any of the Issuer's or the Guarantor's indebtedness.

If any of these events were to occur, the Issuer's or the Guarantor's assets may not be sufficient to pay amounts due on the Bonds.

The obligations of the Guarantor under the Guarantee are structurally subordinated to the liabilities and obligations of its subsidiaries.

The Issuer was established by the Guarantor specifically for the purpose of issuing the debt and hybrid securities and will on-lend the proceeds from the issue of such securities to the Guarantor and any of its subsidiaries for refinancing and general working capital purposes of the Group. The Issuer does not and will not have any assets other than such loan and its ability to make payments under the Bonds will depend on its receipt of timely payments from the Guarantor under such loan arrangement.

The Guarantee will be structurally subordinated to any debt and other liabilities and commitments, including trade payables and lease obligations, of the Guarantor's existing and future subsidiaries, whether or not secured. The Guarantor's obligations under the Guarantee will not be guaranteed by any of the Guarantor's subsidiaries, and the Guarantor's ability to make payments under the Guarantee depends partly on the receipt of dividends, distributions, interest or advances from its subsidiaries. The ability of such subsidiaries to pay dividends to the Guarantor is subject to various restrictions under applicable laws. The Guarantor's subsidiaries are separate legal entities that have no obligation to pay any amounts due under the Guarantee or make any funds available therefore, whether by dividends, loans or other payments. The Guarantor's right to receive assets of any of the Guarantor's subsidiaries, upon that subsidiary's liquidation or reorganisation, will be effectively subordinated to the claim of that subsidiary's creditors (except to the extent that the Guarantor are creditors of that subsidiary). Consequently, the Guarantee will be effectively subordinated to all liabilities, including trade payables and lease obligations, of any of the Guarantor's subsidiaries and any subsidiaries that the Guarantor may in the future acquire or establish. The outstanding indebtedness of the subsidiaries of the Guarantor may also contain covenants restricting the ability of such subsidiaries to pay dividends in certain circumstances for so long as such indebtedness remains outstanding. Moreover, the Guarantor's percentage interests in its subsidiaries and joint ventures could be reduced in the future.

The Guarantee is the Guarantor's unsecured obligations and will (i) rank equally in right of payment with all the Guarantor's other present and future unsubordinated and unsecured indebtedness; and (ii) be effectively subordinated to all of the Guarantor's present and future secured indebtedness to the extent of the value of the collateral securing such obligations. Accordingly, claims of secured lenders, whether senior or junior, with respect to assets securing their loans will be prior with respect to those assets. In the event of the Guarantor's bankruptcy, insolvency, liquidation, reorganisation, dissolution or other winding up, or upon any acceleration of the Bonds, these assets will be available to pay obligations on the Guarantee only after all other debt secured by these assets has been repaid in full. Any remaining assets will be available to the Bondholders rateably with all of the Guarantor's other unsecured and unsubordinated creditors, including trade creditors. If there are not sufficient assets remaining to pay all these creditors, then all or a portion of the Bonds then outstanding would remain unpaid.

If the Guarantor fails to complete the registration of the Guarantee with the SAFE within the time period prescribed by the SAFE, there may be hurdles for cross-border payment under the Guarantee.

Pursuant to the Deed of Guarantee executed by the Guarantor, the Guarantor will unconditionally and irrevocably guarantee the due payment of all sums expressed to be payable by the Issuer under the Bonds and the Trust Deed. The Guarantor is required to file with SAFE the Guarantee within the prescribed timeframe after the execution of the Deed of Guarantee in accordance with the Provisions on the Foreign Exchange Administration of Cross-Border Guarantees (《跨境擔保外匯管理規定》) promulgated by SAFE on 12 May 2014 which came into effect on 1 June 2014 (the "**Foreign Exchange Cross-Border Guarantee Rules**"), the Operational Guidelines on Foreign Exchange Administration of Cross-border Guarantee (《跨境擔保外匯管理操作指引》) promulgated by SAFE on 12 May 2014 (the "**SAFE Guidelines**"), and any implementation rules as issued by SAFE from time to time.

There is no assurance that the Guarantor will be able to complete such registration with SAFE within the prescribed timeframe or at all. Under the Terms and Conditions of the Bonds, Bondholders may require the Issuer to redeem their Bonds in the event that the Deed of Guarantee is not registered within a specified timeframe. Bondholders who do not exercise such redemption option should note that before requisite registrations of the Deed of Guarantee given by the Guarantor are completed, it is uncertain whether the Guarantee given by the Guarantor can be enforced in practice.

Although the failure to register does not render the Guarantee ineffective or invalid under PRC laws, SAFE may impose penalties on the Guarantor if the Guarantor fails to complete the Cross-Border Security Registration. Further, there may be hurdles at the time of remittance of funds (if any cross-border payment is to be made by the Guarantor under the Guarantee) as domestic banks may require evidence of SAFE registration in connection with the Guarantee in order to effect such remittance. Prior to the performance or discharge of its obligations under the Guarantee, the Guarantor is also required to complete a verification process with banks for each remittance under the Guarantee.

The interpretation of the Foreign Exchange Cross-Border Guarantee Rules and the SAFE Guidelines may involve significant uncertainty, and may adversely affect the practical enforceability of the Guarantee given by the Guarantor in the PRC. In addition, the administration of the Foreign Exchange Cross-Border Guarantee Rules and SAFE Guidelines may be subject to a certain degree of executive and policy discretion by the SAFE.

Any failure to complete the relevant filings under the Circular 2044 within the prescribed time frame following the completion of the issue of the Bonds may have adverse consequences for the Issuer and/or the investors of the Bonds.

The NDRC issued the Circular 2044 on 14 September 2015, which came into effect on the same day. According to the Circular 2044, domestic enterprises and their overseas controlled entities shall procure the registration of any debt securities issued outside the PRC with a maturity not less than one year with the NDRC prior to the issue of the securities. Furthermore, relevant issuers are required to notify the NDRC the particulars of the relevant issues within 10 PRC Business Days (as defined in the Terms and Conditions of the Bonds) after the completion of the issue of such debt. The Circular 2044 is silent on the legal consequences of non-compliance with the post-issue notification requirement under the Circular 2044. In the worst-case scenario, such non-compliance with the post-issue notification requirement under the Circular 2044 may result in it being unlawful for the Issuer and/or the Guarantor to perform or comply with any of their respective obligations under the Bonds and the Guarantee, and the Bonds might be subject to enforcement as provided in Condition 9 of the Terms and Conditions of the Bonds. Similarly, there is no clarity as to the legal consequences of noncompliance with the post-issue notification requirement under the Circular 2044. Additional guidance has been issued by the NDRC on 18 December 2015 (the "**NDRC Circular Guidelines**"), which states that companies, investment banks, law firms and other intermediaries involved in debt securities issues which do not comply with the registration requirement under the Circular 2044 will be subject to a blacklist and sanctions. The NDRC Circular Guidelines are silent as to how such blacklist will be implemented or the exact sanctions that will be enacted by the NDRC, or any impact on the holders of the Bonds, in the event of a noncompliance by the Guarantor with the Circular 2044.

Since the Circular 2044 does not stipulate any detailed implementation procedures, there is no assurance that the NDRC will not issue further implementation rules or notices which may require additional steps in terms of the registration or provide sanctions or other administrative procedures the NDRC may impose in case of failure of such registration with, or post issuance report to, the NDRC. There is also no assurance that the registration with the NDRC will not be revoked or amended in the future or that changes in PRC laws and regulations will not have a negative impact on the performance or validity and enforceability of the Bonds in the PRC. Potential investors of the Bonds are advised to exercise due caution when making their investment decisions. The Guarantor will undertake to notify the NDRC of the particulars of the issue of the Bonds within the prescribed time in accordance with the Circular 2044.

The PRC government has no payment or other obligations under the Bonds.

The PRC government is not an obligor and shall under no circumstances have any obligation arising out of or in connection with the Bonds, the Guarantee, the Trust Deed or the Agency Agreement in lieu of the Issuer or the Guarantor. Any ownership or control by the PRC government does not necessarily correlate to, or provide any assurance as to, the Issuer or the Guarantor's financial condition. This position has been reinforced by the Circular of the Ministry of Finance on Issues relevant to the "Regulation on the Financing Activities Conducted by Financial Institutions for Local Governments and State-owned Enterprises" (《財政部關於規範金融企業對地方政府和國有企業投融資行為有關問題的通知》財金[2018]23號), (the "**MOF Circular**") promulgated on 28 March 2018 and which took effect on the same day, and the "Circular of the National Development and Reform Commission and the Ministry of Finance on Improvement of Market Regulatory Regime and Strict Prevention of Foreign Debt Risks and Local Government Indebtedness Risks" (《國家發展改革委財政部關於完善市場約束機制嚴格防範外債風險和地方債務風險的通知》) (the "**Joint Circular**") promulgated on 11 May 2018 and which took effect on the same day.

The PRC government controls the Guarantor and has limited liability in the form of its equity contribution in the Guarantor in accordance with the PRC Company Law. As such, the PRC government does not have any payment obligations or other obligations under the Bonds, the Guarantee, the Trust Deed or the Agency Agreement. The Bonds are solely to be repaid by the Issuer and guaranteed by the Guarantor, each as an obligor under the relevant transaction documents and as an independent legal person.

Therefore, investors should base their investment decision only on the financial condition of the Issuer, the Guarantor and the Group and base any perceived credit risk associated with an investment in the Bonds only on the Group's own financial information reflected in its financial statements.

The Issuer may not be able to redeem the Bonds upon the due date for redemption thereof.

The Issuer may, at its option, and at maturity or at any time following the occurrence of a Relevant Event (as defined in the Terms and Conditions of the Bonds) will, be required to redeem all of the Bonds. If such an event were to occur, the Issuer may not have sufficient cash in hand and may not be able to arrange financing to redeem the Bonds in time, or on acceptable terms, or at all. The ability to redeem the Bonds in such event may also be limited by the terms of other debt instruments. The Issuer's failure to repay, repurchase or redeem tendered Bonds could constitute an event of default under the Bonds, which may also constitute a default under the terms of other indebtedness of the Issuer, the Guarantor or other members of the Group.

The Bonds are subject to optional redemption by the Issuer and may have a lower market value than bonds that cannot be redeemed.

The Issuer has the option to redeem all of the Bonds at the Make Whole Price (as defined in the Terms and Conditions of the Bonds) at any time or at their principal amount at any time on or after 24 January 2027. Such an optional redemption feature is likely to limit the market value of the Bonds. During any period when the Issuer may elect to redeem the Bonds, the market value of those Bonds generally will not rise substantially above the price at which they can be redeemed. This also may be true prior to any redemption period.

The Issuer may be expected to redeem the Bonds when its cost of borrowing is lower than the coupon rate on the Bonds. At those times, an investor generally would not be able to reinvest the redemption proceeds at an effective interest rate as high as the interest rate on the Bonds being redeemed and may only be able to do so at a significantly lower rate. Potential investors should consider reinvestment risk in light of other investments available at that time.

The Issuer may issue additional bonds in the future.

The Issuer may, from time to time, and without prior consultation of the Bondholders, create and issue further bonds (see "*Terms and Conditions of the Bonds — Further Issues*") or otherwise raise additional capital through such means and in such manner as it may consider necessary. There can be no assurance that such future issuance or capital raising activity will not adversely affect the market price of the Bonds.

The Bonds may not be a suitable investment for all investors.

The Bonds are complex financial instruments and may be purchased as a way to reduce risk or enhance yield with an understood, measured, appropriate addition of risk to their overall portfolios. A potential investor should not invest in the Bonds unless it has the expertise (either alone or with the help of a financial adviser) to evaluate how the Bonds will perform under changing conditions, the resulting effects on the value of such Bonds and the impact this investment will have on the potential investor's overall investment portfolio.

Additionally, the investment activities of certain investors are subject to legal investment laws and regulations, or review or regulation by certain authorities. Each potential investor should consult its legal advisers to determine whether and to what extent (a) the Bonds are legal investments for it, (b) the Bonds can be used as collateral for various types of borrowing and (c) other restrictions apply to its purchase of any Bonds. Financial institution investors should consult their legal advisers or the appropriate regulators to determine the appropriate treatment of Bonds under any applicable risk-based capital or similar rules.

The Bonds may not be suitable investment for all investors. Each potential investor in the Bonds must determine the suitability of that investment in light of its own circumstances. In particular, each potential investor should:

(i) have sufficient knowledge and experience to make a meaningful evaluation of the Bonds, the merits and risks of investing in the Bonds and the information contained or incorporated by reference in this Offering Circular or any applicable supplement;

(ii) have access to, and knowledge of, appropriate analytical tools to evaluate, in the context of its particular financial situation, an investment in the Bonds and the impact such investment will have on its overall investment portfolio;

(iii) have sufficient financial resources and liquidity to bear all of the risks of an investment in the Bonds;

(iv) understand thoroughly the Terms and Conditions of the Bonds and be familiar with the behaviour of any relevant indices and financial markets; and

(v) be able to evaluate (either alone or with the help of a financial adviser) possible scenarios for economic, interest rate and other factors that may affect its investment and its ability to bear the applicable risks.

The liquidity and price of the Bonds following this offering may be volatile.

The price and trading volume of the Bonds may be highly volatile. Factors such as variations in the revenues, earnings and cash flows of the Group and proposals of new investments, strategic alliances and/or acquisitions, interest rates and fluctuations in prices for comparable companies could cause the price of the Bonds to change. Any such developments may result in large and sudden changes in the volume and price at which the Bonds will trade. There can be no assurance that these developments will not occur in the future.

Changes in market interest rates may adversely affect the value of the Bonds.

The Bonds will carry a fixed interest rate. Consequently, the trading price of the Bonds will vary with the fluctuations in the US dollar interest rates. If a holder of the Bonds tries to sell such Bonds before their maturity, he may receive an offer that is less than his investment.

Developments in other markets may adversely affect the market price of the Bonds.

The market price of the Bonds may be adversely affected by declines in the international financial markets and world economic conditions. The market for the Bonds is, to varying degrees, influenced by economic and market conditions in other markets, especially those in Asia. Although economic conditions are different in each country, investors' reactions to developments in one country can affect the securities markets and the securities of issuers in other countries, including China. Since the global financial crisis of 2008 and 2009, the international financial markets have experienced significant volatility. If similar developments occur in the international financial markets in the future, the market price of the Bonds could be adversely affected.

A trading market for the Bonds may not develop.

The Bonds are a new issue of securities for which there is currently no trading market. Although an application will be made to the Hong Kong Stock Exchange for the listing of and permission to deal in, the Bonds on the Hong Kong Stock Exchange, there can be no assurance as to the liquidity of the Bonds or that an active trading market will develop. If such a market were to develop, the Bonds could trade at prices that may be higher or lower than the initial issue price depending on many factors, including prevailing interest rates, the Group's operations and the market for similar securities. The liquidity of the Bonds will be adversely affected if the Bonds are held or allocated to limited investors. Bondholders should note that they may need to hold their Bonds until maturity as there may not be an active secondary market for the Bonds. The Joint Lead Managers are not obligated to make a market in the Bonds and any such market making, if commenced, may be discontinued at any time at the sole discretion of the Joint Lead Managers. In addition, the Bonds are being offered pursuant to exemptions from registration under the Securities Act and, as a result, holders will only be able to resell their Bonds in transactions that have been registered under the Securities Act or in transactions not subject to, or exempt from, registration under the Securities Act.

The Issuer may be treated as a PRC resident enterprise for PRC tax purpose, which may subject the Issuer to PRC income taxes on its world-wide income and interest payable by the Issuer to foreign investors and gains on the transfer of the Bonds may be subject to income tax under PRC tax laws.

The Issuer is incorporated under the laws of the British Virgin Islands. Pursuant to the Enterprise Income Tax Law of the PRC (the "**EIT Law**") and its implementation regulations, enterprises that are established under the laws of foreign countries and regions but whose "*de facto* management bodies" are within the PRC are treated as PRC tax resident enterprises for the purposes of the EIT Law. If the relevant PRC tax authorities decide, in accordance with applicable tax rules and regulations, that the "*de facto* management body" of the Issuer is within the PRC, the Issuer may be held to be a PRC tax resident enterprise for the purposes of the EIT Law and income or gains paid with respect to the Bonds may considered to be derived from sources within the PRC.

Under the EIT Law and its implementation rules, any income or gains realised by non-resident enterprises may be subject to PRC enterprise income tax if such income or gains are regarded as derived from sources within the PRC. Under the EIT Law, a "non-resident enterprise" means an enterprise established under the laws of a jurisdiction other than the PRC and whose actual administrative organisation is not in the PRC, which has established offices or premises in the PRC, or which has not established any offices or premises in the PRC but has obtained income derived from sources within the PRC. In the event the Issuer is deemed to be a PRC tax resident enterprise by the PRC tax authorities in the future, the Issuer would be subject to PRC enterprise income tax at the rate of 25 per cent. on its global income in the future, interest paid on the Bonds may be considered to be derived from sources within the PRC, in which case the Issuer would be required to withhold income tax at the applicable rate of 10 per cent. from payments of interest in respect of the Bonds to any non-resident enterprise holders. Pursuant to the Individual Income Tax Law of the PRC and its implementation regulations, if the Issuer is considered to be a PRC tax resident enterprise, the Issuer may be obliged to withhold such individual income tax on payments of interests to non-resident individual holders of the Bonds.

Any capital gain realised by a non-resident enterprise from the transfer of the Bonds may be regarded as being derived from sources within the PRC and accordingly may be subject to a PRC tax of up to 10 per cent. if the Issuer is treated as a PRC tax resident. Any capital gain realised by a non-resident individual holder from transfer of the Bonds may also be regarded as being derived from sources within the PRC and be subject to PRC tax of up to 20 per cent. if the Issuer is treated as a PRC tax resident enterprise.

According to the Arrangement between the Mainland of China and the Hong Kong Special Administrative Region for the Avoidance of Double Taxation and the Prevention of Fiscal Evasion with Respect to Taxes on Income (《內地和香港特別行政區關於對所得避免雙重徵稅和防止偷漏稅的安排》) (the "**Taxation Arrangement**") which was promulgated on 21 August 2006, Bondholders who are Hong Kong residents, including both enterprise holders and individual holders, will be exempted from PRC income tax on capital gains derived from a sale or exchange of the Bonds.

On 23 March 2016, the Ministry of Finance and the State Administration of Taxation (the "**SAT**") issued Circular 36, which introduced a new VAT from 1 May 2016. VAT is applicable where the entities or individuals provide services within the PRC. Circular 36 and laws and regulations pertaining to VAT are relatively new, and the interpretation and enforcement of such laws and regulations involve uncertainties.

If a Bondholder, being a non-resident enterprise or non-resident individual, is required to pay any PRC income tax or VAT on the interest or capital gains on the transfer of the Bonds, the value of the relevant Bondholder's investment in the Bonds may be materially and adversely affected.

The Bonds are redeemable in the event of certain withholding taxes being applicable.

No assurances are made by the Issuer or the Guarantor as to whether or not payments on the Bonds may be made without withholding taxes or deductions applying from the Issue Date on account of any present or future taxes, duties, assessments or governmental charges of whatever nature imposed, levied, collected, withheld or assessed by or within the British Virgin Islands or the PRC (each a Relevant Jurisdiction) or any political subdivision or authority therein or thereof having power to tax. Although pursuant to the Terms and Conditions of the Bonds, the Issuer and the Guarantor are required to gross up payments on account of any such withholding taxes or deductions, the Bonds may be redeemed at the option of the Issuer in whole, but not in part, at any time, as a result of any change in, or amendment to, the laws or regulations of any Relevant Jurisdiction or any political subdivision or any authority thereof or therein having power to tax, or any change in the application or official interpretation of such laws or regulations (including a judgment or order of a court of competent jurisdiction), which change or amendment becomes effective on or after 16 February 2022 where the Issuer or the Guarantor has or will become obligated to pay additional tax and such obligation cannot be avoided by the Issuer or the Guarantor taking reasonable measures available to it.

The insolvency laws of the British Virgin Islands and the PRC and other local insolvency laws may differ from those of another jurisdiction with which the holders of the Bonds are familiar.

As the Issuer and the Guarantor are incorporated under the laws of the British Virgin Islands and the PRC, any insolvency proceeding relating to the Issuer or the Guarantor would likely involve British Virgin Islands or the PRC insolvency laws, the procedural and substantive provisions of which may differ from comparable provisions of the local insolvency laws of jurisdictions with which the holders of the Bonds are familiar.

Exchange rate risks and exchange controls may result in a Bondholder receiving less interest or principal than expected.

The Issuer will pay principal and interest on the Bonds in US dollars. This presents certain risks relating to currency conversions if a Bondholder's financial activities are denominated principally in a currency or currency unit (the "**Investor's Currency**") other than US dollars. These include the risk that exchange rates may significantly change (including changes due to devaluation of the U.S. dollar or revaluation of the Investor's Currency) and the risk that authorities with jurisdiction over the Investor's Currency may impose or modify exchange controls. An appreciation in the value of the Investor's Currency relative to the U.S. dollar would decrease (i) the Investor's Currency equivalent yield on the Bonds; (ii) the Investor's Currency equivalent value of the principal payable on the Bonds; and (iii) the Investor's Currency equivalent market value of the Bonds.

Governments and monetary authorities may impose (as some have done in the past) exchange controls that could adversely affect an applicable exchange rate. As a result, a Bondholder may receive less interest or principal than expected, or no interest or principal.

The ratings of the Bonds may be downgraded or withdrawn and may adversely affect the market price of the Bonds.

The Bonds are expected to be rated "A–" by Fitch, upon issuance. Fitch has assigned a corporate rating of "A–" with a stable outlook to the Guarantor. The ratings represent opinions of the rating agency and its assessment of the ability of the Issuer and the Guarantor to perform their respective obligations under the Bonds and the Guarantee and credit risks in determining the likelihood that payments will be made when due under the Bonds. A rating is not a recommendation to buy, sell or hold the Bonds. The ratings can be lowered or withdrawn at any time. No assurance can be given that a rating will remain in effect for any given period of time or that a rating will not be lowered or withdrawn entirely by an assigning rating agency. Any decline in the financial position of the Issuer, the Guarantor, or any of its subsidiaries may impair the ability of the Issuer or the Guarantor to make payments to the Bondholders under the Bonds and/or result in the rating of the Bonds being lowered, suspended or withdrawn entirely. If the rating initially assigned to the Bonds is subsequently lowered or withdrawn for any reason, no person or entity will be obliged to provide any additional credit enhancement with respect to the Bonds. Neither the Guarantor nor the Issuer is obliged to inform the holders of the Bonds if the ratings are lowered or withdrawn. A reduction or withdrawal of the ratings may adversely affect the market price of the Bonds and the Issuer's and the Guarantor's ability to access debt capital markets.

The Trustee may request holders of the Bonds to provide an indemnity and/or security and/or prefunding to its satisfaction.

In certain circumstances, including without limitation giving of notice to the Issuer and the Guarantor pursuant to Condition 9 of the Terms and Conditions of the Bonds and taking of any steps and/or actions and/or the instituting of any proceedings pursuant to Condition 14 of the Terms and Conditions of the Bonds, the Trustee may, at its sole discretion, request holders of the Bonds to provide an indemnity and/or security and/or prefunding to its satisfaction before it takes actions on behalf of holders of the Bonds. The Trustee shall not be obliged to take any such steps and/or actions and/or institute any such proceedings if not first indemnified and/or secured and/or prefunded to its satisfaction. Negotiating and agreeing an indemnity and/or security and/or prefunding can be a lengthy process and may impact on when such action can be taken. The Trustee may not be able to take any step and/or action and/or institute any proceeding, notwithstanding the provision of an indemnity or security or prefunding to it, in breach of the terms of the Trust Deed, the Deed of Guarantee or the Terms and Conditions of the Bonds and in such circumstances, or where there is uncertainty or dispute as to the applicable laws or regulations, to the extent permitted by the agreements and the applicable laws and regulations, it will be for the holders of the Bonds to take such actions directly.

Decisions that may be made on behalf of all holders of the Bonds may be adverse to the interests of individual holders of the Bonds.

The Terms and Conditions of the Bonds will contain provisions for calling meetings of holders of the Bonds to consider matters affecting their interests generally. These provisions will permit defined majorities to bind all holders of the Bonds including holders who did not attend and vote at the relevant meeting and holders who voted in a manner contrary to the majority. Furthermore, there is a risk that the decision of the majority of holders of the Bonds may be adverse to the interests of individual Bondholders.

A change in English law which governs the Bonds may adversely affect holders of the Bonds.

The Terms and Conditions of the Bonds will be governed by English law. No assurance can be given as to the impact of any possible judicial decision or change to English law or administrative practice after the date of issue of the Bonds and any such change could materially adversely impact the value of any Bonds affected by it.

Modifications and waivers may be made in respect of the Terms and Conditions of the Bonds, the Agency Agreement, the Deed of Guarantee and the Trust Deed by the Trustee or less than all of the holders of the Bonds, and decisions may be made on behalf of all holders of the Bonds that may be adverse to the interests of the individual holders of the Bonds.

The Terms and Conditions of the Bonds will provide that the Trustee may, without the consent of the holders of the Bonds, agree to any modification of the Trust Deed, the Terms and Conditions of the Bonds, the Deed of Guarantee and/or the Agency Agreement (other than in respect of a reserved matter) which in the opinion of the Trustee will not be materially prejudicial to the interests of the holders of the Bonds and to any modification of the Bonds, the Trust Deed, the Deed of Guarantee or the Agency Agreement which in the opinion of the Trustee is of a formal, minor or technical nature or is made to correct a manifest error or to comply with any mandatory provision of law.

In addition, the Trustee may, without the consent of the holders of the Bonds, authorise or waive any proposed breach or breach of the Terms and Conditions of the Bonds, the Deed of Guarantee, the Trust Deed or the Agency Agreement if, in the opinion of the Trustee, the interests of the holders of the Bonds will not be materially prejudiced thereby. Any such modification, waiver or authorisation shall be binding on the Bondholders and, unless the Trustee otherwise agrees, such modification, waiver or authorisation shall be notified by the Issuer, failing whom, the Guarantor, to the Bondholders as soon as practicable.

The Bonds initially will be represented by a Global Certificate and holders of a beneficial interest in the Global Certificate must rely on the procedures of the relevant Clearing System.

The Bonds will initially be represented by a Global Certificate. Such Global Certificate will be deposited with a common depositary for Euroclear and Clearstream (each of Euroclear and Clearstream, a "**Clearing System**"). Except in the circumstances described in the Global Certificate, investors will not be entitled to receive definitive Bonds. The relevant Clearing System will maintain records of the beneficial interests in the Global Certificate. While the Bonds are represented by the Global Certificate, investors will be able to trade their beneficial interests only through the Clearing Systems. While the Bonds are represented by the Global Certificate, the Issuer will discharge its payment obligations under the Bonds by making payments to the common depositary for Euroclear and Clearstream, for distribution to their account holders. A holder of a beneficial interest in the Global Certificate must rely on the procedures of the relevant Clearing System to receive payments under the Bonds. The Issuer has no responsibility or liability for the records relating to, or payments made in respect of, beneficial interests in the Global Certificate. Holders of beneficial interests in the Global Certificate will not have a direct right to vote in respect of the Bonds. Instead, such holders will be permitted to act only to the extent that they are enabled by the relevant Clearing System to appoint appropriate proxies.

Bonds which have a denomination that is not an integral multiple of the minimum specified denomination may be illiquid and difficult to trade.

The specified denominations of the Bonds are US$200,000 and integral multiples of US$1,000 in excess thereof. Therefore, it is possible that the Bonds may be traded in amounts in excess of US$200,000 that are not integral multiples of US$1,000. In such a case, a Bondholder who, as a result of trading such amounts, holds a principal amount of less than US$200,000 will not receive a definitive certificate in respect of such holding of Bonds (should definitive certificates be printed) and would need to purchase a principal amount of Bonds such that it holds an amount equal to a specified denomination.

USE OF PROCEEDS

The gross proceeds from the offering of the Bonds, before deducting underwriting commissions and other estimated expenses payable in connection with the offering of the Bonds, will be US$591,102,000. The Issuer intends to use the proceeds from the offering of the Bonds to refinance the Group's offshore existing indebtedness.

TERMS AND CONDITIONS OF THE BONDS

The following, save for the paragraphs in italics and subject to modification, is the text of the Terms and Conditions of the Bonds.

The issue of the US$600,000,000 in aggregate principal amount of 2.95 per cent. guaranteed bonds due 2027 (the "**Bonds**" which term shall include, unless the context requires otherwise, any further bonds issued in accordance with Condition 13 of these terms and conditions of the Bonds (the "**Conditions**") and consolidated and forming a single series therewith) was authorised by a resolution of the board of Directors of Chinalco Capital Holdings Limited (the "**Issuer**") passed on 20 December 2021. The Bonds are guaranteed by Aluminum Corporation of China (中國鋁業集團有限公司) (the "**Guarantor**"). The Bonds are constituted by a trust deed (as amended or supplemented from time to time, the "**Trust Deed**") dated on or about the Issue Date (as defined below) between the Issuer, the Guarantor and Bank of Communications Trustee Limited (the "**Trustee**", which expression shall include its successor(s) and all persons for the time being the trustee or trustees under the Trust Deed) as trustee for itself and the holders (as defined below) of the Bonds. The Bonds are the subject of an agency agreement (as amended or supplemented from time to time, the "**Agency Agreement**") dated on or about the Issue Date between the Issuer, the Guarantor, the Trustee and Bank of Communications Co., Ltd. Hong Kong Branch as registrar (the "**Registrar**"), as transfer agent (the "**Transfer Agent**") and as principal paying agent (the "**Principal Paying Agent**") and any other agents named therein. References herein to "**Agents**" means the Principal Paying Agent, the Registrar, the Transfer Agent and any other agent or agents appointed from time to time with respect to the Bonds. The Bonds have the benefit of a deed of guarantee (as amended or supplemented from time to time, the "**Deed of Guarantee**") dated on or about the Issue Date entered into by the Guarantor and the Trustee relating to the Bonds. The entering into the Deed of Guarantee was authorised by resolutions of the general manager meeting of the Guarantor on 8 October 2021. The Bondholders are entitled to the benefit of, are bound by, and are deemed to have notice of, all the provisions of the Trust Deed and the Deed of Guarantee and are deemed to have notice of those provisions of the Agency Agreement applicable to them. Copies of the Trust Deed, the Deed of Guarantee and the Agency Agreement are available for inspection by Bondholders at all reasonable times during usual business hours upon prior written request and proof of holding and identity satisfactory to the Principal Paying Agent at the specified office for the time being of the Principal Paying Agent (being at the issue of the Bonds at 20 Pedder Street, Central, Hong Kong).

All capitalised terms that are not defined in these Conditions will have the meanings given to them in the Trust Deed.

1 FORM, SPECIFIED DENOMINATION AND TITLE

The Bonds are issued in the specified denomination of US$200,000 and integral multiples of US$1,000 in excess thereof.

The Bonds are represented by registered certificates ("**Certificates**") and each Certificate shall represent the entire holding of Bonds by the same holder. Title to the Bonds shall pass only by transfer and registration of title in the Register as described in Condition 2. The holder of any Bond will (except as ordered by a court of competent jurisdiction or as otherwise required by law) be treated as its absolute owner for all purposes whether or not it is overdue and regardless of any notice of ownership, trust or any interest in it, any writing on the Certificate representing it (other than an endorsed form of transfer) or the theft or loss of such Certificate and no person shall be liable for so treating the holder.

In these Conditions, "**Bondholder**" or "**holder**" in relation to a Bond means the person in whose name a Bond is registered in the Register (as defined below) (or in the case of a joint holding, the first name thereof).

Upon issue, the Bonds will be represented by a global certificate (the "Global Certificate") registered in the name of a nominee of, and deposited with a common depositary for Euroclear Bank SA/NV and Clearstream Banking S.A. The Conditions are modified by certain provisions contained in the Global Certificate. See "Summary of Provisions relating to the Bonds while in Global Form".

Except in the limited circumstances described in the Global Certificate, owners of interests in Bonds represented by the Global Certificate will not be entitled to receive definitive Certificates in respect of their individual holdings of Bonds. The Bonds are not issuable in bearer form.

2 TRANSFERS OF BONDS

(a) Register

The Issuer will cause the register (the "**Register**") to be kept at the specified office of the Registrar outside the United Kingdom and in accordance with the terms of the Agency Agreement, on which shall be entered the names and addresses of the holders and the particulars of the Bonds held by them and of all transfers of the Bonds. Each holder shall be entitled to receive only one Certificate in respect of its entire holding of Bonds.

(b) Transfer

Subject to the Agency Agreement and Conditions 2(e) and 2(f) herein, a Bond may be transferred by delivery of the Certificate issued in respect of that Bond, with the form of transfer endorsed on the Certificate duly completed and signed by the holder or his attorney duly authorised in writing, to the specified office of the Registrar or any Transfer Agent. No transfer of title to a Bond will be valid unless and until entered on the Register.

(c) Delivery of New Certificates

Each new Certificate to be issued pursuant to Condition 2(b) shall be available for delivery within seven business days (as defined below) of receipt of a duly completed form of transfer and surrender of the existing Certificate(s). Delivery of the new Certificate(s) shall be made at the specified office of any Transfer Agent or of the Registrar (as the case may be) to whom delivery or surrender of such form of transfer and Certificate shall have been made or, at the option of the holder making such delivery or surrender as aforesaid and as specified in the relevant form of transfer, be mailed by uninsured post at the risk of the holder entitled to the new Certificate to such address as may be so specified, unless such holder requests otherwise and pays in advance to the relevant Transfer Agent or the Registrar (as the case may be) the costs of such other method of delivery and/or such insurance as it may specify.

Where only part of a principal amount of the Bonds in respect of which a Certificate is issued is to be transferred or exchanged, a new Certificate in respect of the Bonds not so transferred or exchanged will, within seven business days (as defined below) of the surrender of the existing Certificate to the Registrar or, as the case may be, the Transfer Agent, be made available at the specified office of the Transfer Agent or of the Registrar (as the case may be) or, at the option of the holder making such surrender as aforesaid and as specified in the relevant form of transfer, be mailed by uninsured post at the risk of the holder entitled to the new Certificate to such address as may be so specified, unless such holder requests otherwise and pays in advance to the relevant Transfer Agent or the Registrar (as the case may be) the costs of such other method of delivery and/or such insurance as it may specify.

In this Condition 2(c) and in Condition 2(e), "**business day**" means a day, other than a Saturday, Sunday or public holiday, on which banks are open for business in the place of the specified office of the relevant Transfer Agent or the Registrar (as the case may be).

(d) Formalities Free of Charge

Certificates, on transfer, shall be issued and registered without charge to the relevant Bondholder by or on behalf of the Issuer, the Registrar or any Transfer Agent, but upon (i) payment by the relevant holder of any tax or other governmental charges that may be imposed in relation to it (or the giving of such indemnity and/or security and/or pre-funding as the Registrar or the relevant Transfer Agent may require), (ii) the Registrar being satisfied in its absolute discretion with the documents of title or identity of the person making the application and (iii) the relevant Agent being satisfied that the regulations concerning transfer of Bonds have been complied with.

(e) Closed Periods

No holder may require the transfer of a Bond to be registered (i) during the period of seven business days ending on (but excluding) the due date for any payment of principal (or premium) in respect of that Bond, (ii) during the period of seven business days ending on (and including) any Record Date (as defined in Condition 7(a)), (iii) during the period of 15 days prior to (and including) any date on which Bonds may be called for redemption by the Issuer pursuant to Conditions 6(b), 6(d) and 6(e) or (iv) after any such Bond has been put for redemption pursuant to Condition 6(c).

(f) Regulations

All transfers of Bonds and entries on the Register will be made subject to the detailed regulations concerning transfer and registration of Bonds scheduled to the Agency Agreement. The regulations may be changed by the Issuer with the prior written approval of the Registrar and the Trustee or by the Registrar with the prior written approval of the Trustee. A copy of the current regulations will be mailed (free of charge to the holders and at the Issuer's (failing whom, the Guarantor's) expense) by the Registrar to any holder who requests one in writing and is available for inspection by any Bondholder during usual business hours at the specified office of the Transfer Agent upon written request and satisfactory proof of holding.

Transfers of interests in the Bonds evidenced by the Global Certificate will be effected in accordance with the rules and procedures of the relevant clearing systems.

3 STATUS AND GUARANTEE

(a) Status

The Bonds constitute direct, unsubordinated, unconditional and (subject to Condition 4(a)) unsecured obligations of the Issuer and shall at all times rank *pari passu* and without any preference or priority among themselves. The payment obligations of the Issuer under the Bonds shall, save for such exceptions as may be provided by applicable law and subject to Condition 4(a), at all times rank at least equally with all its other present and future unsecured and unsubordinated obligations.

(b) Guarantee

The Guarantor has unconditionally and irrevocably guaranteed the due payment of all sums expressed to be payable by the Issuer under the Bonds and the Trust Deed (the "**Guarantee**"). The Guarantor's obligations in respect of the Guarantee are contained in the Deed of Guarantee. The obligations of the Guarantor under the Guarantee shall, save for such exceptions as may be provided by applicable law and subject to Condition 4(a), at all times rank at least equally with all its other present and future unsecured and unsubordinated obligations.

4 COVENANTS

(a) Negative Pledge and Relevant Indebtedness

So long as any Bond remains outstanding, neither the Issuer nor the Guarantor will, and the Guarantor will ensure that none of its Principal Subsidiaries (other than the Listed Subsidiaries and the Subsidiaries of a Listed Subsidiary) will, create or permit to subsist any mortgage, charge, lien, pledge or other security interest upon the whole or any part of its present or future undertaking, assets or revenues (including any uncalled capital) to secure any Relevant Indebtedness which is issued outside the PRC, or any guarantee or indemnity in respect of any Relevant Indebtedness which is issued outside the PRC, without at the same time or prior thereto according to the Bonds (A) the same security as is created or subsisting to secure any such Relevant Indebtedness, guarantee or indemnity or (B) such other security as either (1) the Trustee may in its absolute discretion deem not materially less beneficial to the interests of the Bondholders or (2) as shall be approved by an Extraordinary Resolution (as defined in the Trust Deed) of the Bondholders.

(b) Undertaking in relation to the NDRC and the Guarantee

(i) The Guarantor undertakes to file or cause to be filed the relevant information in connection with the Bonds with the National Development and Reform Commission of the PRC or its local counterparts (the "**NDRC**"), within the prescribed timeframe after the Issue Date of the Bonds and in accordance with the Notice on Promoting the Reform of the Filing and Registration System for Issuance of Foreign Debt by Enterprises (國家發展改革委關於推進企業發行外債備案登記制管理改革的通知(發改外資[2015]2044號)) promulgated by the NDRC on 14 September 2015 which came into effect immediately and any implementation rules, regulations, certificates, circulars or notices in connection therewith issued by the NDRC from time to time (the "**Post-Issuance Filing**"). The Guarantor shall submit the Post-Issuance Filing and comply with all applicable PRC laws and regulations in relation to the Post-Issuance Filing.

(ii) The Guarantor undertakes to file or cause to be filed with the State Administration of Foreign Exchange of the PRC or its local branch ("**SAFE**") the Deed of Guarantee within the prescribed timeframe after execution of the Deed of Guarantee in accordance with the Provisions on the Foreign Exchange Administration of Cross-Border Guarantees (跨境擔保外匯管理規定) promulgated by SAFE on 12 May 2014 which came into effect on 1 June 2014 (the "**Cross-Border Security Registration**"). The Guarantor shall use all reasonable endeavors to complete the Cross-Border Security Registration and obtain a registration certificate from SAFE (or any other document evidencing the completion of registration issued by SAFE) on or before the Registration Deadline and comply with all applicable PRC laws and regulations in relation to the Cross-Border Security Registration.

(iii) The Guarantor shall before the Registration Deadline and within ten PRC Business Days after receipt of the registration certificate from SAFE (or any other document evidencing the completion of registration issued by SAFE), provide the Trustee with (A) a certificate of the Guarantor confirming the completion of the registration of the Deed of Guarantee with SAFE in accordance with the Cross-Border Security Registration; and (B) (x) a copy of the SAFE registration certificate or (y) any other document issued by SAFE evidencing the completion of SAFE registration, and in the case of each of (x) and (y), together with the particulars of registration, each certified in English as a true and complete copy of the original signed by an Authorised Signatory of the Guarantor (the items in (A) and (B) collectively the "**Registration Documents**").

(iv) The Trustee shall have no obligation or duty to monitor or ensure the Post-Issuance Filing or the Cross-Border Security Registration on or before the Registration Deadline or to verify the accuracy, validity and/or genuineness of any documents in relation to or in connection with the Post-Issuance Filing or the Cross-Border Security Registration and/or the Registration Documents or to translate or procure any translation into English of any Registration Document that is in the Chinese language or to give notice to the Bondholders confirming the completion of the Post-Issuance Filing or the Cross-Border Security Registration, and shall not be liable to the Bondholders or any other person for not doing so.

(c) Issuer Activities

For so long as any Bond remains outstanding, save with the approval of an Extraordinary Resolution of the Bondholders, the Issuer will not conduct any business or any activities other than the incurrence and subsistence of any Relevant Indebtedness and the lending of the proceeds thereof to any of the Guarantor's Subsidiaries and affiliates and any other activities reasonably incidental thereto.

(d) Financial Information

For so long as any Bond remains outstanding, the Issuer and the Guarantor will furnish the Trustee (A) within 150 days of the end of each Relevant Period, with a Compliance Certificate of each of the Issuer and the Guarantor (on which the Trustee may rely conclusively and without liability as to such compliance) and a copy of the relevant Guarantor Audited Financial Reports in the Chinese language prepared in accordance with PRC GAAP (audited by a nationally recognised firm of independent accountants) of the Guarantor and its subsidiaries, together with the Translated Guarantor Audited Financial Reports translated by (aa) a nationally recognised firm of independent accountants or (bb) a professional translation service provider and checked by a nationally recognised firm of independent accountants, together in either case with a certificate signed by an Authorised Signatory of the Guarantor certifying that such translation is complete and accurate; and (B) within 90 days of the end of each Relevant Period, with a copy of the Guarantor Management Accounts in the Chinese language prepared on a basis consistent with the audited consolidated financial statements of the Guarantor and its subsidiaries, together with an English translation of the same translated by (aa) a nationally recognised firm of independent accountants or (bb) a professional translation service provider and checked by a nationally recognised firm of independent accountants, together in either case with a certificate signed by an Authorised Signatory of the Guarantor certifying that such translation is complete and accurate, provided that, if at any time the capital stock of the Guarantor is listed for trading on a recognised stock exchange, the Guarantor may furnish to the Trustee, as soon as they are available but in any event not more than 14 calendar days after any financial or other reports of the Guarantor are filed with the exchange on which the Guarantor's capital stock is at such time listed for trading, copies of any financial or other report filed with such exchange (and if the same are not in the English language, no translation to English shall be provided by the Guarantor) in lieu of the reports identified in this Condition 4(d).

(e) Certain Definitions

In these Conditions:

"**Compliance Certificate**" means a certificate of the Issuer or the Guarantor (as the case may be) signed by an Authorised Signatory of the Issuer or the Guarantor (as the case may be) that, having made all reasonable enquiries, to the best of the knowledge, information and belief of the Issuer or the Guarantor (as the case may be) as at a date (the "**Certification Date**") not more than five days before the date of the certificate that no Event of Default or Potential Event of Default or other breach of the Trust Deed, the Deed of Guarantee or the Bonds had occurred since the Certification Date of the last such certificate or (if none) the date of the Trust Deed or, if such an event had occurred, giving details of it;

"**Guarantor Audited Financial Reports**" means the annual audited consolidated balance sheet, income statement, statement of cash flows and statements of changes in owners' equity of the Guarantor together with (if applicable) any statements, reports (including any auditors' reports) and notes attached to or intended to be read with any of them;

"**Guarantor Management Accounts**" means the quarterly (or any other interim reporting period required by applicable law or regulations) unaudited and unreviewed consolidated balance sheet, income statement and statement of cash flows of the Guarantor;

"**Issue Date**" means 24 February 2022;

"**Listed Subsidiary**" means, at any time, any Subsidiary of the Issuer, or, as the case may be, the Guarantor, the ordinary voting shares of which are at such time listed on a recognised stock exchange, and "Listed Subsidiaries" shall be construed accordingly;

"**PRC**" means the People's Republic of China, which shall for the purposes of these Conditions, exclude Hong Kong, Macau and Taiwan;

"**PRC Business Day**" means a day (other than a Saturday, Sunday or public holiday) on which commercial banks are generally open for business in Beijing;

"**PRC GAAP**" means the Accounting Standards for Business Enterprises in PRC and all applicable guidance, bulletins and other relevant accounting regulations issued thereafter, as amended from time to time;

"**Registration Deadline**" means 5:00 p.m. (Hong Kong time) on the day falling 150 PRC Business Days after the Issue Date;

"**Relevant Indebtedness**" means any indebtedness which is in the form of, or represented or evidenced by, bonds, notes, debentures, loan stock or other securities which for the time being are, or are intended to be or capable of being, quoted, listed or dealt in or traded on any stock exchange or over-the-counter or other securities market;

"**Relevant Period**" means (i) in relation to the Guarantor Audited Financial Reports, each period of twelve months ending on the last day of its financial year (being 31 December of that financial year); and (ii) in relation to the Guarantor Management Accounts, each period of three months ending on the last day of the first quarter in its financial year (being 31 March of that financial year), each period of six months ending on the last day of its first half financial year (being 30 June of that financial year) and each period of nine months ending on the last day of the third quarter of the financial year (being 30 September of that financial year);

a "**Subsidiary**" of any person means (a) any company or other business entity of which that person owns or controls (either directly or through one or more other Subsidiaries) more than 50 per cent. of the issued share capital or other ownership interest having ordinary voting power to elect directors, managers or trustees of such company or other business entity, or (b) any company or other business entity which at any time has its accounts consolidated with those of that person or which, under the law, regulations or generally accepted accounting principles of the jurisdiction of incorporation of such person from time to time, should have its accounts consolidated with those of that person; and

"**Translated Guarantor Audited Financial Reports**" means the English translation of the annual audited consolidated balance sheet, income statement, statement of cash flows and statements of changes in owners' equity of the Guarantor together with selected key notes attached to or intended to be read with any of them.

5 INTEREST

The Bonds bear interest on their outstanding principal amount from and including 24 February 2022 at the rate of 2.95 per cent. per annum, payable semi-annually in arrear in equal instalments of US$14.75 per Calculation Amount (as defined below) on 24 February and 24 August in each year (each, an "**Interest Payment Date**") commencing on 24 August 2022. Each Bond will cease to bear interest from the due date for redemption unless, upon surrender of the Certificate representing such Bond, payment of principal is improperly withheld or refused. In such event it shall continue to bear interest at such rate (both before and after judgment) until whichever is the earlier of (a) the day on which all sums due in respect of such Bond up to that day are received by or on behalf of the relevant holder, and (b) the day falling seven days after the Trustee or the Principal Paying Agent has notified Bondholders of receipt of all sums due in respect of all the Bonds up to that seventh day (except to the extent that there is failure in the subsequent payment to the relevant holders under these Conditions).

In these Conditions, the period beginning on and including the Issue Date and ending on but excluding the first Interest Payment Date and each successive period beginning on and including an Interest Payment Date and ending on but excluding the next succeeding Interest Payment Date is called an "**Interest Period**".

Interest in respect of any Bond shall be calculated per US$1,000 in principal amount of the Bonds (the "**Calculation Amount**"). The amount of interest payable per Calculation Amount for any period shall be (save as provided in relation to equal instalments) be equal to the product of the rate of interest specified above, the Calculation Amount and the day-count fraction for the relevant period, rounding the resulting figure to the nearest cent (half a cent being rounded upwards). If interest is required to be calculated for a period of less than a complete Interest Period, the relevant day-count fraction will be determined on the basis of a 360-day year consisting of 12 months of 30 days each and in the case of an incomplete month, the number of days elapsed.

6 REDEMPTION AND PURCHASE

(a) Final Redemption

Unless previously redeemed, or purchased and cancelled, the Bonds will be redeemed at their principal amount on 24 February 2027 (the "**Maturity Date**"). The Bonds may not be redeemed at the option of the Issuer other than in accordance with this Condition 6.

(b) Redemption for Taxation Reasons

The Bonds may be redeemed at the option of the Issuer in whole, but not in part, at any time, on giving not less than 30 nor more than 60 days' notice (a "**Tax Redemption Notice**") to the Bondholders in accordance with Condition 16 (which such notice shall be irrevocable) and in writing to the Trustee and the Principal Paying Agent, at their principal amount, together with interest accrued to but excluding the date fixed for redemption, if the Issuer (or, if the Guarantee was called, the Guarantor) satisfies the Trustee immediately prior to the giving of such notice that (i) it (or, if the Guarantee was called, the Guarantor) has or will become obliged to pay Additional Tax Amounts as provided or referred to in Condition 8 as a result of any change in, or amendment to, the laws or regulations of any Relevant Jurisdiction or any political subdivision or any authority thereof or therein having power to tax, or any change in the application or official interpretation of such laws or regulations (including a judgment or order of a court of competent jurisdiction), which change or amendment becomes effective on or after 16 February 2022, and (ii) such obligation cannot be avoided by the Issuer (or, the Guarantor, as the case may be) taking reasonable measures available to it, provided that no Tax Redemption Notice shall be given earlier than 90 days prior to the earliest date on which the Issuer (or, the Guarantor, as the case may be) would be obliged to pay such Additional Tax Amounts were a payment in respect of the Bonds (or, the Guarantee, as the case may be) then due. Prior to the giving of any Tax Redemption Notice pursuant to this Condition 6(b), the Issuer (or, the Guarantor, as the case may be) shall deliver to the Trustee (A) a certificate in English signed by an Authorised Signatory of the Issuer (or by an Authorised Signatory of the Guarantor, as the case may be) stating that the obligation referred to in (i) above of this Condition 6(b) cannot be avoided by the Issuer (or, the Guarantor, as the case may be) taking reasonable measures available to it and (B) an opinion of an independent legal or tax adviser of recognised standing that the Issuer or the Guarantor, as the case may be, has or will become obliged to pay additional amounts as a result of such change or amendment or any such change in the application or official interpretation (as the case may be). The Trustee shall be entitled (but shall not be obliged) to accept and rely upon such certificate and opinion as sufficient evidence of the satisfaction of the conditions precedent set out in (i) and (ii) above of this Condition 6(b), in which event it shall be conclusive and binding on the Bondholders.

(c) Redemption for Relevant Events

At any time following the occurrence of a Relevant Event, the holder of any Bond will have the right, at such holder's option, to require the Issuer to redeem all, but not some only, of that holder's Bonds on the Put Settlement Date at 101 per cent. (in the case of a redemption for a Change of Control) or 100 per cent. (in the case of a redemption for a No Registration Event) of their principal amount, together with accrued interest to but excluding such Put Settlement Date. To exercise such right, the holder of the relevant Bond must deposit at the specified office of any Paying Agent a duly completed and signed notice of redemption, in the form for the time being current, obtainable from the specified office of any Paying Agent (a "**Put Exercise Notice**"), together with the Certificate evidencing the Bonds to be redeemed, by not later than 30 days following a Relevant Event, or, if later, 30 days following the date upon which notice thereof is given to Bondholders by the Issuer in accordance with Condition 16. The "**Put Settlement Date**" shall be the fourteenth day after the expiry of such period of 30 days as referred to above in this Condition 6(c).

A Put Exercise Notice, once delivered, shall be irrevocable and the Issuer shall redeem the Bonds the subject of the Put Exercise Notices delivered as aforesaid on the Put Settlement Date.

The Issuer shall give notice to Bondholders (in accordance with Condition 16) and to the Trustee and the Principal Paying Agent in writing by not later than 14 days following the first day on which it becomes aware of the occurrence of a Relevant Event, which notice shall specify the procedure for exercise by holders of their rights to require redemption of the Bonds pursuant to this Condition 6(c).

Neither the Trustee nor the Agents shall be required to monitor whether a Relevant Event or any event which could lead to the occurrence of a Relevant Event has occurred and shall not be liable to any person for not doing so.

For the purposes of these Conditions:

a "**Change of Control**" occurs when:

(i) the Guarantor ceases to directly or indirectly hold or own 100 per cent. of the issued share capital of the Issuer; or

(ii) SASAC and/or any other person or persons, directly or indirectly Controlled by the central government of the PRC, together cease to, directly or indirectly, hold or own at least 75 per cent. of the Guarantor's issued and outstanding share capital;

"**Control**" means, with respect to any person, the acquisition or control of more than 50 per cent. of the voting rights of the issued share capital of such person and/or the right to appoint and/or remove the majority of the members of such person's board of directors or other governing or managing body, whether obtained directly or indirectly, and whether obtained by ownership of share capital, the possession of voting rights, contract or otherwise and the terms "**Controlling**" and "**Controlled**" shall have meanings correlative to the foregoing;

a "**No Registration Event**" occurs when the Registration Conditions have not been satisfied in full on or before the Registration Deadline;

"**Registration Conditions**" means the receipt by the Trustee of the Registration Documents;

a "**Relevant Event**" means a Change of Control or a No Registration Event;

"**Relevant Jurisdiction**" means the British Virgin Islands or the PRC; and

"**SASAC**" means the State-owned Assets Supervision and Administration Commission of the PRC or its successor.

(d) Redemption at Make Whole Price at the Option of the Issuer

On giving not less than 30 nor more than 60 days' notice (a "**Make Whole Redemption Notice**") to the Trustee in writing and to the Bondholders in accordance with Condition 16, the Issuer may at any time and from time to time redeem the Bonds, in whole but not in part, at a Make Whole Price as of, and accrued and unpaid interest, if any, to (but excluding), the redemption date (the "**Make Whole Redemption Date**") specified in the Make Whole Redemption Notice.

Neither the Trustee nor the Agents shall be responsible for calculating or verifying any calculations of any amounts payable under these Conditions (including any Make Whole Price or any amount payable under any notice of redemption), and none of them shall be liable to the Bondholders, the Issuer, the Guarantor or any other person for not doing so or for any appointment of, or any calculation or determination made by, the Quotation Agent.

In this Condition 6(d):

"**Adjusted Treasury Rate**" means, with respect to any Make Whole Redemption Date, the rate per annum equal to the semi-annual equivalent yield in maturity of the Comparable Treasury Issue, assuming a price for the Comparable Treasury Issue (expressed as a percentage of its principal amount) equal to the Comparable Treasury Price for such redemption date;

"**Comparable Treasury Issue**" means the U.S. Treasury security having a maturity comparable to the then remaining term of the Bonds that would be utilised, at the time of selection and in accordance with customary financial practice, in pricing new issues of corporate debt securities of comparable maturity to most nearly equal to the Maturity Date;

"**Comparable Treasury Price**" means, with respect to any Make Whole Redemption Date:

(i) the average of the bid and asked prices for the Comparable Treasury Issue (expressed in each case as a percentage of its principal amount) on the third business day preceding such Make Whole Redemption Date, as set forth in the daily statistical release (of any successor release) published by the Federal Reserve Bank of New York and designated "Composite 3:30 p.m. Quotations for U.S. Government Securities"; or

(ii) if such release (or any successor release) is not published or does not contain such prices on such business day, (A) the average of the Reference Treasury Dealer Quotations for such Make Whole Redemption Date, after excluding the highest and lowest of such Reference Treasury Dealer Quotations, or (B) if fewer than three such Reference Treasury Dealer Quotations are available, the average of all such quotations;

"**Make Whole Price**" means, with respect to a Bond at any Make Whole Redemption Date, the amount calculated by the Quotation Agent that is the greater of (i) the present value of the principal amount of the Bonds, assuming a scheduled repayment thereof on the Maturity Date plus all required remaining scheduled interest payments due on such Bond through the Maturity Date (but excluding accrued and unpaid interest to the Make Whole Redemption Date), computed using a discount rate equal to the Adjusted Treasury Rate plus 50 basis points, and (ii) the principal amount of such Bonds;

"**Quotation Agent**" means the Reference Treasury Dealer selected by the Issuer (at the expense of the Issuer, falling whom, the Guarantor) and notified in writing to the Trustee;

"**Reference Treasury Dealer**" means each of any three investment banks of recognised standing that is a primary U.S. Government securities dealer in New York City, selected by the Issuer in good faith; and

"**Reference Treasury Dealer Quotations**" means, with respect to each Reference Treasury Dealer and any Make Whole Redemption Date, the average as determined by the Quotation Agent, of the bid and asked prices for the Comparable Treasury Issue (expressed in each case as a percentage of its principal amount) quoted in writing to such Quotation Agent by such Reference Treasury Dealer at 5:00 p.m. (New York time) on the third business day preceding such Make Whole Redemption Date.

(e) Redemption at par at the Option of the Issuer

The Issuer may, on giving not less than 30 nor more than 60 days' notice (an "**Optional Redemption Notice**") to the Bondholders in accordance with Condition 16 (which notice shall be irrevocable) and in writing to the Trustee and the Principal Paying Agent, redeem the Bonds in whole, but not in part, at any time on or after 24 January 2027, at 100 per cent. of their principal amount together with any interest accrued to but excluding the date fixed for redemption specified in the Optional Redemption Notice.

(f) Notice of Redemption

All Bonds in respect of which any notice of redemption is given under this Condition 6 shall be redeemed on the date specified in such notice in accordance with this Condition 6. If there is more than one notice of redemption given in respect of any Bond (which shall include any notice given by the Issuer pursuant to Condition 6(b), Condition 6(d) and Condition 6(e) and any Put Exercise Notice given by a Bondholder pursuant to Condition 6(c)), the notice given first in time shall prevail and in the event of two notices being given on the same date, the first to be given shall prevail.

(g) Purchase

The Issuer, the Guarantor or any of their respective Subsidiaries may at any time purchase Bonds in the open market or otherwise at any price. The Bonds so purchased, while held by or on behalf of the Issuer, the Guarantor or any such Subsidiary, shall not entitle the holder to vote at any meetings of the Bondholders and shall not be deemed to be outstanding for the purposes of, among other things, calculating quorums at meetings of the Bondholders or Conditions 9, 12(a) and 14.

(h) Cancellation

All Certificates representing Bonds redeemed or purchased by or on behalf of the Issuer, the Guarantor or any of their respective Subsidiaries shall be surrendered for cancellation to the Registrar and, upon surrender thereof, all such Bonds shall be cancelled forthwith. Any Certificates so surrendered for cancellation may not be reissued or resold and the obligations of the Issuer and the Guarantor in respect of any such Bonds shall be discharged immediately upon cancellation of the relevant Certificates.

7 PAYMENTS

(a) Method of Payment

(i) Payments of principal and premium (if any) shall be made (subject to surrender of the relevant Certificates at the specified office of any Paying Agent or of the Registrar if no further payment falls to be made in respect of the Bonds represented by such Certificates) in the manner provided in Condition 7(a)(ii).

(ii) Interest on each Bond shall be paid to the person shown as the holder on the Register at the close of business on the fifth Payment Business Day before the due date for payment thereof (the "**Record Date**"). Payments of interest on each Bond shall be made in US dollars by transfer to the registered account of the holder. In this Condition

7, a holder's "**registered account**" means the US dollar denominated account maintained by or on behalf of it with a bank that processes payments in US dollars, details of which appear on the Register at the close of business on the Record Date.

(iii) If the amount of principal being paid upon surrender of the relevant Certificate is less than the outstanding principal amount of such Certificate, the Registrar will annotate the Register with the amount of principal so paid and will (if so requested in writing by the Issuer or a Bondholder) issue a new Certificate with a principal amount equal to the remaining unpaid outstanding principal amount. If the amount of interest being paid is less than the amount then due, the Registrar will annotate the Register with the amount of interest so paid.

Notwithstanding the foregoing, so long as the Global Certificate is held on behalf of Euroclear Bank SA/NV, Clearstream Banking S.A. or any other clearing system, each payment in respect of the Global Certificate will be made to the person shown as the holder in the Register at the close of business of the relevant clearing system on the Clearing System Business Day before the due date for such payments, where "Clearing System Business Day" means a weekday (Monday to Friday, inclusive) except 25 December and 1 January.

(b) Payments subject to Fiscal Laws

All payments are subject in all cases to (i) any applicable fiscal or other laws, regulations and directives in the place of payment, but without prejudice to the provisions of Condition 8; and (ii) if applicable, any withholding or deduction required pursuant to an agreement described in Section 1471(b) of the U.S. Internal Revenue Code of 1986, as amended (the "**Code**") or otherwise imposed pursuant to Sections 1471 through 1474 of the Code, any regulations or agreements thereunder, any official interpretations thereof, or (without prejudice to the provisions of Condition 8) any law implementing an intergovernmental approach thereto. No commissions or expenses shall be charged to the Bondholders in respect of such payments.

(c) Payment Initiation

Where payment is to be made by transfer to an account in US dollars, payment instructions (for value on the due date or, if that is not a Payment Business Day, for value the first following day which is a Payment Business Day) will be initiated on the due date for payment (or, if that date is not a Payment Business Day, on the first following day which is a Payment Business Day), or, in the case of payments of principal and premium (if any) where the relevant Certificate has not been surrendered at the specified office of any Transfer Agent or of the Registrar, on a day on which the Principal Paying Agent is open for business and on which the relevant Certificate is surrendered.

(d) Agents

The Principal Paying Agent, the Registrar and the Transfer Agent initially appointed by the Issuer and the Guarantor and their respective specified offices are listed below. The Principal Paying Agent, the Registrar and the Transfer Agent act solely as agents of the Issuer and the Guarantor and do not assume any obligation or relationship of agency or trust for or with any Bondholder. The Issuer and the Guarantor reserve the right at any time with the prior written approval of the Trustee to vary or terminate the appointment of the Principal Paying Agent, the Registrar, any Transfer Agent or any of the other Agents and to appoint additional or other Agents, provided that the Issuer and the Guarantor shall at all times maintain (i) a Principal Paying Agent, (ii) a Registrar, (iii) a Transfer Agent and (iv) such other agents as may be required by any stock exchange on which the Bonds may be listed, in each case as approved in writing by the Trustee.

Notice of any such termination or appointment or any change of any specified office of an Agent shall promptly be given by the Issuer to the Bondholders.

(e) Delay in Payment

Bondholders will not be entitled to any interest or other payment for any delay after the due date in receiving the amount due on a Bond if the due date is not a Payment Business Day, if the Bondholder is late in surrendering or cannot surrender its Certificate (if required to do so).

(f) Non-Payment Business Days

If any date for payment in respect of any Bond is not a Payment Business Day, the holder shall not be entitled to payment until the next following Payment Business Day nor to any interest or other sum in respect of such postponed payment.

In this Condition 7, "**Payment Business Day**" means a day (other than a Saturday, a Sunday or a public holiday) on which banks and foreign exchange markets are open for business in New York, Hong Kong and the place in which the specified office of the Principal Paying Agent is located.

8 TAXATION

All payments of principal, premium (if applicable) and interest by or on behalf of the Issuer or the Guarantor in respect of the Bonds or under the Guarantee shall be made free and clear of, and without withholding or deduction for or account of, any present or future taxes, duties, assessments or governmental charges of whatever nature imposed, levied, collected, withheld or assessed by or within any Relevant Jurisdiction or any political subdivision or authority therein or thereof having power to tax, unless such withholding or deduction is required by law.

Where such withholding or deduction is made by the Issuer or, as the case may be, the Guarantor by or within the PRC up to and including the rate applicable on 16 February 2022 (the "**Applicable Rate**"), the Issuer or, as the case may be, the Guarantor will increase the amounts paid by it to the extent required, so that the net amount received by Bondholders equals the amounts which would otherwise have been received by them had no such withholding or deduction been required.

If the Issuer or, as the case may be, the Guarantor is required to make a deduction or withholding, (i) by or within the PRC in excess of the Applicable Rate or (ii) by or within a Relevant Jurisdiction other than the PRC, the Issuer or, as the case may be, the Guarantor shall pay such additional amounts ("**Additional Tax Amounts**") as will result in receipt by the Bondholders of such amounts as would have been received by them had no such withholding or deduction been required, except that no Additional Tax Amounts shall be payable in respect of any Bond:

(a) *Other Connection:* held by or on behalf of a holder who is liable to such taxes, duties, assessments or governmental charges in respect of such Bond by reason of his having some connection with any Relevant Jurisdiction other than the mere holding of the Bond; or

(b) *Surrender More Than 30 Days after the Relevant Date:* in respect of which the Certificate representing it is presented (where presentation is required) for payment more than 30 days after the Relevant Date except to the extent that the holder of it would have been entitled to such Additional Tax Amounts on surrendering the Certificate representing such Bond for payment on the last day of such period of 30 days.

References in these Conditions to principal, premium and interest shall be deemed also to include any Additional Tax Amounts which may be payable under this Condition 8 or any undertaking or covenant given in addition thereto or in substitution therefor pursuant to the Trust Deed.

In these Conditions, "**Relevant Date**" in respect of any Bond means the date on which payment in respect of it first becomes due or (if any amount of the money payable is improperly withheld or refused) the date on which payment in full of the amount outstanding is made or (if earlier) the date falling seven days after that on which notice is duly given to the Bondholders that, upon further surrender of the Certificate representing such Bond being made in accordance with these Conditions, such payment will be made, provided that payment is in fact made upon such surrender.

If the Issuer or the Guarantor becomes subject at any time to any taxing jurisdiction other than any Relevant Jurisdiction, references in these Conditions to any "Relevant Jurisdiction" shall be construed as including references to such other taxing jurisdiction.

Neither the Trustee nor any Agent shall be responsible for paying any tax, duty, charge, withholding or other payment referred to in this Condition 8 or for determining whether such amounts are payable or the amount thereof, and shall not be responsible or liable for any failure by the Issuer, the Guarantor, the Bondholders or any other person to (i) pay such tax, duty, charge, withholding or other payment or (ii) provide any notice or information to the Trustee or any Agent that would permit, enable or facilitate the payment of any principal, premium, interest or other amount under or in respect of the Bonds without deduction or withholding for or on account of any tax, duty, charge, withholding or other payment imposed by or in any jurisdiction.

9 EVENTS OF DEFAULT

If an Event of Default (as defined below) occurs, the Trustee at its discretion may, and if so requested in writing by holders of at least 25 per cent. of the aggregate principal amount of the Bonds then outstanding or if so directed by an Extraordinary Resolution, shall (provided in any such case that the Trustee shall have been indemnified and/or secured and/or pre-funded to its satisfaction), give notice to the Issuer and the Guarantor that the Bonds are, and they shall immediately become, due and payable at their principal amount together (if applicable) with accrued interest.

An "**Event of Default**" occurs if:

(a) *Non-Payment:* there has been a failure to pay (i) the principal of or any premium on any of the Bonds when due; or (ii) any interest on any of the Bonds within 10 days after the due date for such payment; or

(b) *Breach of Other Obligations:* the Issuer or the Guarantor does not perform or comply with any one or more of its other obligations under the Bonds or the Trust Deed or the Deed of Guarantee (other than where it gives rise to a redemption pursuant to Condition 6(c)) and such default (i) is, in the opinion of the Trustee, incapable of remedy or, (ii) being a default which is, in the opinion of the Trustee, capable of remedy, remains unremedied for 30 days after the Trustee has given written notice thereof to the Issuer or the Guarantor, as the case may be; or

(c) *Cross-Acceleration:* (i) any other present or future indebtedness of the Issuer, the Guarantor or any of the Principal Subsidiaries for or in respect of moneys borrowed or raised becomes due and payable prior to its stated maturity by reason of any actual default, event of default or the like (howsoever described), or (ii) the Issuer, the Guarantor, or any of the Principal Subsidiaries fails to pay when due any amount payable by it under any present or future guarantee for, or indemnity in respect of, any moneys borrowed or raised provided that the aggregate amount of the relevant indebtedness, guarantees and indemnities in respect of which one or more of the events mentioned above in this Condition 9(c) have occurred equals or exceeds US$100 million or its equivalent (on the basis of the middle spot rate for the relevant currency against the US dollar as quoted by any leading bank on the day on which the relevant provisions operate); or

(d) *Unsatisfied Judgement:* one or more judgement(s) or order(s) from which no further appeal or judicial review is permissible under applicable law in respect of the whole or any substantial part of its property, assets or revenues is rendered against the Issuer, the Guarantor, or any of the Principal Subsidiaries and continue(s) unsatisfied and unstayed within 60 days after the date(s) thereof or, if later, the date therein specified for payment; or

(e) *Security Enforced:* any mortgage, charge, pledge, lien or other encumbrance, present or future, created or assumed by the Issuer, the Guarantor, or any of the Principal Subsidiaries in respect of all or a substantial part of its assets becomes enforceable and any step is taken to enforce it (including the taking of possession or the appointment of a receiver, manager or other similar person) and is not discharged within 60 days; or

(f) *Insolvency:* the Issuer, the Guarantor or any of the Principal Subsidiaries is (or is, or could be, deemed by law or a court to be) insolvent or bankrupt or unable to pay its debts as and when such debts fall due, stops, suspends or threatens to stop or suspend payment of all or a substantial part of its debts, proposes or makes a general assignment or an arrangement or composition with or for the benefit of the relevant creditors in respect of any of such debts or a moratorium is agreed or declared in respect of or affecting all or any substantial part of the debts of the Issuer, the Guarantor or any of the Principal Subsidiaries; or

(g) *Winding-up:* an order of any court of competent jurisdiction is made or an effective resolution passed for the winding-up or dissolution of the Issuer, the Guarantor or any of the Principal Subsidiaries, or the Issuer, the Guarantor or any of the Principal Subsidiaries ceases or threatens to cease to carry on all or substantially all of its business or operations, except for (i) the purpose of and followed by a reconstruction, amalgamation, reorganisation, merger or consolidation on terms approved by an Extraordinary Resolution of the Bondholders, (ii) in the case of a Principal Subsidiary, whereby the undertaking and assets of such Principal Subsidiary are transferred to or otherwise vested in the Issuer, the Guarantor (as the case may be) and/or any of their respective Subsidiaries, (iii) a solvent winding-up or dissolution of any Principal Subsidiary (other than the Issuer) or (iv) a disposal on an arm's length basis where the assets resulting from such disposal are vested in the Guarantor and/or any of its Subsidiaries; or

(h) *Nationalisation:* any step is taken by any person with a view to the seizure, compulsory acquisition or expropriation of all or a substantial part of the assets of the Issuer, the Guarantor or any of the Principal Subsidiaries; or

(i) *Authorisation and Consents:* any action, condition or thing (including the obtaining or effecting of any necessary consent, approval, authorisation, exemption, filing, licence, order, recording or registration) at any time required to be taken, fulfilled or done in order (i) to enable each of the Issuer and the Guarantor lawfully to enter into, exercise their respective rights and perform and comply with their respective obligations under the Bonds, the Trust Deed, and the Deed of Guarantee, (ii) to ensure that those obligations are legally binding and enforceable and (iii) to make the Bonds, the Trust Deed, and the Deed of Guarantee admissible in evidence in the courts of Hong Kong is not taken, fulfilled or done; or

(j) *Illegality:* it is or will become unlawful for the Issuer or the Guarantor to perform or comply with any one or more of their respective obligations under any of the Bonds, the Trust Deed or the Deed of Guarantee; or

(k) *Unenforceability of Guarantee:* except as permitted under the Deed of Guarantee, any part of the Guarantee is unenforceable or invalid or shall for any reason cease to be in full force and effect or is claimed to be unenforceable, invalid or not in full force and effect by the Issuer or the Guarantor; or

(l) *Analogous Events:* any event occurs which under the laws of any relevant jurisdiction has an analogous effect to any of the events referred to in Conditions 9(d) to 9(g) (both inclusive).

In these Conditions, "**Principal Subsidiary**" means any Subsidiary of the Guarantor:

(a) whose revenue or (in the case of a Subsidiary which itself has Subsidiaries) consolidated revenue, as shown by its latest audited income statement are at least ten per cent. of the consolidated revenue as shown by the latest audited consolidated income statement of the Guarantor and its Subsidiaries; or

(b) whose gross assets or (in the case of a Subsidiary which itself has Subsidiaries) consolidated gross assets, as shown by its latest audited balance sheet are at least ten per cent. of the amount which equals the amount included in the consolidated gross assets of the Guarantor and its Subsidiaries as shown by the latest audited consolidated balance sheet of the Guarantor and its Subsidiaries including, for the avoidance of doubt, the investment of the Guarantor in each Subsidiary whose accounts are not consolidated with the consolidated audited accounts of the Guarantor and after adjustment for minority interests; or

(c) to which is transferred the whole or substantially the whole of the assets of a Subsidiary which immediately prior to such transfer was a Principal Subsidiary, provided that the Principal Subsidiary which so transfers its assets shall forthwith upon such transfer cease to be a Principal Subsidiary and the Subsidiary to which the assets are so transferred shall cease to be a Principal Subsidiary at the date on which the first audited accounts (consolidated, if appropriate) of the Guarantor prepared as of a date later than such transfer are issued unless such Subsidiary would continue to be a Principal Subsidiary on the basis of such accounts by virtue of the provisions of paragraphs (a) or (b) above of this definition;

provided that, in relation to paragraphs (a) and (b) above of this definition:

(i) in the case of a corporation or other business entity becoming a Subsidiary after the end of the financial period to which the latest consolidated audited accounts of the Guarantor relate, the reference to the then latest consolidated audited accounts of the Guarantor for the purposes of the calculation above shall, until consolidated audited accounts of the Guarantor for the financial period in which the relevant corporation or other business entity becomes a Subsidiary are published be deemed to be a reference to the then latest consolidated audited accounts of the Guarantor adjusted to consolidate the latest audited accounts (consolidated in the case of a Subsidiary which itself has Subsidiaries) of such Subsidiary in such accounts;

(ii) if at any relevant time in relation to the Guarantor or any Subsidiary which itself has Subsidiaries no consolidated accounts are prepared and audited, revenue or gross assets of the Guarantor and/or any such Subsidiary shall be determined on the basis of pro forma consolidated accounts prepared for this purpose by the Guarantor;

(iii) if at any relevant time in relation to any Subsidiary, no accounts are audited, its revenue or gross assets (consolidated, if appropriate) shall be determined on the basis of pro forma accounts (consolidated, if appropriate) of the relevant Subsidiary prepared for this purpose by the Guarantor; and

(iv) if the accounts of any subsidiary (not being a Subsidiary referred to in proviso (i) above) are not consolidated with those of the Guarantor, then the determination of whether or not such subsidiary is a Principal Subsidiary shall be based on a pro forma consolidation of its accounts (consolidated, if appropriate) with the consolidated accounts (determined on the basis of the foregoing) of the Guarantor.

A certificate signed by an Authorised Signatory of the Guarantor stating that, in his/her opinion, a Subsidiary is or is not, or was or was not, a Principal Subsidiary shall, in the absence of manifest error, be conclusive and binding on all parties.

10 PRESCRIPTION

Claims against the Issuer or the Guarantor for payment of principal, premium or interest in respect of the Bonds shall be prescribed and become void unless made within ten years (in the case of principal or premium) or five years (in the case of interest) from the appropriate Relevant Date in respect of them.

11 REPLACEMENT OF CERTIFICATES

If any Certificate is lost, stolen, mutilated, defaced or destroyed, it may be replaced at the specified office of the Registrar or any Transfer Agent, subject to all applicable laws and stock exchange or other relevant authority requirements, upon payment by the claimant of the expenses incurred in connection with such replacement and on such terms as to evidence, security, indemnity and otherwise as the Issuer and/or such Agent may require. Mutilated or defaced Certificates must be surrendered before replacements will be issued.

12 MEETINGS OF BONDHOLDERS, MODIFICATION AND WAIVER

(a) Meetings of Bondholders

The Trust Deed contains provisions for convening meetings of Bondholders to consider matters affecting their interests, including the sanctioning by Extraordinary Resolution of a modification of any of these Conditions or any provisions of the Deed of Guarantee, the Agency Agreement or the Trust Deed. Such a meeting may be convened by the Issuer, the Guarantor or the Trustee, and shall be convened by the Trustee if requested in writing by Bondholders holding not less than 10 per cent. in aggregate principal amount of the Bonds for the time being outstanding and subject to it being indemnified and/or secured and/or pre-funded to its satisfaction against all costs and expenses. The quorum for any meeting convened to consider an Extraordinary Resolution will be two or more persons holding or representing more than 50 per cent. in aggregate principal amount of the Bonds for the time being outstanding, or at any adjourned meeting two or more persons being or representing Bondholders whatever the principal amount of the Bonds held or represented, unless the business of such meeting includes consideration of proposals, *inter alia*, (i) to modify the maturity of the Bonds or the dates on which interest is payable in respect of the Bonds, (ii) to reduce or cancel the principal amount of, or interest on, the Bonds, (iii) to change the currency of payment of the Bonds, (iv) to modify the provisions concerning the quorum required at any meeting of Bondholders or the majority required to pass an Extraordinary Resolution, or (v) to modify or terminate the Deed of Guarantee other than in accordance with Condition 12(b), in which case the necessary quorum will be two or more persons holding or representing not less than 75 per cent., or at any adjourned meeting not less than 25 per cent., in aggregate principal amount of the Bonds for the time being outstanding. Any Extraordinary Resolution duly passed shall be binding on Bondholders (whether or not they were present at the meeting at which such resolution was passed).

The Trust Deed provides that a resolution in writing signed by or on behalf of the holders of not less than 90 per cent. in aggregate principal amount of the Bonds for the time being outstanding shall for all purposes be as valid and effective as an Extraordinary Resolution passed at a meeting of Bondholders duly convened and held. Such a resolution in writing may be contained in one document or several documents in the same form, each signed by or on behalf of one or more Bondholders.

(b) Modification of the Conditions, the Trust Deed, the Agency Agreement and the Deed of Guarantee

The Trustee may (but shall not be obliged to) agree, without the consent of the Bondholders, to (i) any modification of any of these Conditions or any of the provisions of the Deed of Guarantee, the Trust Deed or the Agency Agreement which, in its opinion, is of a formal, minor or technical nature or is made to correct a manifest error or to comply with any mandatory provision of law, and (ii) any other modification (except as mentioned in the Trust Deed), and any waiver or authorisation of any breach or proposed breach, of any of these Conditions or any of the provisions of the Deed of Guarantee, the Trust Deed or the Agency Agreement that is in the opinion of the Trustee not materially prejudicial to the interests of the Bondholders. Any such modification, authorisation or waiver shall be binding on the Bondholders and, unless the Trustee otherwise agrees, such modification, authorisation or waiver shall be notified by the Issuer, failing whom, the Guarantor, to the Bondholders as soon as practicable.

(c) Entitlement of the Trustee

In connection with the exercise of its functions, rights, powers and discretions (including but not limited to those referred to in this Condition 12), the Trustee shall have regard to the interests of the Bondholders as a class and shall not have regard to the consequences of such exercise for individual Bondholders, and the Trustee shall not be entitled to require on behalf of any Bondholder, nor shall any Bondholder be entitled to claim, from the Issuer, the Guarantor or the Trustee, any indemnification or payment in respect of any tax consequence of any such exercise upon individual Bondholders.

(d) Certificates and Reports

The Trustee may rely without liability to Bondholders, the Issuer, the Guarantor or any other person on any report, confirmation, certificate or information from or any advice or opinion of any lawyers, accountants, financial advisers, financial institution or any other expert, whether or not addressed to it and whether their liability in relation thereto is limited (by its terms or by any engagement letter relating thereto entered into by the Trustee or in any other manner) by reference to a monetary cap, methodology or otherwise. The Trustee may accept and shall be entitled to rely on any such report, confirmation, certificate, information, advice or opinion, and, in such event, such report, confirmation, certificate, information, advice or opinion shall be binding on the Bondholders.

13 FURTHER ISSUES

The Issuer may from time to time without the consent of the Bondholders create and issue further bonds having the same terms and conditions as the Bonds in all respects (or in all respects except for the issue date, the issue price, the first payment of interest on them, the timing for the Post-Issuance Filing with the NDRC and the timing for completion of the Cross-Border Security Registration) and so that such further issue shall be consolidated and form a single series with the outstanding Bonds. References in these Conditions to the Bonds include (unless the context requires otherwise) any other bonds issued pursuant to this Condition 13 and consolidated and forming a single series with the Bonds. Any further bonds consolidated and forming a single series with the outstanding Bonds shall be constituted by a deed supplemental to the Trust Deed and be guaranteed by the Guarantor pursuant to an additional deed of guarantee or a deed supplemental to the Deed of Guarantee, provided that such supplemental documents are executed and further opinions are obtained as the Trustee may require.

14 ENFORCEMENT

At any time after the Bonds become due and payable, the Trustee may, at its discretion and without further notice, institute such proceedings against the Issuer or the Guarantor as it may think fit to enforce the terms of the Trust Deed, the Deed of Guarantee and the Bonds, but it need not take any such proceedings unless (a) it shall have been so directed by an Extraordinary Resolution or so requested in writing by Bondholders holding at least 25 per cent. in principal amount of the Bonds outstanding, and (b) it shall have been indemnified and/or secured and/or pre-funded to its satisfaction. No Bondholder may proceed directly against the Issuer or the Guarantor unless the Trustee, having become bound so to proceed, fails to do so within a reasonable time and such failure is continuing.

15 INDEMNIFICATION OF THE TRUSTEE AND THE AGENTS

Under the Trust Deed, the Trustee is entitled to be indemnified and/or secured and/or pre-funded to its satisfaction and to be relieved from responsibility in certain circumstances and to be paid its fees, costs, expenses, indemnity payments and all other amounts in priority to the claims of the holders. In addition, the Trustee is entitled to enter into business transactions with the Issuer, the Guarantor and any entity related to the Issuer or the Guarantor without accounting for any profit.

In the exercise of its powers and discretions under these Conditions and the Trust Deed, the Trustee will have regard to the interests of the Bondholders as a class and will not be responsible for any consequence for any individual Bondholder as a result of such Bondholder being connected in any way with a particular territory or taxing jurisdiction.

Whenever the Trustee is required or entitled by the terms of the Trust Deed, the Deed of Guarantee, the Agency Agreement or these Conditions to exercise any discretion or power, take any action, make any decision or give any direction, the Trustee is entitled, prior to exercising any such discretion or power, taking any such action, making any such decision or giving any such direction, to seek directions from the Bondholders by way of Extraordinary Resolution, and the Trustee shall not be responsible for any loss or liability incurred by the Issuer, the Guarantor, the Bondholders or any other person as a result of any delay in it exercising such discretion or power, taking such action, making such decision or giving such direction as a result of seeking such direction from the Bondholders or in the event that no direction is given to the Trustee by the Bondholders.

None of the Trustee or any of the Agents shall be responsible for the performance by the Issuer, the Guarantor and any other person appointed by the Issuer and/or the Guarantor under the Trust Deed, the Deed of Guarantee, the Agency Agreement or these Conditions or in relation to the Bonds of the duties and obligations on their part expressed in respect of the same and, unless it has written notice from the Issuer or the Guarantor to the contrary, the Trustee and each Agent shall be entitled to assume that the same are being duly performed. None of the Trustee or any Agent shall be liable to any Bondholder, the Issuer, the Guarantor or any other person for any action taken by the Trustee or any Agent in accordance with the instructions of the Bondholders. The Trustee shall be entitled to rely on any direction, request or resolution of Bondholders given by Bondholders holding the requisite principal amount of Bonds outstanding or passed at a meeting of Bondholders convened and held in accordance with the Trust Deed. Neither Trustee nor any of the Agents shall be under any obligation to monitor or take any steps to ascertain whether an Event of Default, a Potential Event of Default or Relevant Event has occurred or monitor compliance by the Issuer or the Guarantor with the provisions of the Trust Deed, the Deed of Guarantee, the Agency Agreement or these Conditions, and shall not be liable to the holders or any other person for not doing so.

Each Bondholder shall be solely responsible for making and continuing to make its own independent appraisal and investigation into the financial condition, creditworthiness, condition, affairs, status and nature of the Issuer, the Guarantor and their respective Subsidiaries, and the Trustee shall not at any time have any responsibility or liability for the same and no party (including any Bondholder) shall rely on the Trustee in respect thereof.

16 NOTICES

Notices to the holders of the Bonds will be valid if (a) made in writing in English and mailed to them by uninsured mail at the Issuer's (failing whom, the Guarantor's) expense at its addresses in the Register maintained by the Registrar and deemed to have been given on the fourth weekday (being a day other than a Saturday, Sunday or public holiday) after the date of mailing; or (b) published at the Issuer's (failing whom, the Guarantor's) expense in a leading English language daily newspaper having general circulation in Asia (which is expected to be The Wall Street Journal Asia). If publication of such notice is required pursuant to the rules and regulations of any stock exchange or other relevant authority on which the Bonds are for the time being listed, the Issuer shall also ensure that notices are duly published in a manner that complies with such rules and regulations. Any such notice shall be deemed to have been given on the date of such publication or, if published more than once, on the first date on which publication is made.

So long as the Global Certificate is held by or on behalf of Euroclear Bank SA/NV, Clearstream Banking S.A. or any other clearing system, any notice to the holders of the Bonds shall be validly given by the delivery of such notice to the relevant clearing system, for communication by such clearing system to the entitled accountholders in substitution for notification as required by the Conditions and shall be deemed to have been given on the date of delivery to such clearing system.

17 CONTRACTS (RIGHTS OF THIRD PARTIES) ACT 1999

No person shall have any right to enforce any term or condition of the Bonds or any provision of the Trust Deed under the Contracts (Rights of Third Parties) Act 1999 except to the extent expressly provided for in these Conditions and in the Trust Deed.

18 GOVERNING LAW AND JURISDICTION

(a) Governing Law

The Bonds, the Trust Deed, the Agency Agreement and the Deed of Guarantee and any non-contractual obligations arising out of or in connection with them, are all governed by and shall be construed in accordance with English law.

(b) Jurisdiction

The courts of Hong Kong are to have exclusive jurisdiction to settle any disputes which may arise out of or in connection with the Bonds, the Trust Deed, the Agency Agreement and the Deed of Guarantee and accordingly any legal action or proceedings arising out of or in connection with the Bonds, the Trust Deed, the Agency Agreement and the Deed of Guarantee ("**Proceedings**") may be brought in such courts. Each of the Issuer and the Guarantor has irrevocably submitted to the jurisdiction of such courts.

(c) Service of Process

Pursuant to the Trust Deed, the Agency Agreement and the Deed of Guarantee, each of the Issuer and the Guarantor has irrevocably appointed Aluminum Corporation of China Overseas Holdings Limited currently at Room 4501, 45/F, Far East Finance Centre, No. 16 Harcourt Road, Admiralty, Hong Kong, to receive service of process in any Proceedings in Hong Kong based on the Bonds, the Trust Deed, the Agency Agreement and the Deed of Guarantee. Such service shall be deemed completed on delivery to such agent (whether or not it is forwarded to and received by the Issuer or the Guarantor, as the case may be). If for any reason the Issuer and/or the Guarantor ceases to have such an agent in Hong Kong, the Issuer and the Guarantor each irrevocably agrees to forthwith appoint a substitute process agent in Hong Kong and deliver to the Trustee a copy of the agent's acceptance of that appointment within 30 days of such cessation. Nothing herein shall affect the right to serve process in any manner permitted by law.

(d) Waiver of Immunity

Each of the Issuer and the Guarantor has waived any right to claim sovereign or other immunity from jurisdiction or execution and any similar defence, and has irrevocably consented to the giving of any relief or the issue of any process, including, without limitation, the making, enforcement or execution against any property whatsoever (irrespective of its use or intended use) of any order or judgment made or given in connection with any Proceedings.

SUMMARY OF PROVISIONS RELATING TO THE BONDS WHILE IN GLOBAL FORM

The Global Certificate contains provisions which apply to the Bonds while they are in global form, some of which modify the effect of the Terms and Conditions of the Bonds set out in this Offering Circular. The following is a summary of certain of those provisions. Defined terms used in this section shall have the meanings given to them in the Terms and Conditions of the Bonds.

The Bonds will be represented by the Global Certificate which will be registered in the name of a nominee of, and deposited with, a common depositary on behalf of Euroclear and Clearstream.

Under the Global Certificate, the Issuer will promise to pay such principal, interest and premium (if any) on the Bonds to the holder of the Bonds on such date or dates as the same may become payable in accordance with the Terms and Conditions of the Bonds, save that the calculation is made in respect of the total aggregate principal amount of the Bonds represented by the Global Certificate, together with such other sums and additional amounts (if any) as may be payable under the Terms and Conditions of the Bonds, in accordance with the Terms and Conditions of the Bonds.

Owners of interests in the Bonds in respect of which the Global Certificate is issued will be entitled to have title to the Bonds registered in their names and to receive individual definitive Certificates if Euroclear or Clearstream, or any other clearing system (an "**Alternative Clearing System**"), is closed for business for a continuous period of 14 days (other than by reason of holidays, statutory or otherwise) or announces an intention permanently to cease business or does in fact do so. In such circumstances, the Issuer will cause sufficient individual definitive Certificates to be executed and delivered to the Registrar for completion, authentication and despatch to the relevant holders of the Bonds. A person with an interest in the Bonds in respect of which the Global Certificate is issued must provide the Registrar with not less than 30 days' notice at its specified office of such holder's intention to effect such exchange and a written order containing instructions and such other information as the Issuer and the Registrar may require to complete, execute and deliver such individual definitive Certificates.

In addition, the Global Certificate will contain provisions which modify the Terms and Conditions of the Bonds as they apply to the Bonds evidenced by the Global Certificate. The following is a summary of certain of those provisions:

Notices: So long as the Bonds are represented by the Global Certificate and the Global Certificate is held on behalf of Euroclear or Clearstream or any Alternative Clearing System, notices to holders of the Bonds may be given by delivery of the relevant notice to Euroclear or Clearstream or such Alternative Clearing System, for communication by it to entitled accountholders in substitution for notification as required by the Terms and Conditions of the Bonds.

Meetings: For the purposes of any meeting of Bondholders, the holder of the Bonds represented by the Global Certificate shall (unless the Global Certificate represents only one Bond) be treated as two persons for the purposes of any quorum requirements of a meeting of Bondholders and as being entitled to one vote in respect of each US$1,000 in principal amount of the Bonds held.

Bondholder's Redemption: The Bondholder's redemption option in Condition 6(c) of the Terms and Conditions of the Bonds may be exercised by the holder of the Global Certificate giving notice to any Paying Agent of the principal amount of the Bonds in respect of which the option is exercised within the time limits specified in the Conditions.

Issuer's Redemption: The option of the Issuer provided for in Conditions 6(b), 6(d) and 6(e) of the Terms and Conditions of the Bonds shall each be exercised by the Issuer giving notice to the Bondholders within the time limits set out in and containing the information required by the relevant Condition of the Terms and Conditions of the Bonds.

Transfers: Transfers of the beneficial interests in the Bonds represented by the Global Certificate will be effected through the records of Euroclear, Clearstream (or any Alternative Clearing System) and their respective participants in accordance with the rules and operating procedures of Euroclear, Clearstream (or any Alternative Clearing System) and their respective participants.

Cancellation: Cancellation of any Bond represented by the Global Certificate which is required by the Conditions to be cancelled will be effected by reduction in the principal amount of the Bonds in the register of Bondholders and the Global Certificate on its presentation to or to the order of the Registrar for annotation (for information only).

Trustee's Powers: In considering the interests of Bondholders while the Global Certificate is registered in the name of a nominee for a clearing system, the Trustee may, to the extent it considers it appropriate to do so in the circumstances, but without being obligated to do so, (a) have regard to any information as may have been made available to it by or on behalf of the relevant clearing system or its operator as to the identity of its accountholders (either individually or by way of category) with entitlements in respect of the Bonds and (b) consider such interests on the basis that such accountholders were the holders of the Bonds in respect of which the Global Certificate is issued.

The Global Certificate is evidence of entitlement only. Title to the Bonds passes only on due registration in the register of Bondholders and only the duly registered holder is entitled to payments on Bonds in respect of which the Global Certificate is issued.

The Global Certificate shall not become valid for any purpose until authenticated by or on behalf of the Registrar.

CAPITALISATION AND INDEBTEDNESS

The following table sets forth the consolidated current and non-current borrowings, total long-term indebtedness, total equity and total capitalisation of the Group as at 31 December 2020 and adjusted to give effect to the issue of the Bonds before deducting the underwriting fees and commissions and other estimated expenses payable in connection with this offering. The following table should be read in conjunction with the Audited Financial Statements and related notes included elsewhere in this Offering Circular:

	As at 31 December 2020			
	Actual		As adjusted	
	(Audited)		(Unaudited)	
	(RMB in millions)	(US$ in millions)(1)	(RMB in millions)	(US$ in millions)(1)
Current borrowings				
Short-term loans	91,491.4	14,021.7	91,491.4	14,021.7
Long-term loans due within one year	12,445.7	1,907.4	12,445.7	1,907.4
Bonds payable due within one year	19,111.7	2,929.0	19,111.7	2,929.0
Short-term bonds payable	25,367.2	3,887.7	25,367.2	3,887.7
Non-current borrowings				
Long-term borrowings(2)	115,821.5	17,750.4	115,821.5	17,750.4
Bonds payable(3)	36,815.6	5,642.2	36,815.6	5,642.2
Bonds to be issued	—	—	3,915.0	600.0
Total long-term indebtedness	**152,637.1**	**23,392.7**	**156,552.1**	**23,992.7**
Total equity(4)	**227,545.2**	**34,872.8**	**227,545.2**	**34,872.8**
Total capitalisation(5)	**380,182.3**	**58,265.5**	**384,097.3**	**58,865.5**

(1) The translation of Renminbi amounts into U.S. dollar amounts has been made at the rate of RMB6.5250 to US$1.00.

(2) As at the date of this Offering Circular, the Group's long-term borrowings increased as compared to 31 December 2020, primarily due to the increase of long-term borrowings of the Guarantor and the Group's copper business segment.

(3) As at 30 September 2021, the Group's bonds payable increased to RMB45,485.1 million due to onshore and offshore issuances by the Guarantor and certain of its subsidiaries, including the 2021 Bonds issued by the Issuer.

(4) As at the date of this Offering Circular, the Group's total equity increased as compared to 31 December 2020, primarily due to the Group's profit for the year ended 31 December 2021.

(5) Total capitalisation represents the sum of total long-term indebtedness and total equity.

Except as disclosed above, there has been no material change in the consolidated capitalisation and indebtedness of the Group since 31 December 2020.

DESCRIPTION OF THE ISSUER

FORMATION

The Issuer was incorporated as a company with limited liability on 28 June 2016 under the laws of the British Virgin Islands. The registered office of the Issuer is at the offices of Intertrust Corporate Services (BVI) Limited, Ritter House, Wickhams Cay II, Road Town Tortola VG1110, British Virgin Islands. As at the date of this Offering Circular, the Issuer is authorised to issue a maximum of 50,000 shares of one class of shares of par value U.S.$1.00 and the Issuer has 1,000 shares in issue.

BUSINESS ACTIVITIES

The Issuer is a wholly-owned subsidiary of Chinalco Overseas, which is wholly-owned by the Guarantor. As at the date of this Offering Circular, the Issuer has not engaged, since its incorporation, in any material activities, other than those in connection with or ancillary to issuing the 2016 Bonds, the 2017 Bonds, the 2019 Securities, the 2021 Bonds and entering into arrangements for the proposed issue of the Bonds. As at the date of this Offering Circular, the Issuer has no subsidiaries or employees.

DIRECTORS

The directors of the Issuer as at the date of this Offering Circular are Mr. Hu Zhenjie, Ms. Shan Shulan and Ms. Hu Weixi.

SHARE CAPITAL

As at the date of this Offering Circular, the Issuer is authorised to issue a maximum of 50,000 shares of a single class each with a par value of US$1.00. As at the date of this Offering Circular, 1,000 ordinary shares, which are held by the Guarantor, had been issued and credited as fully paid, representing the entire issued shares of the Issuer. None of the equity securities of the Issuer was listed or dealt in on any stock exchange and no listing or permission to deal in such securities was being or was proposed to be sought as at the date of this Offering Circular.

FINANCIAL STATEMENTS

As at the date of this Offering Circular, the Issuer has not prepared any financial statements and has no outstanding borrowings or contingent liabilities other than those in connection with the 2016 Bonds, the 2017 Bonds, the 2019 Securities the 2021 Bonds and the proposed issue of the Bonds.

DESCRIPTION OF THE GROUP

OVERVIEW

The Group is a leading diversified and vertically integrated producer of non-ferrous metals in China with a primary focus on alumina, primary aluminium, copper, lead-zinc and various rare earth metals. Chinalco believes that:

- the Group is the largest supplier of electrolytic aluminium and alumina globally;
- the Group ranks first in terms of overall competitiveness among copper enterprises in the PRC for the year ended 31 December 2020;
- the Group has the largest lead-zinc reserves in China, which ranks the fourth largest globally; and
- the Group occupies a dominant market position in the rare earth metals industry with operations covering the complete industry chain and it has the capacity to drive industry consolidation.

The Group principally engages in exploration and mining of mineral resources, refining, smelting, fabrication and trading of non-ferrous metals, mainly bauxite, alumina, primary aluminium, copper, lead-zinc and rare earth metals. In addition, the Group also derives revenue from other services including engineering and technical services, mineral resources development, overseas investment and financial services.

Established in 2001, Chinalco is a directly supervised state-owned core enterprise of SASAC, with 90 per cent. of its equity interest held by SASAC and the rest held by the National Social Security Fund. The Group also owns China's first alumina plant, first electrolytic aluminium plant and its first aluminium processing plant. Three of its subsidiaries focusing on aluminium, copper and rare earth were bestowed "National Level" status. As at 31 December 2020, the Group had an issued share capital of RMB25.20 billion and a total asset value of RMB632.40 billion. The Group has operations in over 20 countries and regions, including over 30 provinces, cities and autonomous regions in China, and as at 31 December 2020, the Guarantor had approximately 500 subordinate entities worldwide. According to *Fortune Magazine*, Chinalco has been a Fortune Global 500 company for 13 consecutive years since 2008 and was ranked 217th among the Fortune Global 500 in 2020. As at 5 January 2022, Chinalco controlled six listed companies in the PRC with a total market capitalisation of approximately RMB207 billion.

In 2018, China Copper, which was then wholly owned by the Guarantor, entered into a transfer agreement in respect of the equity interest in Yunnan Metallurgical, pursuant to which Yunnan SASAC agreed to transfer its 51 per cent. equity interest in Yunnan Metallurgical to China Copper without consideration. The acquisition of Yunnan Metallurgical by the Group was completed at the end of 2018 with the financial positions of Yunnan Metallurgical consolidated into the audited consolidated balance sheet of the Guarantor as at 31 December 2018. The results of operation of Yunnan Metallurgical were not consolidated into the audited consolidated income statement of the Guarantor for the year ended 31 December 2018 but have been consolidated into the audited consolidated income statement of the Guarantor since 2019. As at 31 December 2020, the Guarantor owned approximately 69.32 per cent. of the equity interest in China Copper. In 2018, China Copper also acquired the entire equity interest of Jinding Zinc, a company primarily engaged in zinc and lead business, the financial position and results of operation of which have been consolidated into the Group since January 2019.

The Group's principal lines of business include the following:

- ***Aluminium business:*** The Group's aluminium business is principally conducted by Chalco and Yunnan Aluminum, with its aluminium fabrication business through the Guarantor and its various subsidiaries.

  - Chalco is a leading enterprise in the non-ferrous metal industry, and in terms of comprehensive scale, it ranked among the top enterprises in the global aluminium industry. Chalco has been listed on the Hong Kong Stock Exchange since December 2001 (stock code: 2600), on the New York Stock Exchange (by way of American Depositary Receipts) since December 2001 (ticker symbol: ACH) and on the Shanghai Stock Exchange since April 2007 (stock code: 601600).

  - Yunnan Aluminum is a company listed on the Shenzhen Stock Exchange (stock code: 000807) that primarily engages in bauxite mining, aluminium production, smelting, fabrication and carbon production. The Group acquired Yunnan Aluminum through the acquisition of Yunnan Metallurgical at the end of 2018.

  The Group's aluminium business principally involves bauxite mining, the production and sale of alumina, primary aluminium and aluminium alloy products, the operation of coal and electricity businesses, trading of non-ferrous metal products as well as a logistics business. As at 31 December 2020, the Group's smelting capacity in respect of aluminium oxide and electrolytic aluminium and its processing capacity in respect of aluminium reached 22,000 kilotonnes, 7,970 kilotonnes and 1,840 kilotonnes, respectively. The aluminium business is the Group's largest business line, accounting for 62.83 per cent. and 59.22 per cent. of the Group's operating revenue for the years ended 31 December 2019 and 2020, respectively.

- ***Copper business:*** The Group's copper business is principally conducted by China Copper. China Copper has four principal subsidiaries in this segment, being Yunnan Copper Industry, Chinalco Luoyang Copper, CMC and Yunnan Metallurgical.

  - Yunnan Copper Industry is a leading copper producer in China engaging in the production of high-purity copper cathode, copper wire bar for electrical purposes, industrial sulphuric acid, gold ingots, silver ingots, round copper wire for electrical purposes, bluestone and the recycling of various metals such as gold, silver, aluminium, bismuth, tin, platinum and palladium. It is also the controlling shareholder of Yunnan Copper, which was listed on the Shenzhen Stock Exchange in June 1998 (stock code: 000878).

  - Chinalco Luoyang Copper is an influential non-ferrous metal producer. Chinalco Luoyang Copper has productions lines with line(s) specialised in copper/copper alloy fabrication and in aluminium/aluminium alloy and magnesium/magnesium alloy fabrication.

    - CMC is designed to be one of the Group's core overseas platforms for the future acquisition, investment, development and operation of non-ferrous and non-aluminium mineral resources and projects. It owns the Toromocho Project in Central Peru, one of the largest copper mines in the world.

    - Yunnan Metallurgical is a leading company in the non-ferrous industry in China. Yunnan Metallurgical is the controlling shareholder of two listed companies, namely, Chihong Zn&Ge and Yunnan Aluminum. The Yunnan Metallurgical Group also engages various copper-related businesses including copper trading, copper export and import, copper exploration and mining.

  The Group's copper business principally involves copper mining, copper refining and production and copper fabrication.

- ***Lead-zinc business:*** The Group's lead and zinc business is principally conducted by Chihong Zn&Ge and Jinding Zinc. Key to the Group's strategy in its lead-zinc business is the acquisition of Yunnan Metallurgical, the controlling shareholder of Chihong Zn&Ge.

    - Chihong Zn&Ge is a company listed on the Shanghai Stock Exchange (stock code: 600497) with a leading position in the PRC lead-zinc industry and a fully integrated business line covering mining, concentration, metallurgy, refinery, trading, research and development. Chihong Zn&Ge owns Huize mine and Yiliang mine, two lead-zinc mines with top grades in the world. The Selwyn Project operated by Chihong Zn&Ge, with an estimated lead-zinc mine deposit of approximately 26.9 million tonnes, is one of the world's largest lead-zinc projects.

    - Jinding Zinc mainly engages in the non-ferrous metals fabrication industry. Jinding Zinc owns the largest lead and zinc mine — Lanping mine, of Asia, whose deposit amounts to 9.95 million tonnes as at 31 December 2020.

- ***Rare earth metals business:*** The Group's rare earth metals business is principally conducted by China Rare Earth & Metals, which produces and sells a wide range of rare earth products, such as titanium, molybdenum, tungsten, bismuth, tin, nickel and cobalt. As at 31 December 2020, the Group's smelting capacity in respect of rare earth metals reached 17.2 kilotonnes.

- ***Engineering and technical services business:*** The Group's engineering and technical services business is principally conducted through Chalieco. Chalieco was listed on the Hong Kong Stock Exchange in July 2012 (stock code: 2068) and on the Shanghai Stock Exchange in August 2018 (stock code: 601068) and is a leading technology, engineering services and equipment provider in the non-ferrous metals industry in the PRC and provides fully integrated engineering solutions covering the complete value chain of the non-ferrous metals industry.

- ***Other businesses:*** The Group also runs a number of ancillary businesses, which support its principal businesses, including mineral resource development, overseas investment and financial services.

For the years ended 31 December 2019 and 2020, the Group recorded an operating revenue of RMB356.82 billion and RMB367.02 billion, respectively. As at 31 December 2019 and 2020, the Group's total assets amounted to RMB652.35 billion and RMB632.40 billion, respectively.

The following table sets forth the Group's operating revenue breakdown by business line for the periods indicated:

Principal business lines	For the year ended 31 December			
	2019		2020	
	(RMB million)	%	(RMB million)	%
Aluminium	224,170.37	62.83	217,347.89	59.22
Copper[(1)]	133,169.79	37.32	152,902.92	41.66
Rare Earth Metals	4,121.69	1.16	4,110.92	1.12
Engineering and Technical Services	31,059.79	8.70	23,025.95	6.27
Others	12,849.58	3.60	4,445.29	1.21
Elimination	48,554.11	13.61	34,813.06	9.49
Total	**356,817.11**	**100**	**367,019.91**	**100**

(1) Operating revenue of the lead-zinc business is included in that of the copper business.

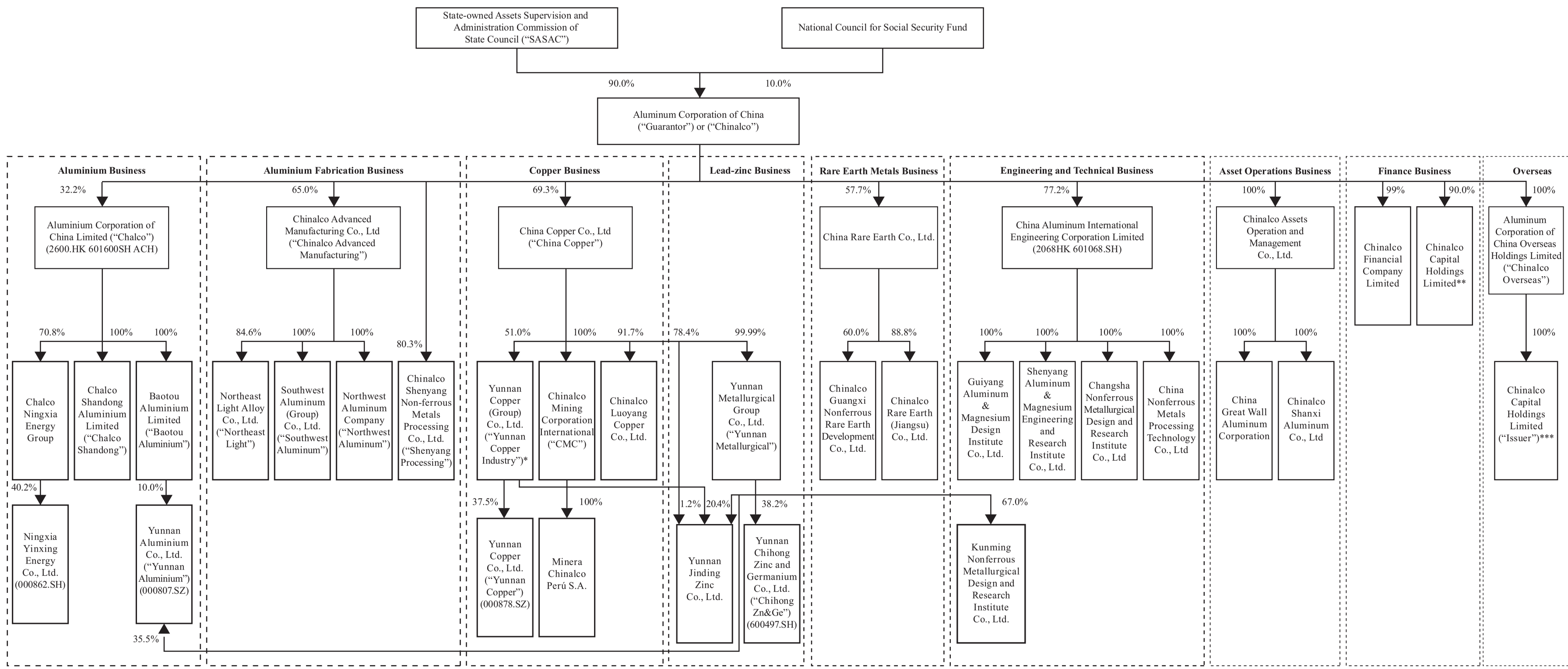
The following table sets forth the Group's gross profit and gross profit margin by business line for the periods indicated:

Principal business lines	For the year ended 31 December			
	2019		2020	
	Gross profit	Gross profit margin	Gross profit	Gross profit margin
	(RMB million)	%	(RMB million)	%
Aluminium	17,082	8.98	19,518	10.49
Copper[(1)]	12,572	9.44	13,070	8.55
Rare Earth Metals	376	9.12	437	10.63
Others	6,640	14.75	7,118	12.32
Elimination	159	0.98	1,093	3.20
Total	**36,511**	**10.24**	**39,050**	**10.65**

(1) Gross profit of the lead-zinc business is included in that of the copper business.

SIMPLIFIED CORPORATE STRUCTURE

The following chart sets forth a simplified corporate structure of the Group as at 31 December 2020:



* Yunnan Copper Industry is 51 per cent. held by China Copper and 49 per cent. held by Yunnan Metallurgical.

** Chinalco Capital Holdings Limited (中鋁資本控股有限公司) is a PRC-incorporated company that primarily engages in the finance business of the Group.

*** The Issuer (Chinalco Capital Holdings Limited) is a company incorporated with limited liability in the British Virgin Islands

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1 *Note: percentages of shareholding in this chart are calculated based on shareholdings of persons acting in concert.*

CORPORATE HISTORY AND MILESTONES

Chinalco's history can be traced back to 1979 when the Non-ferrous Metals Company (Headquarters) of the Ministry of Metallurgical Industry (冶金部有色金屬公司(總局)) was established. Following three successive stages of corporate restructuring, the Non-ferrous Metals Company (Headquarters) of the Ministry of Metallurgical Industry was re-established as China Non- ferrous Metals Industry Corporation (中國有色金屬工業總公司) in 1983, and subsequently the State Administration of Non-ferrous Metals Industry (國家有色金屬工業局), and was later divided into three non-ferrous metals corporations of China, encompassing China Copper Lead Zinc Corporation (中國銅鉛鋅集團公司), China Aluminum Corporation (中國鋁業集團公司) and China Rare Earths Corporation (中國稀有稀土集團公司).

On 23 February 2001, Chinalco was established as a wholly owned and directly supervised state-owned enterprise of SASAC. As at 31 December 2020, 90 per cent. of the equity interest in Chinalco was held by SASAC with the rest held by the National Social Security Fund. Upon establishment, Chinalco initially held eight aluminium entities, two engineering entities and two research and design institutes. After two decades of organic growth and strategic expansion in China and around the world, as at 31 December 2020, Chinalco held approximately 500 subordinate entities. The table below sets out Chinalco's major corporate milestones since inception:

Time	Milestone Event
February 2001	Chinalco was established in China.
December 2001	Chalco was listed on the Hong Kong Stock Exchange and the New York Stock Exchange (through American Depositary Receipts), respectively.
April 2007	Chalco was listed on the Shanghai Stock Exchange.
August 2007	Chinalco acquired all the shares of Canada-incorporated Peru Copper Inc. for a consideration of approximately CAD$820.0 million, which held the Toromocho Project in central Peru through two layers of wholly owned subsidiaries, CMC and Minera Peru Copper S.A. (presently known as "**Minera Chalco Peru S.A.**"), respectively. This marked the Group's entry into the copper business.
October 2007	Chinalco signed a strategic collaboration agreement with the People's Government of Yunnan Province regarding the Guarantor's capital injection into Yunnan Copper Industry.
February 2008	Chinalco acquired a 12.0 per cent. equity interest in Rio Tinto (representing 9.33 per cent. of the equity interest of Rio Tinto Group) together with Alcoa. After Alcoa's exit, Chinalco became the single largest shareholder of Rio Tinto Group. Chalco contributed approximately RMB1.0 billion and became a 5.3 per cent. shareholder in Commercial Aircraft Corp. of China ("**COMAC**") when it was established in Shanghai in 2008 and became its strategic partner.

Time	Milestone Event
June 2010	SASAC authorised the expansion of Chinalco's business scope to the exploration, development and processing of all mineral resources except petroleum and natural gas.
July 2010	Chalco signed a joint development agreement with the Rio Tinto Group for the establishment of a joint venture company to develop the Simandou iron mine in Guinea.
June 2011	Chinalco Jiangsu Rare Earth Co. Ltd. (中鋁稀土江蘇有限公司) ("**Jiangsu Rare Earth**") was established, which marked the Group's entry into the rare earth metals business.
July 2012	Chalieco was listed on the Hong Kong Stock Exchange.
December 2012	The Group completed the restructuring of China Aluminum Ningxia Energy Group Co., Ltd. (中鋁寧夏能源集團) ("**Ningxia Energy**").
January 2013	CMC was listed on the Hong Kong Stock Exchange.
December 2013	The Toromocho Project was commissioned.
August 2014	With the approval from Ministry of Industry and Information Technology of the PRC, the Group became one of the six recognised large-scale rare earth enterprises.
April 2015	The first production line (with annual production capacity of approximately 800,000 tonnes) of Guizhou Huajin Aluminum Corporation Limited (貴州華錦鋁業有限公司) aluminium oxide production facility project (with annual production capacity of approximately 1.6 million tonnes) commenced production.
June 2015	The Toromocho Project commenced commercial production.
	Chalco non-publicly issued an additional 1,379,310,344 A shares, and the total share capital of Chalco increased from 13,524,487,892 shares to 14,903,798,236 shares. The net proceeds from the issue of the A shares, amounting to approximately RMB7.9 billion, were mainly used to replace the funds invested previously in the Chalco Xing County Alumina Project and the Chalco Zhongzhou Branch Bayer Ore-dressing Process Expansion Construction Project.
December 2015	Zhongjianlv New Material Corporation Limited (中建鋁新材料有限公司), Chinalco Aluminum Foil Corporation Limited (中鋁鋁箔有限公司) and Zhongjianlv New Material (Chengdu) Corporation Limited (中建鋁新材料(成都)有限公司) were established in Chengdu.

Time	Milestone Event
March 2017	CMC was delisted from the Hong Kong Stock Exchange.
June 2018	Chalco, through its wholly owned subsidiary, entered into a mining convention with the Guinea government in relation to the project (the "**Boffa Project**") for the development of the bauxite in Boffa, Guinea.
August 2018	Chalieco was listed on the Shanghai Stock Exchange.
November 2018	China Copper International Trading Co., Ltd. (中銅國際貿易有限公司) was established and headquartered in Shanghai. This new subsidiary would serve as a specialised trading and marketing platform to further realise the commercial values of the Group in the international non-ferrous metals industry.
December 2018	With the approvals of SASAC and other relevant authorities, Yunnan SASAC transferred its 51 per cent. equity interest in Yunnan Metallurgical to China Copper, turning the latter into the controlling shareholder of two listed companies (namely Yunnan Aluminum and Chihong Zn&Ge) and the beneficiary of vast lead-zinc resources. The Guarantor was selected by SASAC as one of the pilot state-owned investment companies. SASAC has, in selecting state-owned companies eligible for the pilot programme, taken into the strategy, profitability, board of directors and operations of state-owned companies. Pilot state-owned investment companies are expected to have more autonomy in its business operation, focus more on strategic plans and capital operation, and carry out comprehensive reforms within the company.
October 2019	Chinalco Advanced Manufacturing Co., Ltd. (中國鋁業集團高端製造股份有限公司) ("**Chinalco Advanced Manufacturing**") established in Chongqing commenced operation.
April 2020	Boffa Project in Guinea, the first overseas bauxite supply base of Chalco was completed and put into production.
June 2020	First large ocean-going freighter laden with high quality bauxite from Boffa Project arrived at Fangchenggang Port, Guangxi Zhuang autonomous region, marking completion of the projects two months ahead of schedule.
October 2021	The Group entered into a strategic cooperation agreement with Contemporary Amperex Technology (寧德時代) to establish a full-life-cycle cooperation model for aluminium and copper products, to promote low-carbon development, and to explore opportunities for cooperation in upstream and downstream industrial chains in the new energy industry.
November 2021	The Group entered into a strategic cooperation agreement with China Three Gorges Corporation (三峽集團) for mutually beneficial cooperation in areas such as pursuing carbon reduction goals, furthering international productions and developing new energy resources.

RANKINGS AND AWARDS

Over the years, the Group's accomplishments and industrial presence have been recognised by various publications and organisations. The list below sets out some of the most recent rankings and awards achieved by the Group:

- According to *Fortune Magazine*, the Group has been a Fortune Global 500 company for 13 consecutive years and was ranked 217th among the Fortune Global 500 for the year ended 31 December 2020 in terms of operating revenue.

- In 2018, the Group was awarded the "2017 Environmental Protection Medal" (環保公益勳章獎) at the China Enterprise Public Service Medal Summit (中國企業公益勳章峰會).

- In 2018, the Group was awarded the First Prize of the 25th National Enterprise Management Modernisation and Innovation Award (全國企業管理現代化創新成果獎) by China Enterprises Confederation — China Enterprise Directors Association (中國企業聯合會/中國企業家協會).

- In 2018, the Group ranked 47th among "China's Most Admired Companies" for 2018, a list released by Fortune China.

- In 2018, the Group was recognised as one of the Ten Most Responsible State-owned Companies (十大責任國企) and was awarded the Environmental Green Award (綠色環保獎) by China Social Responsibility 100 Forum (中國社會責任百人論壇).

- In 2018, the Group ranked No. 9 in the 10-Year Socially Responsible SOEs (責任十年 國企十佳) list and was commended for making the greatest progress over the course of a decade increasing from 29 in 2009 to 88.1 in 2018.

- In 2018, the Group was one of the Top 10 Corporate Social Responsibility Brands (最牛責任品牌十佳企業).

- In 2020, the Group ranked No. 12 among all SOEs and No. 14 among all Chinese companies in the 2020 Social Responsibility Development Index (社會責任發展指數).

RECENT DEVELOPMENTS

On 29 October 2021, the Group published its unaudited and unreviewed consolidated financial statements as at and for the nine months ended 30 September 2021 in the Chinese language only, which are not included in and do not form a part of this Offering Circular. Such information has not been audited or reviewed by the Group's independent auditor or any other independent auditor and may be subject to adjustments if audited or reviewed. Consequently, such financial information should not be relied upon by potential investors to provide the same quality of information associated with information that has been subject to an audit or review by an independent auditor and potential investors must exercise caution when using such information to evaluate the Group's financial condition and results of operations.

As at 30 September 2021, the Group's total liabilities increased slightly as compared to 31 December 2020. The Group's total assets also increased slightly, resulting in a slight net increase in total owners' equity as at 30 September 2021 as compared to 31 December 2020. For the nine months ended

30 September 2021, all of the Group's total operating revenue, total profit and net profit increased as compared to the corresponding period in 2020. Based on the Guarantor's preliminary calculations, the Guarantor expects to record an increase in each of the Group's total operating revenue, total profit and net profit for the year ended 31 December 2021, as compared to the year ended 31 December 2020, primarily due to the increase in sales volume and selling price of the Group's core products and the effective management of costs. Such preliminary calculations were based on the unaudited consolidated management accounts of the Group for the year ended 31 December 2021 and the information currently available to the Guarantor. Such preliminary calculations have not been reviewed by the independent auditor of the Group and are subject to finalisation or necessary adjustments upon further review.

COMPETITIVE STRENGTHS

The description of supervision and/or support from SASAC in this section is on the support given to the Group's business operations and should not be read as any indication that the PRC government or SASAC will provide any financial support to the Issuer or the Guarantor in respect of its obligations under the Bonds. Any ownership or control by the PRC government does not necessarily correlate to, or provide any assurance as to, the Issuer or the Guarantor's financial condition. See "Risk Factors — The PRC government has no payment or other obligations under the Bonds" for more information.

A prominent leader of China's non-ferrous metals industry

Through nearly two decades of operations, the Group has maintained its market-leading positions across the non-ferrous metals industries in terms of resources, production capacity and technologies. The Guarantor believes that it is the largest supplier of non-ferrous metals in China and a leading alumina corporation with significant influence globally. The Guarantor believes that in terms of comprehensive scale, it ranked among the top enterprises in the global aluminium industry; it ranked first in terms of overall competitiveness among copper enterprises in the PRC for the year ended 31 December 2020; it has the largest lead-zinc reserves in China, which ranks the fourth largest globally; and it occupies a dominant market position in the rare earth metals industry with operations covering the complete industry chain with the capacity to drive industry consolidation. The large scale of the Group's aluminium, copper, lead-zinc operations have increased the Group's bargaining power, enabling the Group to be less susceptible to price fluctuations and economic cycles. The Group controls significant upstream resources and achieves a competitive cost structure. The Group owns large reserves of bauxite, the lead-zinc mine that is the fourth largest globally, and high-grade copper reserves overseas.

- For its aluminium business, the Group attaches great importance to stable upstream resources through the acquisition and development of high-quality bauxite mines. As at 31 December 2020, Chalco (one of the Group's key subsidiaries in the aluminium business) and its subsidiaries owned and operated 14 mines in China that had approximately 193 million tonnes of aggregate bauxite reserves. It also holds the requisite mining permit for all the three bauxite mines in West Kalimantan, Indonesia through its 96.28 per cent. owned subsidiary, PT Nusapati Prima. In addition, Chalco owns a bauxite mine in Guinea, and has the mining permit, through Chalco Guinea Company S.A., in which it indirectly held 85 per cent. of the equity interest.

- For its copper business, the Group strives to increase the self-sufficiency of copper concentrate through acquisition and development of rich copper reserves in China and globally. As at 31 December 2020, the Group's domestic and overseas copper mines had copper concentration reserves of approximately 30.23 million tonnes. The Toromocho copper mine in Peru acquired by the Group in 2007 ranks among the world's top copper reserves and is one of the largest copper mines in the world with a resource reserve of 9.46 million tonnes. It produced approximately 910.8 thousand tonnes of copper concentrate containing 203.3 thousand tonnes of copper in 2020. The first part of stage two of the Toromocho copper mine and the Lala copper mine of the Luodang Mining Area recently began productions, furhter increasing the Group's copper concentrate production capacity by approximately 44 thousand tonnes.

- For its lead-zinc business, the Group manages to achieve sustainable development by securing lead-zinc mines with high grades and long mine life both domestically and abroad. As at 31 December 2020, the Group owned lead-zinc resources of approximately 45.9 million tonnes, ranking first in Asia and fourth globally. The Group owns the largest lead and zinc mine — Lanping mine, of Asia, whose deposit amounts to 9.95 million tonnes. In addition, Huize mine and Yiliang mine, the two lead-zinc mines in China owned by the Group, reached grade of zinc and lead of 28 per cent. and 22 per cent., respectively, way above the average grade of zinc and lead mines both domestically and abroad. Furthermore, the Selwyn Project operated by the Group, with an estimated lead-zinc mine deposit of 26.90 million tonnes, is one of the world's largest lead-zinc projects.

- As the PRC government continues to encourage consolidation and reorganisation in the rare earth metals industry, China Rare Earth Group Co., Ltd. (中國稀土集團有限公司) ("**China Rare Earth Group**") was established in December 2021. SASAC is the largest shareholder of China Rare Earth Group, holding a 31.2 per cent. equity interest, whereas the Group has a 20.3 per cent. equity interest as one of the joint-second-largest shareholders. China Rare Earth Group primarily focuses on rare earth technology research and development, exploration and development, separation and smelting, deep processing, downstream applications, complete sets of equipment, industrial incubation, technical consulting services, and import and export trading businesses. The Group works together with other shareholders of China Rare Earth Group to develop it into one of the world's leading rare earth enterprises.

Owing to its extensive reserves, the Group is able to excel in terms of production capacities in the field of major non-ferrous metals. As a result, the Group enjoys the flexibility of choosing between its own supply and third party suppliers based on the fluctuating market price to optimise cost benefit.

In addition to the Group's competitive strengths derived from its extensive reserves, the Group has developed strong capability for research and development (R&D) and market leading technologies that will enable it to lay a solid foundation for the development of industries of national strategic importance and the implementation of major state-level projects in China. The Group focuses on the core technologies relating to non-ferrous metals industry and the development and the industrialisation of key technologies, ensuring the satisfaction of the needs of project of national strategic importance, strengthening the core competitiveness of the Group and providing continuous momentum for the sustainable development of the Group. The Group is also tasked with supplying most of domestic aluminium and copper alloy materials and supplies almost all of the high-tech key components. The Group is also the key supplier of domestic key high-tech aluminium and copper to national strategic projects.

The Group is a core research and development production base for non-ferrous metal materials. Members of the Group undertake research, development and production of new materials such as aluminium, magnesium and copper for projects of national strategic importance. The Group has developed strong capabilities of research and development and has one of the world's leading independent intellectual property rights in the aluminium industry. As at 31 December 2020, the Group possessed 12 state-level corporate technology centres and branches, two national engineering technology research institutions, one nation-region joint engineering research centres and one state key laboratory. The Group has established a team of technicians with extensive expertise and experience and has developed a series of advanced technologies relating to the mining, smelting and metal material processing of non-ferrous metals including aluminium, copper, rare metals and rare earth metals. As at 31 December 2020, the Group is supported by 27,714 professional technology specialists and 8,814 R&D staff members, which account for approximately 18.4 per cent. and 5.9 per cent. of its total workforce worldwide, respectively. The Group is a core R&D production base for non-ferrous metal materials, mainly undertaking the research and development of new materials and new products, including aluminium, copper, magnesium, titanium and germanium.

The Group has maintained a leading position in terms of core technologies in the non-ferrous metals industry. It has developed a series of advanced technologies covering the exploration, mining, refinery and processing of non-ferrous metals industry. The Group has applied its advanced technologies in the non-ferrous metals industry to its bauxite and copper mining operations and production procedures to improve efficiency and control energy costs. For example, the technologies employed in the Bayer process designed and applied by the Group in its alumina production could significantly increase the useful life of bauxite mines and provide greater efficiency in bauxite usage. The Group has built the first "1+4" hot rolling aluminium production line in China, which enhances production efficiency and product quality. In addition, the Group also actively implements technologies such as the extraction of iron from bauxite residue, desulphurisation, denitrification and dust control with the aim of improving environmental protection and sustainable development as well as achieving cost advantages in the long term. The Group was successful in reducing its production costs primarily as a result of its advanced technologies. In addition to advanced core technologies, the Group has built up its market leading designing and engineering capabilities in relation to non-ferrous metals. The Group owns five out of nine national A- level non-ferrous design institutes, namely Shenyang Aluminum & Magnesium Engineering and Research Institute Co., Ltd (瀋陽鋁鎂設計研究院有限公司), Guiyang Aluminum & Magnesium Design Institute Co., Ltd (貴陽鋁鎂設計研究院有限責任公司), Changsha Nonferrous Metallurgical Design and Research Institute Co., Ltd (長沙有色金屬設計研究院有限責任公司), China Nonferrous Metals Processing Technology Co., Ltd (中色科技股份有限公司) and Kunming Nonferrous Metallurgical Design and Research Institute Co., Ltd (昆明有色設計研究院股份公司).

For the year ended 31 December 2020, the Group initiated 1,765 technological projects and obtained 889 new patents. As at 31 December 2020, the Group held 7,520 effective patents. As at 31 December 2020, the Group has also won two first class and 24 second class awards of National Science & Technology Progress Award, one second class National Technology Invention Award, one gold medal and 14 excellence awards of China Patent award, and 1,209 provincial Science & Technology award in total. In the past three years, the annual R&D expenditure has remained above RMB6 billion.

A robust developer and executor of China's natural resources strategy

The Group frequently participates in or initiates the formulation of industry standards. The Group has become the major entity in charge of formulating national policies and industry technical standards in the aluminium and copper industries, particularly in the aluminium industry where almost all the technical standards are produced by Chalco. Specifically, in relation to the aluminium industry, approximately 65.0 per cent. of the 20 national/industrial standards for products, approximately 88.0 per cent. of the 352 national/industrial standards for analysis and detection, approximately 64.0 per cent. of the 59 national/industrial standards for other safety and environmental protection and basic specifications are developed by the Group. The Group has taken the lead in the development of approximately 250 national/industrial standards for copper smelting and aluminium processing.

Below is a summary of major policies and standards formulated under the leadership of the Group:

Authority in Charge	Major Policies and Standards Formulated by the Group
State Council	Guiding Opinions of the State Council on Resolving the Conflict of Rampant Overcapacity 《國務院關於化解產能嚴重過剩矛盾的指導意見》
National Development and Reform Commission	Special Force on Regulating the Building and Operation of Self-generating Coal Power Plants 《治理方案燃煤自備電廠規範建設和運行專項》
	Circular on the Closing Down and Rectifying Forces targeting Non-compliant Projects in the Aluminium Industry《〈清理整頓電解鋁行業違規項目行動工作方案〉的通知》
	Circular on Facilitating the Orderly Development of Alumina Industry《關於促進氧化鋁產業有序發展的通知》
Ministry of Industry and Information Technology	Development Plan of the Non-ferrous Metals Industry (2016–2020 Version)《有色金屬工業發展規劃 (2016年–2020年)》
	Norms and Conditions of the Aluminium Industry (2020 Version)《鋁行業規範條件 (2020年本)》
	Norms and Conditions of the Copper Refinery Industry (2019 Version)《銅冶煉行業規範條件 (2019年本)》
	Norms and Conditions of the Lead and Zinc Industry (2020 Version)《鉛鋅行業規範條件 (2020年本)》
	Norms and Conditions of the Rare Earth Metals Industry (2016 Version)《稀土行業規範條件(2016年本)》
	Circular on the Inter-province Replacements of Intra-group Aluminium Capacities 《關於企業集團內部電解鋁產能跨省置換工作的通知》
	Circular on the Capacity Replacement Matters by Aluminium Enterprises through Merger and Acquisitions《關於電解鋁企業通過兼併重組等方式實施產能置換有關事項的通知》

Authority in Charge	Major Policies and Standards Formulated by the Group
Ministry of Land and Resources	Administrative Measures on the Assignment and Transfer of Mining Rights (Consultation Draft) 《礦業權出讓管理辦法(徵求意見稿)》
	Opinions of the Ministry of Natural Resources on Several Matters Concerning Promoting the Reform of Mineral Resources Management (Trial) 《自然資源部關於推進礦產資源管理改革若干事項的意見(試行)》
	Research Study on the Three-rates System in relation to Tungsten Ore, Molybdenum Ore and Bauxite Mineral Reserves《鎢礦、鉬礦、鋁土礦資產資源「三率」指標體系研究報告》 Announcement of the Ministry of Land and Resources on the Minimum Requirements for the Rational Development and Utilisation of Iron, Copper, Lead, Zinc, Rare Earth, Potash Salt and Fluorite (Trial) (No. 21 of 2013)《國土資源部關於鐵、銅、鉛、鋅、稀土、鉀鹽和螢石等礦產資源合理開發利用「三率」最低指標要求(試行)的公告(2013年第21號)》
	Announcement of the Ministry of Land and Resources on the Minimum Requirements for the Rational Development and Utilization of Manganese, Chromium, Bauxite, Tungsten, Molybdenum, Pyrite, Graphite and Asbestos (Trial) (No. 31 of 2014) 《國土資源部關於錳、鉻、鋁土礦、鎢、鉬、硫鐵礦、石墨和石棉等礦產資源合理開發利用「三率」最低指標要求(試行)的公告(2014第31號)》
Miscellaneous	The Group led or participated in the formulation of more than 10 international/national non-ferrous metals industry standards, including Nonferrous Metals Ming Design Standards 《有色金屬採礦設計規範》, Technical Procedures and Standards for the Production Safety of Bauxite Mines 《鋁土礦礦山安全生產技術規程》 and Construction Standards of Non-ferrous Metals Green Mines 《有色金屬行業綠色礦山建設規範》

The Group is the "deputy director unit" of the National Non-ferrous Metals Standardisation Technical Committee. Out of 43 members of the technical committed, 10 of these members are from the Group, which is the highest number from the same group among the Group's peers. The Group has led the formulation and development 653 national standards and 751 industry standards. Within the recent five years, the Group has undertaken amendments of more than 300 technical standards, including 163 national standards, 91 industry standards, two international standards, with the rest being local, organisational and enterprise standards.

Diversified product portfolio with fully integrated value chain

The Group has formulated and implemented the strategy of developing a diversified product and business mix, which has enabled the Group to be more risk resilient, more flexible and creates more room for the Group to make adjustments in face of economic cycle, industrial cycle and price fluctuations of commodities.

The Group's principal businesses currently consist of the production of primary aluminium, copper, lead-zinc and rare earth metals, which is further strengthened by the four ancillary businesses including engineering and technical services, industrial and property services, capital and financial services, and trade and logistic services. The Group is the largest aluminium and alumina producer of the world. It conducts its aluminium business primarily through Chalco, Yunnan Aluminum and its aluminium fabrication department, with a range of aluminium products covering alumina, primary aluminium, aluminium fabrication products, including aluminium ingots, aluminium plates, aluminium sheets, aluminium strips and plastics. The Group is also a copper producer with vast reserves and conducts its copper business primarily through Yunnan Copper Industry, CMC and copper fabrication companies. It offers a broad range of copper products covering copper and copper fabrication products, including copper tubes, copper wires, other components and various forging and die casting products. The Group is the largest zinc and lead and germanium producer of Asia and conducts its zinc and lead business primarily through Chihong Zn&Ge and Jinding Zinc, offering products covering lead ingots, zinc ingots, zinc alloy and by-products, including germanium, bismuth, cadmium, indium, tellurium, gold, silver, sulphuric acid and sulphur. Rare earth metals products of the Group cover titanium, molybdenum, tungsten, bismuth, tin, nickel and cobalt. A diverse product mix enables the Group to compete more effectively in the non-ferrous industry and become more resistant to the industry and economy cycles.

All the four core businesses of the Group possess a vertically integrated production chain that encompasses upstream exploration and mining as well as midstream refining and downstream smelting and value-added fabrication. The Group is dedicated to coordinating and developing the whole industry chains, actively expanding downstream metal application materials field that are of high added-value, high profit margin and exploring new application markets to boost profitability. For its aluminium business, the Group insists on optimising its developments and maintaining its dominant position in the aluminium industry, strengthening structural reform, proactively exploring new applications for aluminium alloy products, including in the field of furniture and constructions. The Group has also witnessed a sharp increase in its copper fabrication capacity. Its copper products are widely used in the high-tech industries and information industry, electronic industry, aerospace industry, automotive industry, furniture and building materials and electricity industry. The lead-zinc business of the Group focuses on zinc, lead and germanium, during the course of which, the Group also recycles rare metals. The lead-zinc business of the Group has developed into a fully integrated industry chain covering exploration, mining, concentration, refinery, processing, deep-processing and trading. For its rare earth metals business, the Group owns the most complete industry chain in China. It has the capacity to produce downstream materials and its products are widely used in electric and electronic components, lightening and the field of environment protection. The Group also engages in the commodity trading business, which consists of the trading of various mineral and metal products, particularly those closely related to its alumina, aluminium, lead-zinc and copper production, such as alumina, aluminium, non-ferrous metal products and coal. A vertically integrated value chain enables the Group to remain competitive and become more resistant to economic and industry cycles. For example, when the markets for alumina and primary aluminium are over supplied, the Group is able to focus more on high-end downstream aluminium fabrication products with more advanced technologies as well as the commodity trading business to offset potential losses from the sale of aluminium and primary aluminium products.

Strategic player in China's non-ferrous metals industry, fully supporting key strategic sectors

In recent years, the PRC government has implemented various measures to improve the development of the overall non-ferrous metal industry in China, including the consolidation of the industry to reduce oversupply, reform of environmental protection measures, introduction of further innovation in technologies, implementation of the "Go Global" and the "One Belt and One Road" strategy, streamlining of business compliance procedures and enhancing the focus on R&D capability. The Group adheres to the high standards set for environmental compliance by the non-ferrous metal industry and complies with applicable national laws and regulations when carrying out its operations, setting an example and becoming an industrial model for its peers within the non-ferrous metal industry. To support the government's reforms of environmental protection and technological innovation, the Group is committed to developing and implementing environmentally friendly technologies. The Group was granted ISO14001 accreditation by China Quality Certification Centre and the International Certification Network in 2004. In 2016, the Group passed the annual review and the accreditation was renewed. The Group has also increased its energy-efficiency by implementing new production techniques and technologies, upgrading production facilities, optimising production processes and enhancing logistics and operations management. The Group has incorporated clean technology and processes into its operations with a view to promoting the concept of "zero emission" plants. In addition, the Group has implemented various pollution prevention measures including the dissolution of sodium carbon clinker, desulphurisation and dust control to achieve cost advantages in the long term.

The Group plays a key role in the effective execution of national strategies in relation to overseas mineral reserves as well as acts as custodian of national strategic resources by acquiring, holding and operating overseas mineral resources on behalf of the country. To execute the government policies of "Go Global" and "One Belt and One Road", aiming at encouraging overseas expansion, the Group has promoted cooperation between the PRC and the certain countries in South East Asia, Canada, Africa, Australia and South America to strategically acquire and develop overseas resources and expand its bauxite, copper and lead-zinc resources portfolio to achieve long-term sustainable development. In accordance with the government's policies, the Group has conducted significant overseas expansion, which included:

- acquisition of the Toromocho copper mine in Peru in 2007, which is one of the biggest copper mines in the world with a resource reserve of 9.46 million tonnes;

- acquisition of 12.00 per cent. equity interest in Rio Tinto (representing 9.33 per cent. of the equity interest of Rio Tinto Group) and became the single largest shareholder of Rio Tinto Group in 2008. As at 31 December 2020, the Group held approximately 14.5 per cent. of equity in Rio Tinto. The Group entered into a joint development agreement with the Rio Tinto Group for the establishment of a joint venture company to develop the Simandou iron mine in Guinea in July 2010;

- operation of Selwyn Project in Canada further brought to the Group lead-zinc reserves of approximately 26.9 million tonnes; and

- cooperation with Guinea government in 2018 in relation to the Boffa Project, one of the world's largest bauxite resources with bauxite reserves of 2.41 billion tonnes, available resource reserves of approximately 1.75 billion tonnes and an expected life span of 60 years. The Boffa Project commenced construction in September 2018 with an expected annual bauxite output capacity of 12 million tonnes. The project was completed and put into operation in April 2020. For the year ended 31 December 2020, the Group extracted approximately 8.06 million tonnes of bauxite from the Boffa mine.

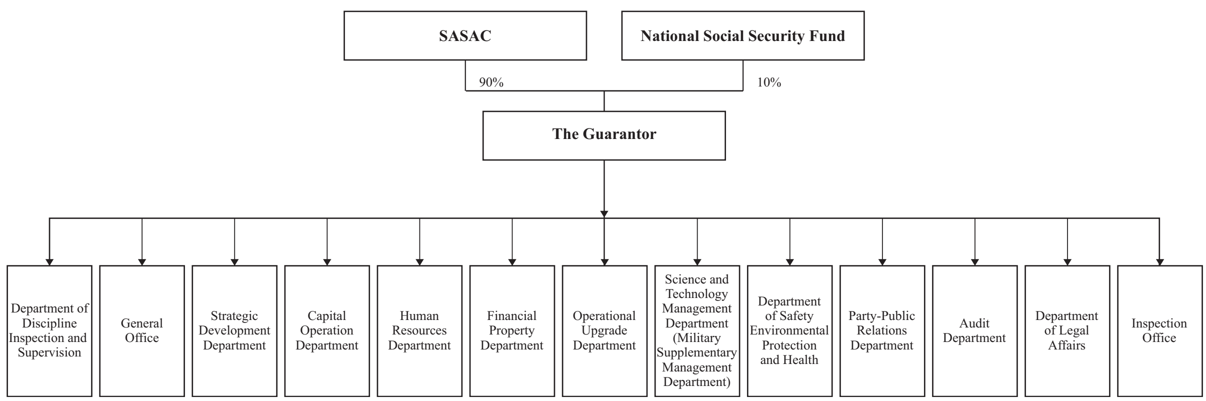
As a strategic corporate platform for the PRC's non-ferrous metal industry, the Group is a primary industry leader in the implementation and development of the PRC government's strategy for the Chinese non-ferrous metal industry. The Group is the major non-ferrous metals supplier of major state-level projects in China. Products of the Group, for instance its specialised aluminium and copper products are widely used in major projects of national strategic importance.

As a result of the Group's efforts to act as the strategic core platform for implementing government policies and its pre-eminent position in the non-ferrous metal industry in China, the Group has been the recipient of various forms of government support, including capital injection and special funds, industry consolidation, financing support and tax benefits. For example, the Group, at its early stage, received gratuitous transfer by the government of high-quality assets from downstream companies with cut-edge technologies in the field of aluminium fabrication. Such companies include Northeast Light Alloy Co., Ltd. (東北輕合金有限責任公司), Southwest Aluminum (Group) Co., Ltd. (西南鋁業(集團)有限責任公司), Northwest Aluminum Fabrication Plant (西北鋁加工廠) and Chinalco Shenyang Non-ferrous Metals Processing Co., Ltd. (中鋁瀋陽有色金屬加工有限公司). In the past few years, to optimise the industry layout and drive the consolidation of outdated production capacity, the Group has led and established an example for its industry peers by upgrading its aluminium production capacities, disposing of or shutting down low efficiency production lines and relocating market-leading production facilities to resource- and energy-rich regions. Further, relying on its existing economies of scale advantages, the Group has acquired and consolidated various aluminium producers, copper producers and rare earth producers in the PRC in order to align with the PRC government's strategy for the Chinese non-ferrous industry. In 2018, the Group through equity swaps with Yunnan SASAC, acquired Yunnan Metallurgical a leading company in the lead and zinc market, turning the Group into the largest lead-zinc enterprise in Asia. Further, in 2018, the Group was selected as one of the pilot state-owned investment companies, enabling the Group to play a more active role during the course of industry consolidation and boost its overall competitiveness. Other examples include that during its strategic investments in overseas projects, including its acquisition of Rio Tinto and Toromocho mine in Peru, policy banks in China provided highly competitive financial arrangements to the Group. Through dedicated state-owned assets management platforms and with the support of China Development Bank in the form of special funds, the Group was able to lower its overall financing costs.

Highly experienced management team and advanced corporate governance system

The Guarantor is a key state-owned enterprise directly supervised and 90 per cent. owned by SASAC (with the rest of its equity interest held by the National Social Security Fund) and is one of the core enterprises in the PRC. The Group is subject to the overall management of the central government, including its strategy making, appointment of senior managements and its operation and evaluation. In terms of strategy making, the main businesses of the Group are outlined by SASAC in the *Reply on the Adjustment of the Main Businesses of China Aluminum Corporation* (《關於調整中國鋁業公司主要業務的覆函》) released in 2010. Based on the mid-to-long term development plan filed with SASAC and the *Framework Plan of Pilot State-owned Investment Companies* (《國有投資公司試點框架方案》) submitted to SASAC, the Group is positioned as a state-owned investment enterprise that is dedicated to serving the strategies of the country, striving to be the market leader of the global non-ferrous metals industry, the safeguard for national strategic mineral resources and materials crucial to industries of national strategic importance and the vanguard of industrial innovation and green development. In terms of management appointments, the Central Organisation Department is in charge of appointing leadership members and the current four external directors are all appointed by SASAC. In terms of operation and evaluation, major matters related to management, personnel arrangements, projects and large capital operations are subject to the review and approval of SASAC. In addition, The Guarantor makes regular reports to SASAC for it to evaluate the Group's performance through financial data.

The Group has established a sound modern corporate organisational structure and effective mechanisms for division of responsibilities and checks and balances, and discloses corporate information with a high degree of transparency. The following chart summarises the Group's organisational structure:



The Group maintains a dedicated management team with extensive industry experience and global vision, which assists in identifying and capturing marketing opportunities, developing and enhancing its competitive edge over industry peers in terms of resources, manufacturing capacity and technologies and brand recognition. Most of the Guarantor's senior managers are either holders of doctoral or master's degrees or are expert-grade senior engineers who have significant experience in the global aluminium, copper and non-ferrous metals industries. Most of the Guarantor's senior management team have over 15 years' business management experience in the mining industry. In addition, many members of the Group's management team have received education or on-the-job training overseas and participated in cross-border mergers and acquisitions. See the section headed "*Directors and Senior Management*". As a result, the Group's management team has accumulated valuable experience in managing and operating overseas projects. The significant experience and proven track record of the Group's successful development provides the Group's management team with an in-depth understanding of the non-ferrous market as well as associated sectors, such as the energy industry. This allows them to develop a long-term strategy to enhance the Group's leading position and achieve sustainable development in the future.

In addition, the Group's visionary management team is supported by distinguished team of experts and professional technicians. Senior managements of the Group also assume important roles in the relevant international and national associations, advising and providing guidance to the industry.

The Group considers its ability to attract, nurture and incentivise human resources to be of critical importance. The Group encourages innovation, and continuously focuses on attracting new talent to join and has a talent pool with a wide range of expertise and diversified and comprehensive personnel resources, laying a solid foundation for the Group's future development.

Continuously improving core competitiveness and resilience to cyclic changes

The Group seeks to continuously reduce its costs, improve the quality of its products and increase efficiency of its operations. As a result of its core competitiveness, the Group has shown resilience in light of the fluctuations in prices of copper, aluminium, lead and zinc from 2018 to 2020. For the years ended 31 December 2019 and 2020, the Group's EBITDA (which is the sum of total profits, interest expenses, depreciation, amortisation of right-of-use assets, amortisation of intangible assets and amortisation of long-term prepaid expenses) was RMB38,424 million and RMB40,653 million respectively. For the year ended 31 December 2019, the Group's EBITDA interest coverage ratio (which is calculated by dividing EBITDA by interest expense), EBITDA margin (which is calculated by dividing EBITDA by total operating revenue) and total debt to EBITDA ratio (which is calculated by dividing total debt by EBITDA, where total debt includes short-term loans, long-term loans due within one year, long-term borrowings and bonds payable) was 2.56, 10.8 per cent. and 7.63, respectively. For the year ended 31 December 2020, the Group's EBITDA interest coverage ratio, EBITDA margin and total debt to EBITDA ratio was 3.11, 11.1 per cent. and 7.41, respectively.

- ***Comprehensive benchmarking to reduce costs:*** The Group conducts comprehensive benchmarking of its business units and subsidiaries against other leading enterprises in relevant industries to control costs, optimise the organisation structure of production units and reduce energy consumption. To achieve efficient and refined operation, the Group has established three major platforms for marketing, procurement and logistics. The Group strategically concentrates its production capacity in resource-rich areas as well as areas benefiting from low costs in clean energy.

- ***Leveraging upstream resources and technological advantages:*** To ensure the stable supply of ore at stable prices, the Group maintains a suitable balance between domestic and foreign mines and actively seeks to increase self-sufficiency of bauxite and copper concentrate. For the year ended 31 December 2020, the Group's average cost of electrolytic aluminum, copper and lead zinc were within the lower 40th percentile, 50th percentile and 33rd percentile of the industry, respectively. For the year ended 31 December 2020, the Group's average cost of electrolytic aluminium was RMB10,724 per tonne, representing a year-on-year decrease of 8.4 per cent. For the year ended 31 December 2020, the Group's self-sufficiency rate for bauxite was 46.4 per cent., representing a year-on-year increase of 8.8 per cent. The Group invests heavily in scientific research to optimise production processes and improve product quality. The Group has achieved major breakthroughs in core technologies and realised the transformation of its products to high-tech and value-added products with higher profit margins, building its brand as a high-end innovative producer of non-ferrous metals. For the year ended 31 December 2020, the Group produced 3.94 million tonnes of fine aluminia, representing a year-on-year increase of 4 per cent.

- ***Innovative management:*** The Group adopts a "Four-Level, Dual-Force" value management system which focuses on core value indicators such as profitability, cash flow and capital return, implementing robust management systems on the "5Cs", namely, capital structure, cash creation, cash management, capital raising and capital allocation. The Group implements a market-based evaluation mechanism on its business units and subsidiaries to analyse operating costs and other performance metrics. Meanwhile, the Group pays close attention to human resources management to optimise staffing and provide adequate training for staff.

Furthermore, the Group implements a contractual management system to manage internal affairs. The Group strives to achieve transformation to a digital smart enterprise with emphasis on smart management and smart production.

- ***Proactively responding to market changes:*** Through utilising various financial tools, implementing flexible production and leveraging stable upstream and downstream relationships, the Group is able to respond to complex market changes and minimise cyclical risks associated with the industries in which the Group operates. Notwithstanding the volatility in non-ferrous metal prices caused by the COVID-19 pandemic, the Group focused on its core businesses and resolutely implemented the strategic policy of reducing costs and enhancing efficiency. The Group recorded a year-on-year growth of 38.5 per cent. in its net profit for the year ended 31 December 2020.

The Group has a disciplined capital expenditure programme and access to various funding sources. The Group's primary sources of funding include bank loans, short-term notes and bonds. The Group has developed strategic partnerships with major PRC banks and maintained long-term relationships with various reputable international banks, as well as other financial institutions such as securities firms and insurance companies. These include state-owned policy-related banks, state-owned commercial banks, domestic and international bond markets, international banks, Chinese brokerages and insurance institutions. As at 31 December 2020, the Group had available committed banking facilities amounting to approximately RMB814.1 billion, of which approximately RMB417.7 billion remained unutilised.

In addition, the Group has also raised funds from the PRC and international capital markets. Since 2014, the Guarantor and its subsidiaries have successfully completed a number of medium term note and short-term note offerings in China and a number of senior bonds and perpetual securities offering in the international markets. As at 31 December 2020, the Group had cash and cash equivalents of RMB43.6 billion and total liabilities of RMB404.9 billion.

In addition, the Guarantor has several major subsidiaries that are listed across major stock exchanges such as Shanghai, Shenzhen, Hong Kong and New York, which enable the Group to take advantage of the equity markets around the world through follow-on offerings, right issues or private placements of equity securities.

The Group's ratio of total debt (including short-term loans, long-term borrowings, bonds payable and other liabilities) to total assets has decreased from 2018 to 2019 and have remained stable in 2020. Meanwhile, the Group's ratio of total debt to EBITDA (earnings before interest, taxes, depreciation and amortisation) has continuously decreased from 2018 to 2020. The Group believes that it has sufficient sources of funding to expand its business operations and capture potential growth opportunities in the future.

The Group implements prudent financial policies and a sound internal control system covering capital management, investment management, risk management and debt management systems, each of which can be further illustrated from the following aspects:

- for capital management, the Group has maintained sufficient cash flow and liquidity and has adopted a centralised capital management system to coordinate the overall financing need of the Group and to prudently optimise financing cost. The Group has also made continuous endeavour to boost capital utilisation efficiency;

- for investment management, the Group has established a sound and complete set of internal standards in terms of investment review and investment management procedures. In deciding an investment project, the Group will take into full account of investment return, resource acquisition, consolidation and coordination with the current core businesses, the improvement of service capabilities, the expansion of technologies and risk control;

- for risk management, the Group has put in pace a sound risk management and internal control system and a prudent decision making mechanism for matters with significant risks. The Group has also adopted a unified accounting policy and centralised capital management system to minimize financial risks, credit risks and insolvency risks; and

- for debt management, the Group has managed to maintain a healthy level of indebtedness alongside business expansion. The Group has been proactively developing and diversifying its financing and funding channels and has managed to maintain a reasonable debt maturity with a sound currency structure.

BUSINESS STRATEGIES

The Group aims to become an internationally leading enterprise in the non-ferrous metals industries with sustainable growth potential and international competitiveness, a custodian for mineral resources and materials of strategic importance to the nation, and a market leader in terms of industry innovation and green development. To this end, the Group initiated its "11336 Strategy", which refers to:

- one overall target of building an internationally leading enterprise in the non-ferrous metals industries with global competitiveness;

- one overall strategy of positioning itself as the frontrunner of China's non-ferrous metals industries, the main force in China's stable supply of strategic minerals and resources, and the leader of innovation and green development in the industry;

- three "engines" of development, namely, technology and innovation, data empowerment, and green and low carbon development;

- three critical "paths" which the Group will take to achieve its goals, namely, prioritising the development of strategic resources, strengthening and optimising core businesses, and cultivating emerging businesses; and

- six core capabilities, namely, the capabilities of value creation, pioneering innovation, green development, intelligent operation, human resource development and guaranteeing industry security.

Leveraging the Three "Engines" of Development

The Group plans to leverage three "engines", namely, technology and innovation, data empowerment, and low carbon development as the sources of motivation to drive continuous growth of the Group.

Firstly, the Group will strive to enhance its core capabilities through technological innovation. As the leading enterprise of China's aluminium industry, the Group has built a scientific and technological innovation system consisting of the Chinalco Central Research Institute (中鋁中央研究院), professional research institutes, professional field technology centres and mass innovation platforms, in order to better utilise innovation and talent advantages, and to achieve high-quality development of core capabilities supported by science and technology. The Group intends to cooperate with an increasing number of enterprises, universities and research institutes to build a collaborative innovation industry system, to seize the opportunity of global and national industrial chain reconstruction, and to collaboratively achieve continuous development and technological breakthroughs. The Group will promote the deep integration of technological innovation and industrial development, promote the flow of talents and the sharing of scientific research resources, with the aim of alleviating the problem of fragmentation of innovation and cultivating large-scale innovation. The Group believes that it is necessary to focus on the implementation of innovative achievements and to explore new opportunities for innovation, in order to accelerate the advancement of the aluminium industry and the modernisation of the industrial chain.

Secondly, the Group will leverage data empowerment to achieve industrial integration. Relying on smart management and smart factories, the Group is fully advancing the construction of "Smart Chinalco". Referencing other advanced enterprises as blueprints while strengthening top-level design with meticulous overall planning, the Group intends to build a "Version 1.0" template of smart factories through means such as data modelling, functional modularisation, system standardisation and continuous replication and iteration. The Group seeks to learn from experts in the industry, jointly promote the implementation of intelligent manufacturing construction projects in the aluminium industry, coordinate the research and development of key common technologies for intelligent manufacturing, participate in the formulation of intelligent manufacturing construction standards, and advance the comprehensive integration and upgrading of intelligent manufacturing construction in the industry.

Thirdly, the Group will persevere in its work to enhance the reputation of the aluminium industry with green development. Achieving carbon neutrality involves broad and profound systemic changes in the economy and society. The Group has released its "Carbon Peak Carbon Neutral Action Plan" (碳達峰碳中和行動方案), proposing the overall goals of reaching the peak of carbon emissions by 2025, reducing carbon emissions by 40 per cent. by 2035, and taking the lead in achieving carbon neutrality in the industry. The Group is currently accelerating research on cutting-edge green, low-carbon, and waste-free technologies, strengthening cooperation with clean energy enterprises, and actively deploying a recycling system in the industry. The Group hopes that more industry partners will join in the efforts of green and low-carbon development, fulfil corporate social responsibility, adhere to the principle of "reduction, reuse and recycling", vigorously develop green recycling industries such as recycled aluminium and comprehensive utilisation of red mud, and comprehensively improve the level of aluminium resource recycling. The Group will continue to optimise processes, improve equipment efficiency, improve energy-saving and consumption-reducing mechanisms, promote technical research and application of new technologies, new equipment, and new processes, and build clean energy generation capacity.

Optimise and Strengthen Core Businesses, Proactively Develop Ancillary Businesses

The Group intends to further develop its core businesses into vertically integrated industry chain with full coverage from the upstream to the downstream to realise the synergy of the entire industry. The Group plans to actively expand into the downstream and the emerging market to produce and fabricate high-end metallic products with high value and high profit margin. Sticking to its innovation strategy, the Group has made substantial breakthrough in the production and marketing of high end and high value products. The Group intends to keep the momentum to further optimise its business layout shut down inefficient production capacity, and replace backward production capacity. The Group also intends to diversify product mix and continuously build up its leadership in the downstream while consolidating its dominant position in the upstream.

To optimise and strengthen its core businesses, the Group has devised numerous initiatives. For its aluminium business, the Group will prioritise the acquisition of both domestic and global resources; optimise alumina business, adjust electrolytic aluminium business and expedite overseas expansion; proactively develop refined alumina and electrolytic aluminium alloy with high purity; and improve the quality and utility of aluminium fabrications and deep- processing capabilities. In terms of the Group's copper business, it will further secure copper resources and improve usage of mines; optimise smelting and refining fabrication process; promote innovation and strengthen international operation and industry influence to form a world leading and globally competitive copper business. Meanwhile, the Group's plans for its lead-zinc business includes focusing on upstream, optimising midstream and developing downstream; strengthening zinc, lead and germanium industry; maintaining work security and environment protection and emphasising efficiencies; leveraging both domestic and overseas markets and resources to build a trillion-level zinc and lead industry.

The Group will proactively develop its ancillary businesses to improve the Group's overall profitability and market competitiveness.

The Group's engineering and technical services business enjoys relatively high profitability compared to its other principal business lines and the Group intends to expand this business and maintain a leading position in this industry through the following:

- continue to leverage its advanced technologies and core competencies in engineering design and consultancy and further develop construction contracting services;

- expand upstream and downstream engineering services to develop equipment manufacturing capacities; and

- explore opportunities in eco-friendly and new materials industries such as aluminium used in engineering projects to increase profit growth.

The Group intends to develop its industrial and property services business from the following perspectives:

- effectively manage the Group's assets, deploy resources into places of strategic importance, dispose of or restructure bad assets, better utilise the liquidity of the Group to achieve economic, social and ecological benefits;

- develop and improve industrial services business with an aim to help maintain and improve the quality and performance of products of the Group; and

- explore opportunities associated with industrial parks, high-quality property management services and emerging markets.

The Group intends to develop its trade and logistic business by phasing in the restructuring and integration of trading logistic resources and platforms within the Group and breaking into a wider market to promote the influence of the Group in the industry. The Group will endeavour to build an intelligent platform of global supply chain in the non-ferrous metals industry.

The Group also intends to develop its finance businesses through consolidating industry resources, securing financing sources and channels, adopting innovative operation systems and providing finance services to other members of the Group.

The Group believes that further growth of its ancillary businesses will help diversify the Group's product mix and revenue sources and also improve the Group's overall profitability and market competitiveness as well as facilitate the Group's core business growth.

Expedite the Cultivation of Emerging Businesses

For its environment protection and energy conservation business, the Group mainly focuses on the cut edge of environment protection techniques to save energy effectively and develop an eco-system friendly business. In addition, the Group intends to prioritise the recycling of natural resources, ecological restoration and carbon emission trading in a bid to become a responsible, sustainable and marketing leading company of worldwide influence.

For its innovation and development business, the Group endeavours to concentrate on the research, development, application and commercialisation of new energy and new materials of strategic importance. The Group plans to make efforts in high-end manufacturing area and explore opportunities in the expanded applications of aluminium and copper as well as the potentials of the combination of the internet and non-ferrous metals.

For its overseas investment business, the Group intends to further cultivate and build teams for its overseas operation of the Group and strengthen the ability of the Group to expand, explore and operate globally. The Group aims to actively and resolutely implement its global strategy and reach synergy between its domestic and overseas businesses.

For its intelligence technology business, the Group plans to expedite the construction of its intelligent factories in relation to its core businesses and gradually form an industrial internet of the non-ferrous metals industry equipped with artificially intelligence. In addition, the Group intends to expedite the research and development in relation to intelligent technology and intelligent equipment in the non-ferrous metals industry and gradually form its intelligent equipment business. The Group strives to continuously improve its capabilities in the field of intelligent technologies.

BUSINESS ACTIVITIES

The Group principally engages in mining, refining, smelting, fabrication and trading of non-ferrous metals, mainly bauxite, alumina, primary aluminium, copper, lead-zinc and rare earth metals, as well as providing ancillary services including engineering and technical services, industrial and property services, financial services and trade and logistic services.

Aluminium Business

Overview

The Group derives a majority of its operating revenue from the aluminium business which amounted to RMB224.17 billion and RMB217.38 billion, representing approximately 62.83 per cent. and 59.22 per cent., respectively of its total operating revenue for the years ended 31 December 2019 and 2020, before taking into account intra-group elimination. The Group conducts its aluminium business primarily through Chalco and its subsidiaries (the "**Chalco Group**") and Yunnan Aluminum and its subsidiaries (the "**Yunnan Aluminum Group**"). Alumina production capacity of the Group accounted for approximately 23.2 per cent. and approximately 24.9 per cent. of the national alumina capacity in 2019 and 2020, respectively. Aluminum production capacity of the Group accounted for approximately 16.9 per cent. and approximately 18 per cent. of the national aluminium capacity of the PRC in 2019 and 2020, respectively. The Group also operates aluminium fabrication business through the Guarantor and its various subsidiaries. For the year ended 31 December 2020, the clean energy primary aluminium production capacity and output of the Group both accounted for over 40.0 per cent. of the Group's aluminium production capacity and output, respectively.

Through the acquisition of Yunnan Metallurgical, as at 31 December 2020, the Guarantor indirectly held 35.48 per cent. of shares of Yunnan Aluminum through Yunnan Metallurgical. As at 31 December 2020, the Group also indirectly holds 10.04 per cent. of shares of Yunnan Aluminum through Chalco. As Yunnan Aluminum is in competing business with Chalco in the segments of alumina and primary aluminium, on 2 January 2019, the Guarantor, as the indirect controlling shareholder of Yunnan Aluminum and the direct controlling shareholder of Chalco, issued a letter of undertakings on non-competition in order to address business competition and safeguard the legitimate interests of Yunnan Aluminum, Chalco and their minority shareholders. According to the letter of undertakings, the Guarantor undertook to start in 2019 planning the integration of the businesses in which Yunnan Aluminum and Chalco compete with each other, and address business competition between Yunnan Aluminum and Chalco within five years.

On 23 December 2020 and 16 March 2021, Chalco entered into a conditional shares subscription agreement and a supplemental agreement with Yunnan Aluminum, respectively, pursuant to which Chalco agreed to subscribe for A shares of Yunnan Aluminum to be issued through non-public offering with the total subscription amount ranging from RMB200 million to RMB320 million. Upon completion of this subscription, Yunnan Aluminum will not become a subsidiary of Chalco but will remain indirectly controlled by the Guarantor.

Chalco Group

Chalco is a leading enterprise in the non-ferrous metal industry in China. In terms of comprehensive scale, it ranked among the top enterprises in the global aluminium industry. Chalco has benefited from the development of the PRC aluminium market, the world's largest aluminium market. It refines bauxite into alumina, which is then smelted into primary aluminium. In addition to alumina and primary aluminium, it also produces and sells chemical alumina products (alumina hydrate and alumina-based industrial chemical products) and carbon products (carbon anodes and cathodes). The Chalco Group is also engaged in the trading and logistics of alumina, primary aluminium, other non-ferrous metal products, coal products and raw and ancillary materials in bulk manufactured by it or sourced from external suppliers domestically and abroad. In addition, it is engaged in coal mining and power generation. The remainder of the Chalco Group's revenues was derived from research and development activities and other products and services.

Accordingly, the Chalco Group organises and manages its operations in five business segments: alumina segment, primary aluminium segment, trading segment, energy segment and corporate and other operating:

- *Alumina segment:* this business segment includes the mining and purchasing of bauxite and other raw materials, and production and sale of alumina as well as chemical alumina and metal gallium. Alumina accounted for approximately 78.7 per cent. of the Chalco Group's total production volume for this segment in 2020. Chemical alumina products are used in the production of chemical, pharmaceutical, ceramic and construction materials. In the process of refining bauxite into alumina, the Chalco Group used to produce gallium as a by-product, which is a rare, high value metal with applications in the electronics and telecommunication industries. On 27 August 2019, the Chalco Group entered into a capital contribution agreement with China Rare Earth & Metals, a subsidiary of the Guarantor, pursuant to which it agreed to make a capital contribution to China Rare Earth & Metals with its gallium assets, which contribution was made in full in August 2019. Chalco expects this transaction to help it revitalise gallium assets irrelevant to its principal businesses and increase investment returns by leveraging on China Rare Earth & Metals' industrial advantages.

- *Primary aluminium segment:* this business segment includes the procurement of alumina, other raw materials, supplemental materials and electrical power, the production and sale of primary aluminium and aluminium-related products, such as carbon products, aluminium alloy products and other aluminium products. The Chalco Group's principal primary aluminium products are ingots, molten aluminium and aluminium alloys. The Chalco Group's standard 20- kilogram remelt ingots are used for general aluminium fabrication in the construction, electricity, electronics, transportation, packaging, machinery and durable goods industries. It internally produces substantially all the carbon products used at its smelters and sell its remaining carbon products to external customers.

- *Trading segment:* for this business segment, the Chalco Group engages in the trading of alumina, primary aluminium, aluminium fabrication products, other non-ferrous metal products, and crude fuels such as coal products, as well as supplemental materials and logistics and transport services to its internal manufacturing plants and external customers. It established its trading business under Chalco Trading as a separate segment in July 2010 as a result of the Chalco Group's operational structural adjustment. Since 2014, the Chalco Group has established China Aluminum International Trading Group Co. Ltd. (中鋁國際貿易集團有限公司), Chalco Materials Co. Ltd. (中鋁物資有限公司) and China Aluminum Logistics Group Corporation Co., Ltd. (中鋁物流集團有限公司) to continuously promote and deepen development of its trading business, jointly constituting its trading segment.

- *Energy segment:* this business segment includes the research and development, production and operation of energy products, including coal mining and conventional coal-fire power generation as well as renewable energy generation such as wind power and solar power. The Chalco Group is also engaged in new energy equipment production. It established its energy segment in January 2013 as a result of the Chalco Group's acquisition of Ningxia Energy in line with its development strategy to partially offset its future energy costs. In 2020, the

Chalco Group supplied the majority of the electricity it generated for its own production use, supplied a portion of the coal output to its own electric power plant and sold the remaining portion to external customers. Ningxia Energy supplied the electricity it generated mainly to the state grid in China.

- *Corporate and other operating segment:* mainly including corporate and other aluminium-related research, development, and other activities.

Production Capacity

As at 31 December 2020, the Chalco Group's annual production capacity for alumina and primary aluminium production was approximately 20.86 million tonnes and 4.46 million tonnes, respectively. The following table sets forth the production capacity of each of the Chalco Group's principal plants by product segment as at the indicated date:

	As at 31 December 2020	
Plant	**Alumina**	**Primary Aluminium**
	(in thousand tonnes)[1]	
Guangxi branch	2,210	—
Zhongzhou Aluminum	3,050	—
Qinghai branch	—	420
Guangxi Huasheng	2,000	—
Chalco Mining	2,410	—
Chalco Shandong	2,270	—
Shanxi New Materials	2,600	424
Chongqing branch	800	—
Lanzhou Aluminum	—	450
Zunyi Alumina	1,000	375
Shandong Huayu	—	65
Baotou Aluminum[2]	—	1,340
Zhengzhou Institute	20	—
Liancheng Branch	—	550
Guizhou Huajin	1,600	—
Xinghua Technology	900	—
Shanxi Huaxing	2,000	—
Guizhou Huaren	—	400
Shanxi Zhongrun	—	432
Total	**20,860**	**4,456**

(1) Production capacity is calculated based on designed capacity, which accounts for various assumptions including downtime for ordinary maintenance and repairs, the ore grade of bauxite feedstock and subsequent capacity modifications.

(2) Including the primary aluminium production capacity of Inner Mongolia Huayun, a subsidiary of Baotou Aluminum.

For the year ended 31 December 2020, the Chalco Group produced approximately 14.53 million tonnes of alumina (excluding chemical alumina products), 3.94 million tonnes of chemical alumina products and 3.69 million tonnes of primary aluminium. Its production of alumina (with chemical alumina products included) and primary aluminium represented approximately 23.1 per cent. and 9.9 per cent., respectively, of the total output of alumina (with chemical alumina products included) and primary aluminium in China in 2020.

The following table sets forth a breakdown of the Chalco Group's production volume by product segment for the periods indicated:

Production Volume by Product	Year ended 31 December 2019	2020
	(in thousand tonnes, except Gallium)	
Alumina segment		
Alumina	13,803	14,526
Chemical alumina products	3,802	3,942
Gallium (in tonnes)[(1)]	98	—
Primary aluminium segment		
Primary aluminium[(2)]	3,788	3,695
Carbon	1,472	1,840

(1) In August 2019, Chalco made a capital contribution with its gallium assets to China Rare Earth & Metals and is not engaged in gallium production in 2020.

(2) Including ingots, molten aluminium and aluminium alloys.

Production Process

Alumina

Alumina is refined from bauxite, an aluminium-bearing ore, through a chemical refining process. The refining process applied is determined by the mineral composition of the bauxite used in production. The Chalco Group's refineries may employ the Bayer process, the Bayer-sintering series process, the Bayer-sintering combined process or the ore-dressing Bayer process. Most of the bauxite reserves in China contain diasporic bauxite, which contains high alumina content but relatively high silica content, resulting in bauxite reserves with low alumina-to-silica ratio. The Bayer process cannot efficiently refine diasporic bauxite that has not undergone processing to increase its alumina-to-silica ratio. The Bayer-sintering process and the Bayer-sintering combined process are suitable for refining low alumina-to-silica ratio bauxite. The Chalco Group has developed and improved these processes to increase its refining yield. In addition, the Chalco Group also produces some chemical alumina products (alumina hydrate and alumina-based industrial chemical products).

Primary Aluminium

The Chalco Group smelts alumina into primary aluminium through electrolytic reduction. The electrolytic process takes place in a reduction cell, or pot, a steel shell lined with carbon cathodes and refractory materials. Powerful electric currents are passed through the pot to produce molten aluminium.

The molten aluminium is transferred to holding furnaces and then poured directly into molds to produce foundry ingots, or further refined to form fabricating ingots, which may be used directly in the aluminium fabrication process. The primary aluminium the Chalco Group produces is in the form of ingots, molten aluminium and aluminium alloys.

All of the Chalco Group's primary aluminiums melters use pre-bake anode reduction pot-lines. In the pre-bake reduction process, the anodes are performed in a separate facility where pollutants can be contained. The cells themselves are enclosed with removable panels so that the waste gas produced during the process can be extracted using large exhaust fans. The Chalco Group's waste gas is treated and purified to reduce dust and fluoride emissions to acceptable levels set by state environmental protection agencies.

Production Facilities

Alumina

The Chalco Group operates eleven alumina refineries and one research institute with a total designed annual production capacity of approximately 20.86 million tonnes as at 31 December 2020. Two of the Chalco Group's refineries are integrated with primary aluminium smelters. In 2020, the Chalco Group produced approximately 14.53 million tonnes of alumina, approximately 3.94 million tonnes of chemical alumina products. The overall utilisation rate for its refineries was 86 per cent. as at 31 December 2020.

The following table sets forth the annual production capacity, output of alumina and chemical alumina products, utilization rate and production process applied in each of the Chalco Group's alumina refineries and its Zhengzhou Institute:

	As at 31 December 2020			For the Year Ended 31 December 2020	
	Annual Production Capacity(1)	Utilisation Rate(2)	Alumina Production Output	Chemical Alumina Products Output	Production Process
	(in thousand tonnes, except percentages)				
Shanxi New Material	2,600	100%	1,793	96	Bayer-sintering
Chalco Mining	2,410	74%	1,320	35	Bayer-sintering
Chalco Shandong	2,270	100%	1,648	2,594	Sintering and Bayer
Zhongzhou Aluminum	3,050	84%	2,081	940	Sintering and Bayer
Guangxi branch	2,210	100%	2,353	196	Bayer
Zunyi Alumina	1,000	100%	1,143	9	Bayer
Chongqing branch(3)	800	—	—	—	Bayer-sintering
Zhengzhou Institute(4)	20	—	—	66	Bayer
Guizhou Huajin	1,600	100%	1,631	—	Bayer
Xinghua Technology	900	100%	864	7	Bayer
Shanxi Huaxing	2,000	50%	1,342	—	Bayer
Guangxi Huasheng	2,000	100%	352	—	Bayer
Total	20,860	86%	14,526	3,942.44	

(1) Production capacity is calculated based on designed capacity, which accounts for various assumptions including downtime for ordinary maintenance and repairs, the ore grade of bauxite feedstock and subsequent capacity modifications.

(2) Capacity utilisation rate is calculated by dividing the utilised production capacity as at the date indicated by the total designed annual production capacity.

(3) In 2018, Chalco leased the alumina production facilities of its Chongqing branch to a third party.

(4) The chemical alumina products produced at Zhengzhou Institute are sold commercially and such sales are included in the total revenues.

Primary Aluminium

The Chalco Group operates nine primary aluminium smelters in China with an aggregate annual production capacity of approximately 4.46 million tonnes as at 31 December 2020. In 2020, Chalco produced approximately 3.69 million tonnes of primary aluminium and the average utilisation rate for its smelters was 86 per cent. as at 31 December 2020.

The following table sets forth the annual production capacity, aluminium output, utilisation rate and smelting equipment used in each of the Chalco Group's aluminiums melters:

	As at 31 December 2020		**For the Year Ended 31 December 2020**	
Plant	**Annual Production Capacity(1)**	**Utilisation Rate(2)**	**Aluminium Output(3)**	**Smelting Equipment**
	(in thousand tonnes, except percentages)			
Baotou Aluminum(4)	1,340	99%	1,249	200Ka, 240Ka, 400Ka and 500Ka pre-bake
Lanzhou Aluminum	450	99%	408	200Ka and 350Ka pre-bake
Qinghai branch	420	99%	403	180Ka and 210Ka pre-bake
Shandong Huayu(5)	65	0%	—	240Ka pre-bake
Shanxi New Material	424	66%	308	300Ka pre-bake
Zunyi Aluminum	375	100%	402	200Ka and 400Ka pre-bake
Liancheng branch	550	28%	153	200Ka and 500Ka pre-bake
Guizhou Huaren	400	99%	486	500Ka
Shanxi Zhongrun	432	100%	285	500Ka

(1) Production capacity takes into account designed capacity, downtime for ordinary maintenance and repairs and subsequent capacity modifications.

(2) Capacity utilisation rate is calculated by dividing the utilised production capacity as at the date indicated by the total designed annual production capacity.

(3) Includes ingots, molten aluminium and aluminium alloys.

(4) Including the primary aluminium production facilities at Inner Mongolia Huayun, a subsidiary of Baotou Aluminum.

(5) Shandong Huayu is situated in Shandong Province and is a stand-alone primary aluminium plant. Chalco currently holds 55 per cent. equity interest in Shandong Huayu. Since November 2018, Chalco has gradually suspended production of aluminium at Shandong Huayu due to market environment and production restriction for environmental protection. In 2019, Chalco halted the primary aluminium production of Shandong Huayu and before that Shandong Huayu produced approximately 8,500 tonnes of primary aluminium in 2019. In October 2020, Shandong Huayu agreed to transfer its primary aluminium capacity quota of 135,000 tonnes to Yunnan Aluminum through judicial auction at a consideration of RMB538.66 million. Shandong Huayu had an annual primary aluminium production capacity of approximately 65,000 tonnes as at 31 December 2020. Shandong Huayu still has supporting facilities and coal-fired generators.

Raw Materials

Alumina

Bauxite is the principal raw material in alumina production. Most of the bauxite in China is monohydrate, consisting mainly of Aluminosilicate compounds. Bauxite deposits have been discovered across a broad area of central China and are especially abundant in the southern and northern parts of central China. The largest bauxite deposit in China lies in Shanxi Province.

On average, the Chalco Group's refineries consume approximately 2.4 tonnes of bauxite to produce one tonne of alumina for the year ended 31 December 2020. Mines of the Chalco Group supplied approximately 20.50 million tonnes of bauxite to its refineries in 2020. It purchases bauxite from a number of suppliers and does not depend on any supplier for its bauxite requirements. In 2020, bauxite secured from other suppliers accounted for approximately 53.6 per cent. of the Chalco Group's total bauxite supply, primarily because its demand for bauxite exceeded the production of its mines.

The following table sets forth the volumes and percentages of bauxite supplied by the Chalco Group's own mines and other suppliers for the periods indicated:

	Year Ended 31 December			
	2019		2020	
	Bauxite Supply	Percentage of Bauxite Supply (%)	Bauxite Supply	Percentage of Bauxite Supply (%)
	(in thousand tonnes, except percentages)			
Own mines[1]	14,791.2	37.6	20,498.3	46.4
Other Suppliers	24,499.9	62.4	23,723.2	53.6
Total	39,291.1	100.0	44,221.5	100.0

(1) Including the bauxite supplied by the Boffa mine in Guinea since 2020.

As at 31 December 2020, the Chalco Group owned and operated 14 mines in China that had approximately 193 million tonnes of aggregate bauxite reserves and it continues to explore new bauxite reserves to replenish the Group's reserves. The Chalco Group had exploration rights to the bauxite mines in Laos through Lao Service Mining Co., Ltd., in which it held 60 per cent. of the equity interest. In April 2019, the Laos government cancelled the exploration rights held by Lao Service Mining Co., Ltd. as it had not continuously carried out related activities in the past years. The Chalco Group also holds the requisite mining permit for all the three bauxite mines in West Kalimantan, Indonesia through its 96.28 per cent. owned subsidiary, PT Nusapati Prima. Its bauxite deposits in Indonesia are lateritic gibbsite and were formed by weathering and leaching of aluminium-rich silicate rock in tropical climates. The Chalco Group has suspended its bauxite mining in Indonesia since September 2014 due to restraints on export of bauxite imposed by the Indonesian government. Since 2017, the Indonesian government has issued, and amended from time to time, relevant rules pursuant to which export of bauxite may be allowed upon satisfaction of certain requirements. The Chalco Group has been actively exploring the possibility of meeting these requirements. In addition, the Chalco Group owns a bauxite mine in Guinea, and has the mining permit, through Chalco Guinea Company S.A., in which it indirectly held 85 per cent. of the equity interest.

The following table sets forth information for the Chalco Group's own mines as at 31 December 2020:

Mine	Location	Nature of Ownerships	Mining Method	Permit Renewal[1]	Present Condition/ Current State of Exploration	Bauxite Production (in thousand tonnes)
Pingguo mine	Guangxi Zhuang Autonomous Region, China	100% owned and operated by Chalco	Open pit	March 2024 – April 2036	Partly developed and operational	5,807
Guizhou mine[2]	Guizhou Province, China	100% owned and operated by Chalco	Open pit/ underground	October 2024 – December 2038	Partly developed and operational	2,001
Zunyi mine	Guizhou Province, China	100% owned and operated by Chalco	Open pit/ underground	May 2021 – December 2030	Partly developed and operational	1,003
Xiaoyi mine	Shanxi Province, China	100% owned and operated by Chalco	Open pit	May 2023 – September 2031	Partly developed and operational	499
Shanxi Other Mines	Shanxi Province, China	100% owned and operated by Chalco	Open pit/ underground	September 2017[3] – July 2035	Partly developed and operational	1,523
Sanmengxia area business department[4]	Henan Province, China	100% owned and operated by Chalco	Open pit/ underground	December 2020[3] – October 2031	Partly developed and operational	401
Luoyang area business department[4]	Henan Province, China	100% owned and operated by Chalco	Open pit/ underground	March 2021[3] – October 2031	Partly developed and operational	754
Zhengzhou area business department[4]	Henan Province, China	100% owned and operated by Chalco	Open pit/ underground	April 2020[3] – October 2031	Partly developed and operational	855
Sanmenxia mine	Henan Province, China	100% owned and operated by Chalco	Underground	November 2021 – April 2027	Fully developed and operational	507
Xuping mine[4]	Henan Province, China	100% owned and operated by Chalco	Open pit/ underground	May 2019[3] – October 2024	Partly developed and operational	277
Jiaozuo mine	Henan Province, China	100% owned and operated by Chalco	Open pit/ underground	September 2018[3] – October 2024	Partly developed and operational	388
Yangquan mine	Shanxi Province, China	100% owned and operated by Chalco	Open pit	September 2031 – May 2036	Partly developed and operational	426
Nanchuan mine	Chongqing Municipality, China	100% owned and operated by Chalco	Underground	December 2022 – November 2026	Suspended production	—
Huaxing mine	Shanxi Province, China	100% owned and operated by Chalco	Underground	September 2020[3] – August 2022	Fully developed and operational	2,768
Boffa bauxite mine	Boffa, Guinea	Owned and operated by Chalco Guinea Company S.A., an 85% subsidiary of Chalco	Open pit	July 2033	Operational	8,062
PT ALUSENTOSA	West Kalimantan, Indonesia	Owned and operated by PT Nusapati Prima, a 96.28% subsidiary of Chalco	Open pit	December 2027	Suspended production	—

Mine	Location	Nature of Ownerships	Mining Method	Permit Renewal[1]	Present Condition/ Current State of Exploration	Bauxite Production
						(in thousand tonnes)
PT KALMIN	West Kalimantan, Indonesia	Owned and operated by PT Nusapati Prima, a 96.28% subsidiary of Chalco	Open pit	December 2027	Suspended production	—
PT VISITAMA	West Kalimantan, Indonesia	Owned and operated by PT Nusapati Prima, a 96.28% subsidiary of Chalco	Open pit	November 2038	Pending production commencement	—

(1) All conditions to retain Chalco Group's properties or leases have been fulfilled as at 31 December 2020. Each mine may be covered by one or more mining permits or exploration permits and the range of permit renewal dates is set forth above.

(2) Including Guizhou No. 1 mine and Guizhou No. 2 mine.

(3) The Chalco Group is in the process of renewing these permits.

(4) To enhance the Chalco Group's mine management system and improve management efficiency and coordination, in 2020, Mianchi mine was renamed as Sanmengxia area business department; Luoyang mine was renamed as Luoyang area business department; Xiaoguan mine, Gongyi mine, Dengfeng mine and Xinmi mine were integrated as Zhengzhou area business department; and Xuchang mine and Pingdingshan mine were integrated as Xuping mine.

The following table sets forth certain estimated details of the reserves for the Chalco Group's own mines in China as at 31 December 2020:

Mine	Total Reserves[1][2]	Average Grade (%) Al_2O_3	SiO_2	Ratio of Average A/S[3]
	(million tonnes)			
Pingguo mine	51.78	52.54	4.77	11.01
Guizhou mine[4]	38.15	64.48	9.06	7.12
Zunyi mine	9.63	59.50	10.66	5.58
Xiaoyi mine	9.99	65.73	12.21	5.38
Shanxi Other Mines	15.25	62.99	13.51	4.66
Sanmengxia area business department[5]	4.73	62.01	14.32	4.33
Luoyang area business department[5]	1.28	62.89	13.27	4.74
Zhengzhou area business department[5]	12.64	63.22	13.90	4.55
Sanmenxia mine	24.19	62.99	12.68	4.97
Xuping mine[5]	3.89	63.79	12.26	5.20
Jiaozuo mine	0.37	63.08	12.30	5.13
Yangquan mine	1.02	58.36	13.94	4.19
Nanchuan mine	17.82	58.50	15.67	3.73
Huaxing Mine	2.54	61.82	9.01	6.86
Total (average) reserves	193.28	60.01	10.13	5.92
By reserve type				
Proven reserve	67.12	60.01	10.26	5.85
Probable reserve	126.61	60.01	10.08	5.95
Total (average) reserves	**193.28**	**60.01**	**10.13**	**5.92**

(1) The Chalco Group's reserves take into consideration mining dilution and loss factors, which generally vary from 5 per cent. to 10 per cent. and are based on the planned mining method and selected drill data for each site.

(2) The Chalco Group's metallurgical recovery factors are calculated in accordance with the relevant PRC mining standards and vary from mine to mine.

(3) Refers to the ratio of average grade of Al_2O_3 to the average grade of SiO_2 of the reserves.

(4) Including both Guizhou No. 1 mine and Guizhou No. 2 mine.

(5) To enhance the Chalco Group's mine management system and improve management efficiency and coordination, in 2020, Mianchi mine was renamed as Sanmengxia area business department; Luoyang mine was renamed as Luoyang area business department; Xiaoguan mine, Gongyi mine, Dengfeng mine and Xinmi mine were integrated as Zhengzhou area business department; and Xuchang mine and Pingdingshan mine were integrated as Xuping mine.

In addition to its own mines, the Chalco Group also sources bauxite from other suppliers. The majority of other domestic suppliers are small independent mines. Small independent mines are not affiliated with the Chalco Group and generally have annual bauxite production capacities not exceeding 200,000 tonnes. These mines have been an important source of bauxite for the Chalco Group's operations. It purchases bauxite directly from small independent mines or through local distributors that procure bauxite from these mines. In addition, the Chalco Group also secures a portion of bauxite overseas. Bauxite secured from other suppliers accounted for 54 per cent. of the Chalco Group's total bauxite supply in 2020.

Primary Aluminium

Alumina is the main raw material in the production of primary aluminium. The Chalco Group's primary aluminium plants that do not have integrated alumina refining operations onsite obtain alumina internally from its alumina refineries located elsewhere or externally on the market. Another principal component of costs in the smelting process is electricity. Apart from alumina and electricity, the Chalco Group also requires carbon anodes, carbon cathodes, fluoride salt and cryolite for its smelting operations.

Supplemental Materials, Electricity and Fuel

The sales and marketing department at the Chalco Group's headquarters coordinates and manages its supply chain for all its major raw materials in conjunction with the procurement centre at each production facility, which manages the logistics and inventory of raw materials locally. The Chalco Group is able to purchase diesel, the main fuel used by its mining and manufacturing equipment, from the public markets, and it sources its water from local rivers, lakes or underground sources.

Alumina

Electricity, coal, alkali (caustic soda or soda ash) and natural gas are the principal materials and energy used in the Chalco Group's alumina production. Electricity is one of the principal cost components in the refining process. The Chalco Group generates electricity at a number of refineries and purchases its remaining electric power requirements from regional power grids at government-mandated rates or directly from power generation enterprises.

Large quantities of coal are used as a reducing agent and fuel to produce steam and gas in the alumina refining process. As at 31 December 2020, the Chalco Group held minority interests in a number of coal mining enterprises, including Shanxi Jiexiu, Qinghai Energy, Xuehugou Coal Industry Co., Ltd., Huasheng Wanjie Coal Co., Ltd., Dongdong Coal, Chalco Liupanshui, Huozhou Coal Group Xingshengyuan Coal Co., Ltd., and Guizhou Yuneng. The Chalco Group holds majority equity interest in Gansu Huayang, which holds exploration rights for certain portion of Luochuan mine in Gansu Province. It has also acquired majority equity interest in the Ningxia Energy, which holds mining rights for coal deposits in Ningxia Autonomous Region.

Guizhou Yuneng, an associate company in which the Chalco Group holds 25 per cent. of the equity interest, has been under development. In 2019, one of the coal mines under its construction was put into production, and another coal mine under its construction is expected to be put into operation in 2021. The operation of Huozhou Coal Group Xingshengyuan Coal Co., Ltd. has been suspended for technological upgrade. Its mining permit was renewed in 2020. Chalco Liupanshui filed bankruptcy in 2019 as a result of the supply-side structural reform carried out by the PRC government in the coal industry and the bankruptcy has been accepted by the court. It has been under the liquidation process. The rest of the coal mining enterprises in which the Chalco Group directly or indirectly have minority equity interests are currently in the extraction or trial production stage.

Primary Aluminium

Electricity, carbon anodes and cathodes are the principal materials and energy used in the Chalco Group's smelting process. Smelting primary aluminium requires a substantial and continuous supply of electricity. The Chalco Group generates electricity at four of its smelters to supply a portion of the electricity consumed by these smelters. It purchases its remaining electric power requirements directly from power generation enterprises. As at 31 December 2020, four of the Chalco Group's smelters had direct purchase arrangement with power generation enterprises and the rest of its smelters were in negotiation process for the renewal of direct purchase arrangement. Direct purchase transactions are normally organised by the local government and the direct purchase agreements are entered into annually. Because power prices in China vary from one region to another, power costs for the Chalco Group's various smelters could vary substantially. The average electricity cost (including tax) of the Chalco Group smelters in 2020 remained relatively stable compared to 2019.

Carbon anodes and cathodes are key raw materials in the smelting process. The Chalco Group is generally able to manufacture carbon anodes necessary for the operations of its smelters. In addition, its Qinghai branch possesses production capacity of carbon cathodes and is able to manufacture carbon cathodes products.

Sales and Marketing

The Chalco Group coordinates substantially all of its sales and marketing activities for its self-produced alumina products and some of its sales and marketing activities for its self-produced primary aluminium products through Chalco Trading. Chalco's subsidiaries and branches sell some of the group's self-produced primary aluminium products directly to external customers. The Chalco Group's alumina refineries sell its self-produced chemical alumina products directly to external customers or indirectly through Chalco Trading for subsequent external trading. For all of its self-produced products that are sold either through Chalco Trading for subsequent external sale or directly to external customers, Chalco's subsidiaries and branches play an important role in providing after-sale services and strengthening its presence in the marketplace. Since late 2009, the Chalco Group also have been engaged substantially in the trading of non-ferrous metal products including alumina, primary aluminium, copper, zinc and lead as well as coal products that it sources from third-party suppliers through Chalco Trading.

Delivery

The Chalco Group relies on rail shipping and trucks for the delivery of products within China. Its alumina is transported by rail or trucks, and transportation costs are generally borne by its customers and excluded from its sales prices. For long distance deliveries, the Chalco Group maintains spur lines connecting its plants to the national railway routes. The Chalco Group's molten aluminium are delivered to its customers primarily by trucks. Other primary aluminium products are primarily transported by rail. The coal products of the Chalco Group are transported both by trucks and by rail. Rail shipping on the PRC national railway system is subject to government mandated pricing.

Recent Developments

In 2021, under the development goal of building itself into a world-class aluminium company with global competitiveness, the Chalco Group implemented new development philosophies. Taking the promotion of high-quality development as the overarching theme, the enhancement of the capability to create value as the leading driver and the deepening of comprehensive benchmarking as the starting point, the Chalco Group strengthened its asset operation and management capabilities and improved efficiency, marking a milestone in the reform and development of the Chalco Group. The Chalco Group experienced significant increase in product output (including major products such as bauxite, alumina, electrolytic aluminium, refined alumina and carbon), comprehensive optimisation of operating quality and growth in economic efficiency.

For the nine months ended 30 September 2021, operating revenue of the Chalco Group increased as compared to the corresponding period in 2020, primarily due to the increase in the revenue from trading and the increase in the selling price of principal products. Meanwhile, operating cost of the Chalco Group for the nine months ended 30 September 2021 increased as compared to the corresponding period in 2020, primarily due to the increase in the purchase costs in trading.

As at 30 September 2021, held-for-trading financial assets of Chalco Group increased significantly as compared to 31 December 2020, primarily due to the purchase of new structured deposits. As at 30 September 2021, total current liabilities of the Chalco Group decreased as compared to 31 December 2020, primarily due to decreases in short-term borrowings (mainly the result of net repayment of matured short-term borrowings) and notes payable (mainly the result of due payment of bank acceptance notes).

Based on preliminary calculations for the year ended 31 December 2021, Chalco expects to record significant increases in its net profit attributable to shareholders and net profit attributable to shareholders after non-recurring profit or loss, as compared to the year ended 31 December 2020. Such preliminary calculations were based on the unaudited consolidated management accounts of the Chalco Group for the year ended 31 December 2021 and the information currently available to Chalco. Such preliminary calculations have not been reviewed by the independent auditor of the Chalco Group and are subject to finalisation or necessary adjustments upon further review.

The Chalco Group completed the acquisition of the gallium production lines of the Guangxi Gallium Branch, Henan Gallium Branch and Zunyi Gallium Branch of China Rare Earth & Metals in September 2021. The acquisition is to facilitate the realisation of synergy between the aluminium and gallium business of the Chalco Group and to improve the production efficiency and effectiveness. Furthermore, the acquisition will also contribute to the planning and establishment of a high-purity material business unit of the Chalco Group in the future.

Yunnan Aluminum Group

Yunnan Aluminum is a core aluminium company of China with substantial national support. Benefiting from the abundant hydropower of Yunnan province, Yunnan Aluminum has established a complete industry chain covering mining, alumina production, smelting, aluminium fabrication and carbon production. It is a major supplier of hydropower aluminium in domestic market, a major manufacturer of ultra-thin aluminium foil in China and a national industry standard maker of casting aluminium alloy ingot. The Group believes that Yunnan Aluminum is by far the only China Environmental Friendly Enterprise in the aluminium industry. The Group also believes Yunnan Aluminum is also one of the first batch of domestic enterprises to obtain product carbon footprint certification with a global leading position. As a result of its reputation for high quality products and low-carbon production, Yunnan Aluminum has formed long-term strategic cooperation with market leading companies and gained increasing popularity among customers, with its aluminium ingots becoming the designated procurements products of more and more domestic and international companies.

Yunnan Aluminum primarily engages in the production of alumina, primary aluminium, aluminium fabrications and carbon products. As at 31 December 2020, Yunnan Aluminum had the annual production capacity of bauxite in the amount of approximately 3.04 million tonnes, alumina in the amount of approximately 1.40 million tonnes, hydropower aluminium in the amount of approximately 2.78 million tonnes, aluminium alloy and fabrications in the amount of approximately 1.50 million tonnes and carbon products in the amount of approximately 0.80 million tonnes. For the years ended 31 December 2019 and 2020, operating revenue generated from the Yunnan Aluminum Group's electrolytic aluminium amounted to approximately 57.66 per cent. and 55.99 per cent., respectively of its total operating revenue, while operating revenue generated from the Yunnan Aluminum Group's aluminium fabrication products amounted to 38.76 per cent. and 42.47 per cent., respectively of its total operating revenue.

One of its core competitive advantages is its abundant bauxite resources. Relying on the abundant bauxite deposits, Yunnan Wenshan Aluminum Co., Ltd. (雲南文山鋁業有限公司, "**Wenshan Aluminum**"), a wholly owned subsidiary of Yunnan Aluminum has established its annual production capacity of 1.40 million alumina. In addition, after the launch of anode carbon project with Sunstone Development Co., Ltd. (索通發展股份有限公司), a company specialised in the production and marketing of prebaked carbon anodes to the aluminium industry both domestically in China as well as the export of anodes to the rest of the world and listed on the Shanghai Stock Exchange, Yunnan Aluminum is expected to be able to increase the self-sufficiency of anode carbon, a key raw material for the electrolytic aluminium industry.

Relying on the strong hydropower supply in Yunnan province of China, Yunnan Aluminum sources its electricity from hydropower. In recent years, Yunnan Aluminum has accelerated the implementation of a couple of "green aluminium" projects such as its three large hydropower aluminium projects, namely "Zhaotong 700,000 Tonnes Green Aluminium Project", "Heqing 450,000 Tonnes Green Aluminium Project" and "Wenshan 500,000 Tonnes Green Aluminium Project". In 2021, Yunnan Aluminum completed the construction of the second and third sections of phase two of the "Yunnan Aluminum Haixin Hydroelectric Aluminium Project". The "Yunnan Aluminum Yixin Smart Manufacturing Project" passed its acceptance check and began operations in 2021. Focusing on high-quality hydropower and aluminium sources, Yunnan Aluminum has a concentrated layout and extended development of green and low-carbon "integrated hydropower and aluminium processing" industry, with a wide range of driving forces. It has established a research and innovation system, including technology centres of provincial level, research institutes with advanced technologies and patents. As a result, Yunnan Aluminum has developed into an internationally leading aluminium company in terms of environment protection as well as other economic aspects.

In addition, Yunnan Aluminum has implemented an integrated strategy to develop green, low carbon, hydropower-driven aluminium business and to expedite its industry upgrade. Yunnan Aluminum thus established a complete aluminium industry chain covering each step from upstream to downstream. A complete and integrated industry chain enables Yunnan Aluminum to reach synergy effect, reducing raw material processing costs, controlling periodic price fluctuations of upstream products, as well as improving the risk resistance of the company and its sustainable development capabilities. With the establishment and operation of several significant projects, total production capacity of primary aluminium, anode carbon and aluminium alloy or fabrications of Yunnan Aluminum are expected to continue to increase.

Yunnan Aluminum is located close to the southern China with the largest aluminium consumption amount, where Yunnan Aluminum has been claiming more and more market share. Yunnan Aluminum is also close to the southern-west of China with comparatively undeveloped economy and a urbanisation rate far behind the average level of China. Southern-west of China thus bore the potential for vast aluminium consumptions as a result of economic development and urbanisation. In addition, leveraging its geographic advantage, Yunnan Aluminum is able to tap into the southern and southeast Asian market and resources to further spur its developments.

In 2021, in face of the challenges presented by the shortage of power supply in Yunnan province, which led to power cuts and shutdowns in some of Yunnan Aluminum's production systems, Yunnan Aluminum closely adhered to the philosophy of "motivation from reform and innovation, lowering costs and advancing efficiency" (改革創新啟動力、對標降本增效益) guided by its annual production and operation goals. Yunnan Aluminum actively responded to the implementation of staggered power consumption, maintained safe and stable production and operation, reduced costs and increased efficiency by comprehensive benchmarking. For the nine months ended 30 September 2021, Yunnan Aluminum's operating revenue and net profit increased as compared to the corresponding period in 2020. As at 30 September 2021, Yunnan Aluminum's total assets decreased as compared to 31 December 2020. The Group's total liabilities also decreased, resulting in a net increase in total owners' equity as at 30 September 2021 as compared to 31 December 2020.

Aluminium Fabrication Business

The Group's aluminium fabrication segment includes the production and sale of fabrication products, including casts, planks, strips, screens, extrusions, ingots and profiles, which are widely used in the construction, power generation, automobile, packaging, machinery and durable goods industries. In June 2013, Chalco disposed of substantially all of its aluminium fabrication operations to the Guarantor in line with Chalco's development strategy to focus on the upstream sectors of the aluminium industry chain and the production of high value-added products. Since then, the Group has operated the aluminium fabrication business through the Guarantor and its other subsidiaries, primarily Northeast Light Alloy Co., Ltd (東北輕合金有限責任公司, "**Northeast Light Alloy**"), Southwest Aluminum (Group) Co., Ltd (西南鋁業(集團)有限責任公司, "**Southwest Aluminum**"), Chalco Ruimin Co., Ltd. (中鋁瑞閩股份有限公司), Northwest Aluminum Co., Ltd (西北鋁業有限責任公司, "**Northwest Aluminum**") and Chinalco Shenyang Non-ferrous Metals Processing Co., Ltd (中鋁瀋陽有色金屬加工公司, "**Chinalco Shenyang**").

Established in February 2015 as a business unit of the Guarantor, the Aluminum Processing Business Unit is a non-legal person entity with independent accounting and consolidated with the Group, acting as the operation and control centre of the aluminium processing companies of the Group.

Northeast Light Alloy mainly engages in aluminium, magnesium and other alloy plates, strips, foils, pipes, rods, profiles, wire rods, forgings and other deep processed products, which are widely used in industries of national strategic importance, rail transportation, packing, petroleum and chemical industry, and its products have been exported to Europe, the United States, Japan, Korea and South-east Asian countries. As a national level high-tech enterprise, Northeast Light Alloy has established its national level enterprise technology centre, postdoctoral scientific research stations, academician workstations, national non-ferrous metal preparation and processing laboratories and various provincial level R&D centres, engineering centres and key laboratories. It has engaged in various national key projects, large transport aircrafts and large civil planes development projects.

Southwest Aluminum is established for the production of new varieties of large-sized and high-quality aluminium and aluminium alloy materials for industries and projects of national strategic importance. Southwest Aluminum mainly engages in the production of aluminium and aluminium alloy plates, strips, foils, pipes, rods, profiles and forgings, and supplies the aluminium materials in industries such as aeronautics and astronautics, transportation, packing and printing and architectural decoration industry. Its products have been exported to over 40 countries in Europe, America, South-east Asia and Middle East.

Northwest Aluminum, a subsidiary of the Group, is one of three largest aluminium processing companies in China and the largest aluminium processing company in Northwest China. Northwest Aluminum has a complete set of aluminium smelting, casting, extruding and deep processing production facilities and supporting facilities. It has many products including aluminium and aluminium alloy pipes, rods, profiles, wire rods, material arrangement, castings and deep processed products, which are widely used in aviation, aerospace, transportation, machinery manufacturing, instrumentation, household appliances, chemicals, electronics and other industries.

Chinalco Shenyang was the first specialised production and research base focusing on copper and copper alloy in China. Chinalco Shenyang has established titanium casting, nickel-copper casting, forging, strip, residual titanium recovery and other production lines and technology research and development centres, and owns a full range of alloy specifications.

In October 2019, Chinalco Advanced Manufacturing was jointly formed by the Guarantor and Chongqing Municipal Government with an aim of becoming the leading high-end manufacturing enterprise dedicated to product quality development. The Guarantor injected 12 subsidiaries in the aluminium fabrication segment into Chinalco Advanced Manufacturing, including Northeast Light, Southwest Aluminum and Northwest Aluminum.

Copper Business

Overview

The Group's copper business is principally conducted by China Copper as well as CMC which holds the entire stake in the Toromocho Project in Central Peru, one of the largest copper mine in the world.

China Copper holds four principal subsidiaries in this segment, being Yunnan Copper Industry, Chinalco Luoyang Copper, CMC and Central China Copper. Yunnan Copper Industry is a renowned copper producer in China engaged in the production of high-purity copper cathode, copper wire bar for electrical purposes, industrial sulphuric acid, gold ingots, silver ingots, round copper wire for electrical purposes, bluestone and the recycling of various non-ferrous metals such as gold, silver, aluminium, bismuth, tin, platinum and palladium.

CMC is a resource development company acting as the Group's core platform for the future acquisition, investment, development and operation of non-ferrous and non-aluminium mineral resources and projects outside China. CMC holds nearly the entire stake in the Toromocho Project in central Peru, one of the largest copper mines in the world, which commenced commercial production since 17 June 2015. The Toromocho Project achieved annual production of 763.5 thousand tonnes of copper concentrate and 182.3 thousand tonnes of copper contained in the concentrate for the year ended 31 December 2015, being the first year of its operations. The Toromocho Project produced approximately 910.8 thousand tonnes of copper concentrate with 203.3 thousand tonnes of copper contained in the concentrate for the year ended 31 December 2020.

The Group's copper fabrication segment is principally conducted through Chinalco Luoyang Copper, Chinalco Kunming Copper and Chinalco Central China Copper. The Group's copper fabrication subsidiaries are among the largest producers of copper fabrication products and are equipped with advanced production facilities in the PRC. The Group's copper fabrication products are offered in the forms of tubes, pipes, plates, sheets, foils, rods, rolls, strips, cables, wires, pipe fittings, forgings and castings. Such fabricates have been widely employed in the high-technology industry, information, electronics, aviation, automobile, ship-building, household appliances, construction materials and electricity supply sectors. As at 31 December 2020, the Group offers over five categories of copper fabricates, which are further divided into over seven species and over 100 specifications.

Production Capacity

As at 31 December 2020, the Group's annual production capacity for copper and copper fabrication products was approximately 1,280 thousand tonnes and 445 thousand tonnes, respectively, while the Group's annual production capacity for copper concentrate was approximately 366 thousand tonnes. The following table sets forth the production capacity of each of the Group's principal copper subsidiaries by product segment as at the indicated date:

	As at 31 December 2020	
Plant	**Refined Copper**	**Copper Fabrication Products**
	(in thousand tonnes)	
Yunnan Copper Industry	1,280	—
Chinalco Luoyang Copper	—	135
Chinalco Kunming Copper	—	220
Chinalco Central China Copper	—	90
Total	**1,280**	**445**

As at 31 December 2020, the Group's production output of copper represented approximately 13.06 per cent. of the total production output in the PRC for the period.

The following table sets forth a breakdown of the Group's copper production volume by product segment for the periods indicated:

Production Volume by Product	Year ended 31 December	
	2019	**2020**
	(in thousand tonnes, except Golden and Silver)	
Copper segment		
Copper contained in copper concentrate	304.2	327.5
Refined Copper	1,115	1,309
Copper Fabrication segment		
Tubes and pipes	4.8	4.1
Plates and sheets	174	177
Rods	4.1	4.6
Others	103.1	143.3
By-products		
Gold (in kilograms)	11,961	16,935
Silver (in kilograms)	696,304	748,281
Iron ore pellets	—	—
Sulphuric acid	501.1	599.4
Zinc	598.9	605.7

Production Process

Copper

Copper is extracted from its ores through either the thermal extraction process or the solvent extraction process. The choice of extraction process depends on the chemical composition of the copper ores. The thermal extraction process is more suitable for ores containing predominantly copper sulphides, whereas the solvent extraction process is more suitable for ores containing predominantly copper oxides. Approximately 80 per cent. of copper is extracted through the thermal extraction process globally. For the years ended 31 December 2019 and 2020, the Group extracted approximately 1,115 thousand tonnes of copper and 1,310 thousand tonnes of copper, respectively, all through the thermal extraction process.

Thermal Extraction Process

Copper ore is first extracted and beneficiated into copper concentrate before the thermal extraction process starts. The thermal extraction process begins with the mixing of copper concentrate with fuel and melting agents according to specified ratios. The mixture is then fed into a furnace and roasted at a temperature of about 1,100 degree Celsius. At such temperature, some of the sulphur in the ores is converted to sulphur dioxide and removed from the furnace for further processing into sulphuric acid; the majority of impurities such as arsenic and antimony are also oxidised and vaporised. Some of the iron sulphide in the ores is converted to iron oxide and further combines with silica to form a residue. The remaining copper sulphide and iron sulphide in the molten ores will turn into a new mixture known as matte, which contains 20 per cent. to 50 per cent. of copper and 23 per cent. to 27 per cent. of sulphur. As the iron oxide-silica residue is lighter, it floats on the matte and could be readily removed.

The next stage of the thermal extraction process is the removal of iron and sulphur from the matte. The matte is led into a converting furnace and mixed with quartz sand. Air is led into the converting furnace to facilitate further combustion at temperatures between 1,100 and 1,300 degrees Celsius. Since iron has greater affinity to oxygen than copper, iron sulphide in the matte is oxidised before copper sulphide. The newly formed iron oxide adheres to the quartz sand and forms a residue. The copper sulphide in the matte is gradually oxidised into copper oxide and further reacts with the remaining copper sulphide to form crude copper and sulphur dioxide. At this stage, crude copper obtained from the converting furnace contains approximately 98.5 per cent. of copper.

Crude copper is further refined in an anode furnace to produce copper anode plates that are suitable for electrolysis. Air is fed into the anode furnace to further oxidise the impurities in the crude copper and facilitate their removal. Having removed a certain quantity of impurities, the crude copper is sprayed with heavy oil to initiate the reduction of copper oxide into copper and carbon monoxide. The final stage of the thermal extraction process is electrolysis. The copper anode plates obtained from the previous stage are inserted into electrolytic cells where electric current passes through a copper-containing electrolyte. Pure copper (containing 99.9 per cent. of copper) could be obtained at the cathode while previous metals such as gold and silver could be obtained from the residue at the anode.

Solvent Extraction Process

The solvent extraction process is performed by dissolving copper ores, refined copper ores or copper-containing calcine in a suitable solvent. As copper oxide in the copper ores or calcine is discharged into the solvent, it is concentrated in and finally removed from the solution. The extract will be led into an electro-winning tank to undergo electro-winning, during which a current is passed from an inert anode through the extract so that copper is extracted as it is deposited onto the cathode. The end product is known as copper cathode.

By-products

The Group also produces gold, silver, zinc, iron ore pellets and sulphur dioxide as by-products during the copper refining process.

Gold and silver deposit in trace quantities are in the residue at the anode during electrolysis. These precious metals are washed out from the residue and refined to increase their purities.

Sulphur dioxide released during the initial stages of the thermal extraction process is converted into sulphuric acid via a couple of simple chemical reactions. On average, the production of one tonne of refined copper could yield three tonnes of sulphuric acid.

Owing to the rich iron content in the Group's copper ores, iron oxides could be obtained from the thermal extraction process. Iron oxides, which adhere to quartz sand and solidify, are recovered from the converting furnace and further processed into iron ore pellets.

Copper Fabrication

The ductility and malleability of copper and copper alloys make them ideally suited to fabrication methods that involve severe deformation such as tube forming, wire drawing, spinning, roll forming and deep drawing. These fabrication methods involve specialised heavy equipment and skilled operators.

Raw copper materials are fed into specialised fabrication equipment which applies pressure on the materials to fix them into the desired shapes and dimensions. Mild heating could be applied to soften the materials so that they are more susceptible to the mechanical forces of the fabrication equipment.

The casting technique is employed to produce fabrication products with complex shapes. The most flexible casting technique utilises sand moulds, which can be used for producing simple one-off items and long casting runs which range in size from a few grams to many tonnes. Die casting is another popular casting technique which uses iron moulds. Die casting is suited to long casting runs. Bars, sections and hollows that require tight dimensional control are often produced by continuous casting. Rings, discs and other symmetrical shapes tend to be produced using centrifugal casting.

Production Facilities

Copper

Yunnan Copper Industry currently operates six copper refineries with a total designed annual refined copper production capacity of approximately 1,280 thousand tonnes as at 31 December 2020.

Copper Fabrication Products

The Group operates three copper fabrication subsidiaries located in Henan Province, Yunnan Province and Hubei Province respectively. The Group's copper fabrication subsidiaries are equipped with production lines and machinery that meet up to international standards. The following table sets forth the annual production capacity, copper fabrication output, utilisation rate of each of the Group's copper fabrication subsidiaries:

	For the year ended 31 December			
	2019		2020	
Branch	**Copper Fabrication Output**	**Utilisation Rate[(1)]**	**Copper Fabrication Output**	**Utilisation Rate[(1)]**
	(in thousand tonnes, except percentages)			
Chinalco Luoyang Copper	71	34.13%	85	62.96%
Chinalco Kunming Copper	174	79.09%	177	80.45%
Chinalco Central China Copper	40	44.44%	67	74.44%
Total	**286**	**55.21%**	**329**	**73.93%**

(1) Capacity utilisation rate is determined by dividing the production output by production capacity.

Raw Materials

Apart from copper ore, raw materials such as blister copper and matte are also required for copper smelting. The Group refines copper ores into copper concentrate, and then refined copper, for external sales or further production at its own copper fabrication plants. The Group procures the remaining portion of copper ores from *third*-party suppliers in the domestic and international markets.

The following table sets forth the percentage of copper concentrate sourced from the Group's own mines, third-party suppliers in the domestic market and international market for the years ended 31 December 2019 and 2020, respectively:

Mines	For the year ended 31 December 2019	2020
	(in percentage)	
Own mines	11.04	10.51
Domestic third-party suppliers	32.24	33.25
International third-party suppliers	56.72	56.24

Own Copper Mines

As at 31 December 2020, the Group owned 9 copper mines (8 of which are in production and the remaining one is under development) in China with over 23 million tonnes of defined copper reserves. For the years ended 31 December 2019 and 2020, the Group extracted approximately 304.2 thousand tonnes and 327.5 thousand tonnes, respectively, of copper ores from its own copper mines. Through CMC, the Group also owns a large copper mine in Peru (the Toromocho Project), with approximately 6.4 million tonnes of copper reserves.

The following table sets forth information of selected copper mines of the Group in China as at 31 December 2020:

Mine	Location	Mining method	As at 31 December 2020 Total mine life	Remaining mine life
Dahongshan mine	Yunnan Province, China	Underground	31	14
Simao Dapingzhang mine	Yunnan Province, China	Open pit	42	26
Liuju mine	Yunnan Province, China	Underground	47	5
Yinmin mine	Yunnan Province, China	Underground	76	18
Yangla mine	Yunnan Province, China	Underground	46	31
Toromocho Project	Morococha, Peru	Open pit	31	24
Pulang Copper mine	Yunnan Province, China	Underground	41	37
Lala mine	Yunnan Province, China	Open pit	84	20

Toromocho Project

In August 2007, through its Canadian subsidiary, the Group acquired all the shares of Canada-incorporated Peru Copper Inc., and transferred all the shares to CMC after its establishment. After the acquisition, CMC owned the Toromocho Project located in the core of the Morococha mining district in central Peru. The proved and probable JORC[2]-compliant reserves of the Toromocho Project deposit are estimated to contain approximately 7.3 million tonnes of copper, 290,000 tonnes of molybdenum and 10,500 tonnes of silver. The Toromocho Project was commissioned on 10 December 2013 and commenced commercial operations since 17 June 2015. The Toromocho Project achieved annual production of 765 thousand tonnes of copper concentrate and 183 thousand tonnes of copper contained in the concentrate for the year ended 31 December 2015, being the first year of its operations. The Toromocho Project produced approximately 910.8 thousand tonnes of copper concentrate with 203.3

2 Australasian Joint Ore Reserves Committee. JORC Code means the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, a widely used and internationally recognised resource/reserve classification system. The JORC Code was first published in 1989, with the most recent revision being published late in 2012.

thousand tonnes of copper contained in the concentrate for the year ended 31 December 2020. CMC processes the copper sulphide ore on-site and sell copper concentrate primarily to China for smelting and production of refined copper.

The following tables summarise the estimated ore reserves and mineral resources in respect of the Toromocho Project as at 31 December 2020:

		Grade			Metal Content		
JORC Ore Reserve Category	**Tonnes (millions)**	**Copper (%)**	**Molybdenum**	**Silver (grams/ tonne)**	**Copper (million tonnes)**	**Molybdenum (tonnes)**	**Silver (tonnes)**
Proved	509	0.48	0.015	5.27	2.5	76,139	2,684
Probable	970	0.41	0.015	5.62	3.9	141,681	5,448
Total	1,479	0.43	0.015	5.50	6.4	217,820	8,132

		Grade			Metal Content		
JORC Measured and Indicated	**Tonnes (millions)**	**Copper (%)**	**Molybdenum**	**Silver (grams/ tonne)**	**Copper (million tonnes)**	**Molybdenum (tonnes)**	**Silver (tonnes)**
Measured	519	0.50	0.015	5.64	2.6	77,625	2,926
Indicated	1,114	0.43	0.013	5.87	4.8	141,997	6,538
Total	1,633	0.45	0.013	5.80	7.4	219,622	9,464

		Grade			Metal Content		
JORC Inferred Mineral Resources Category	**Tonnes (millions)**	**Copper (%)**	**Molybdenum**	**Silver (grams/ tonne)**	**Copper (million tonnes)**	**Molybdenum (tonnes)**	**Silver (tonnes)**
Inferred	631	0.37	0.010	6.20	2.4	260,081	3,913

Third-party supplies

Due to the scarcity of copper resources and uneven distribution of copper deposits in China, the Group relies on third-party suppliers to supply copper concentrate for its production. For the years ended 31 December 2019 and 2020, the Group procured approximately 88.96 per cent. and 89.48 per cent. of copper ores from domestic and international third-party suppliers.

Copper concentrate acquired in the domestic market are mainly produced at small independent copper mines in Yunnan province and Sichuan province. The benchmark price for copper quoted by the Shanghai Metals Exchange serves as a general pricing guide to the Group's copper products. The purchase price is reached either by deducting production costs from the average price or spot price quoted by the Shanghai Metals Exchange, or by multiplying the average price or spot price by a relevant pricing ratio. The Group normally makes advance payments to a domestic supplier according to the payment schedule specified in the individual procurement agreement. The remaining balance is paid upon receipt of the copper ores and certification of satisfactory quality by its own laboratories.

Internationally procured copper concentrate is mainly imported from South America, Australia, Mongolia, Russia and the United States. The Group has long-term contracts with several large international suppliers, such as Mitsui & Co., Ltd, Teck Metals Ltd., Bhp Billiton Marketing AG, Sandfire Resources NL, Corporación Nacional Del Cobre De Chile, Freeport Minerals Corporation, Anglo American Marketing Limited Singapore Branch, Industrial Minerals SA, Glencore International

AG, Trafigura Pte Ltd., Mitsubishi Corporation RtM International Pte. Ltd., China Minmetals Nonferrous Metals Company Ltd., Oyu Tolgoi LLC., First Quantum Minerals Ltd., Vale International SA., Grupo Mexico and Metal Trade Overseas AG. However, the Group also enters into some spot contracts, depending on the production plan and market conditions. The Group negotiates the production charges and refining charges with an international supplier and deduct such charges from the benchmark price to arrive at a contract price. Payment is made in accordance to the terms of the specific procurement agreement upon receipt of an invoice from the supplier. The contract price could be paid by instalments or in one lump sum. If payment is by instalments, the last instalment is paid upon confirmation of the quality of the copper ores. The contract price could either be paid to the international supplier by a letter of credit issued by the Group's banks, or paid by the Group to the international supplier's bank without a letter of credit.

Sales and Marketing

The Group is currently focusing on the domestic market in China. The Group's copper is mainly sold to large electrical cable producers and copper fabricate producers in eastern China, northern China and southwestern China whereas copper fabricates produced by the Group are mainly supplied to the information transmission and telecommunication enterprises in China.

The majority of the Group's copper is sold directly to customers with the remainder distributed through its distribution agents. China Copper International Trade Group Co., Ltd. (中銅國際貿易集團有限公司), in which China Copper and Yunnan Copper hold 50 per cent. of equity each and its branch trading company located in Kunming form the distribution network covering Beijing, Tianjin, Shenzhen, Chengdu and Kunming for the sale of the Group's copper.

Chinalco Luoyang Copper, Chinalco Central China Copper and Chinalco Kunming Copper sell and distribute their copper fabrication products to customers directly, such as Schneider Electric, ABB Group, Siemens and Chengdu Xuguang Electronics Co., Ltd.

By-products from the copper extraction process are also sold for profit. Sulphuric acid is mainly sold to fertiliser producers on the periphery of the Group's copper refineries. Gold is traded and sold on the Shanghai Metals Exchange and silver is mainly exported to overseas precious metal dealers. Iron ore pellets are supplied to iron refineries in China through the same channel as copper.

Pricing

The Group's copper is either sold as existing goods or future goods. Existing copper goods are sold by way of spot or long-term contracts. The selling price under a spot contract is determined with reference to the prevailing spot price for copper in the market. The selling price under a long-term contract is determined by adding an agreed premium to the monthly average of the close prices for refined copper in such month as quoted on the Shanghai Futures Exchange. Future copper goods are traded on the Shanghai Metals Exchange.

The selling price of the Group's copper fabrication products is determined according to the price of raw materials and processing charges. The Group's copper fabrication products are sold directly to external customers or through distribution agents.

Delivery

The Group relies on railway and trucks for the delivery of copper products within China. The Group's copper is transported by rail or trucks, and transportation costs are generally borne by the Group's customers and excluded from the Group's sales prices. The Group's copper fabrication products are transported by trucks.

Recent Developments

As the scale of China Copper's business continued to expand, its total assets as at 30 September 2021 increased as compared to 31 December 2020, concurrently, its total liabilities as at 30 September 2021 also increased as compared to 31 December 2020. For the nine months ended 30 September 2021, operating revenue and net profit of China Copper increased as compared to the corresponding period in 2020, primarily due to the increase in prices of China Copper's main products including electrolytic copper.

Lead-zinc Business

Overview

The Group expanded into lead-zinc industry mainly by its acquisition of Yunnan Metallurgical in 2018. As a result, the Group consolidated its strategic cooperation with Yunnan government in terms of non-ferrous metals industry and turned itself into the biggest lead-zinc producer of Asia. After the injection of Yunnan Metallurgical into the Group, as at 31 December 2020, the Group owned a total lead-zinc reserve of 45.9 million tonnes, with approximately 19.0 million tonnes located in China and 26.9 million tonnes located overseas. The lead-zinc reserves owned by the Group ranks first in China and fourth globally. In addition, the production capacity of the Group is estimated to be 850,000 tonnes of lead-zinc per year, accounting for approximately 6.8 per cent. of the overall production of China. The fabrication capacity of zinc per year is estimated to be 620,000 tonnes.

The Group has developed a diversified product mix including zinc ingot, lead ingot, zinc alloy, and various by-products including germanium, bismuth, cadmium, indium, tellurium, gold, silver, sulphuric acid and sulphur. Hot-dip zinc alloy products and zinc casting alloy products fabricated by the Group are widely used in automotives, machinery and equipment components, casting of metal components and hot-dip galvanisation of steel. The wide scope of application is indicative of huge market potentials of the zinc industry.

Production Processes

Zinc

The production of refined zinc from minerals involves a number of steps. The first step is concentration to separate zinc-rich minerals from other minerals in the zinc ore to produce zinc concentrates. The most common zinc concentrate (as well as recycled zinc material) is zinc sulphide, which is obtained by concentrating sphalerite using the froth floatation method.

The next step is smelting, i.e., to convert zinc concentrates into pure zinc. The Group mainly uses the hydrometallurgical process for smelting. Hydrometallurgical process begins with roasting to produce impure zinc oxide, called zinc calcine, through oxidising zinc sulphide concentrates at high temperatures. Roasting is followed by leaching, the process of extracting zinc sulphate from zinc calcine. The next stage of smelting is purification, which uses zinc dust and steam to remove copper, cadmium, cobalt, nickel and other elements that would interfere with the electrolysis process that will follow. After purification, zinc is then extracted from the purified zinc sulphate solution by electrowinning, a specialised form of electrolysis. After the process of electrolysis, zinc will deposit on the cathodes, which be later removed and rinsed and the zinc will be mechanically stripped from the coated cathodes. The final step is to melt the cathodes in an induction furnace into either pure zinc ingots or alloyed and cast into ingots.

Lead

The production of refined metallic lead from lead ore can be illustrated through the following steps. *Firstly*, similar to zinc production, lead ore has to be separated to produce a lead concentrate. This is typically done through froth floatation. In the case of lead-zinc ores, generally the metals will be separated in two stages by *firstly* depressing zinc sulphide while floating lead sulphide and then further activating and floating the zinc ore.

Lead concentrate is roasted to remove most of the sulphur and to further agglomerate. Roasting fuses the remaining ingredients into a brittle product called sinter, which consists of oxides of, among others, lead, zinc, iron and silicon along with lime, metallic lead and some remaining sulphur. Sinters will be discharged into blast furnaces and, during the sintering process, the metallic oxides will be reduced to metallic lead. The sintering process will produce, largely speaking, granulated slag and bullion, i.e., lead containing dissolved metallic and non-metallic impurities. Separate refining operations will be carried out to remove impurities. The Group generally uses electrolytic refining to remove and recover remaining impurities from the lead bullion.

Production Facilities

The Group mainly conducts its lead-zinc business through Chihong Zn&Ge and Jinding Zinc. Other subsidiaries of the Guarantor that are engaged in lead-zinc business include Yunnan Yuntong Zinc Co., Ltd. (雲南雲銅鋅業股份有限公司) and Qinghai Hongxin Mining Co., Ltd. (青海鴻鑫礦業有限公司). As at 31 December 2020, the Group's annual production capacity for lead-zinc was approximately 800 thousand tonnes.

Chihong Zn&Ge

Chihong Zn&Ge is a listed company with a leading position in lead-zinc industry and a fully integrated business line covering mining, concentration, metallurgy, refinery, trading, research and development. Chihong Zn&Ge, after decades of successful development, has expanded its worldwide presence with over 40 subsidiaries, including subsidiaries in Canada, Australia and Bolivia. In terms of upstream strengths, Chihong Zn&Ge owns, among others, Huize mine and Yiliang mine, two lead-zinc mines with top grades in the world. The Selwyn Project operated by Chihong Zn&Ge, with an estimated lead-zinc mine deposit of approximately 26.90 million tonnes, is one of the world's largest lead-zinc projects. Chihong Zn&Ge produces zinc products, lead products and the associated by-products recycled during the course of lead-zinc smelting, including silver ingots, germanium, gold, sulphur etc.

The following table summarises the lead-zinc mine reserves Chihong Zn&Ge held through its six major subsidiaries as at 31 December 2020:

Mine	Location	Zinc/Lead Production	Grades
		in tonnes per year	%
Huize Mine	Yunnan Province, China	170,000	27–28
Yiliang Chihong Mine	Yunnan Province, China	130,000	21–22
Rongda Mine	Inner Mongolia Autonomous Region, China	50,000	5–6
Yongchang Mine	Yunnan Province, China	30,000	9–11
Lancang Mine	Yunnan Province, China	10,000	5–6
Xinhu Mine (under production)	Tibet Autonomous Region, China	25,000	13–14

Non-ferrous metal commodities for trade of Chihong Zn&Ge comprise mainly of lead-zinc products and copper cathode. The continuous efforts of Chihong Zn&Ge have led to a strong and comprehensive production capacity. By end of 2020, the mining and concentration capacity of Chihong Zn&Ge reached three million tonnes, smelting capacity reached 630,000 tonnes of zinc, 150 tonnes of silver, 70 kilogram of gold, 60 tonnes of germanium products and more than 400 tonnes rare metals including cadmium, bismuth and antimony. The table below sets forth the details of the smelting capacity of Chihong Zn&Ge as at 31 December 2020:

Plant	Production by Design	Actual Production	Self-sufficiency Ratio of Raw Materials
by location	in tonnes per year		%
Qujing City, Yunnan Province, China	Lead: 100,000 Zinc: 100,000	Lead: 100,000 Zinc: 100,000	65.00
Huize County, Yunnan Province, China	Lead Bullion: 70,000 Zinc: 130,000	Lead Bullion: 70,000 Zinc: 130,000	100.00
Hulunbeier City, Inner Mongolia Autonomous Region, China	Lead: 60,000 Zinc: 140,000	Lead: 60,000 Zinc: 140,000	16.00
Baoshan City, Yunnan Province, China	Zinc: 30,000	Zinc: 30,000	61.00

Lead-zinc ores owned by Chihong Zn&Ge are also rich in high-quality germanium. The proved reserves of germanium of Huize mine and Yiliang mine exceeded 600 tonnes. Chihong Zn&Ge is able to produce 60 tonnes of germanium products each year. It is able to produce 50 tonnes of germanium products each year based on its own germanium resources, accounting for over 30 per cent. of global production.

During the nine months ended 30 September 2021, the price of zinc products increased. Chihong Zn&Ge seized market opportunities and actively co-ordinated production to achieve high yield and high sales. At the same time, Chihong Zn&Ge carried out all-factor benchmarking to reduce costs and increase efficiency, resulting in a year-on-year decrease in controllable product costs. Overall, this has led to an increase in the net profit of Chihong Zn&Ge for the nine months ended 30 September 2021 as compared to the corresponding period in 2020. Total assets and total liabilities of Chihong Zn&Ge as at 30 September 2021 largely remained stable as compared to 31 December 2020.

Jinding Zinc

Jinding Zinc mainly engages in the non-ferrous metals fabrication industry. Jinding Zinc owns the largest lead and zinc mine — Lanping mine, of Asia, whose deposit amounts to 9.95 million tonnes. The Group intends to apply its advanced technologies, sophisticated management experience, well-developed distribution network to boost its lead-zinc business with Lanping mine.

Rare Earth Metals Business

Overview

The Group commenced its rare earth metals business in 2011 to further diversify its business lines. In particular, the Group intends to focus on titanium and molybdenum in expanding the range of rare earth metal products and developing expertise in the processing of rare earth metals.

For the years ended 31 December 2019 and 2020, the Group's rare earth metals business contributed RMB4.12 billion and RMB4.11 billion, respectively, to the Group's total operating revenue, representing approximately 1.16 per cent. and 1.12 per cent., respectively, of the Group's total operating revenue for the corresponding periods, before taking into account intra-group elimination.

Despite its relatively insignificant contribution to the Group's operating revenue, the Guarantor believes that the rare earth metals industry in China has great potential and considers this business as the Group's new strategic focus going forward. The Group is actively enhancing its rare earth metals business platform through a series of mergers and acquisitions and business restructuring. As at 31 December 2020, the Group has acquired or established five major subsidiaries for rare earth metal exploration and mining, extraction, trading and rare earth magnets production, including Jiangsu Rare Earth, Guangxi Rare Earth, Chinalco Shandong Rare Earth Co., Ltd. (中鋁山東稀土有限公司), Chinalco Shandong Yinuowei Rare Earth Co., Ltd. (中鋁山東依諾威強磁材料有限公司) and Chinalco Rare Earth International Trading Corporation (中稀國際貿易有限公司). The PRC government continues to encourage the consolidation and reorganisation in the rare earth metals industry, please see the subsection headed "*China Rare Earth Group*" below for more details.

Production Processes

The rare earth manufacturing process can be simplified into the following stages. First, ores are processed to rare earth concentrates to be the raw material for smelting and separation process. The second step is called acidic solvent, where rare earth concentrates are soaked in an acidic solvent. After the rare earth concentrates have been reduced in the acidic solvent, the different rare elements are gradually separated into different containers. This is followed by precipitating solutions in these different containers containing rare earth elements. The final stage is burning, which means burning the precipitated materials in cylinders to obtain different rare earth element oxides, such as praseodymium, neodymium and dysprosium.

Jiangsu Rare Earth is one of the leading rare earth isolation and smelting companies in China in terms of production capacity, technology and equipment and diversity of product offering. The isolation technique applied by Jiangsu Rare Earth, namely the "interactive solvent extraction" technique, is the leading technique for isolation of rare earth metals in China.

Production Facilities

The Group's rare earth metals business is primarily conducted by China Rare Earth & Metals through its subsidiaries, Guangxi Rare Earth and Jiangsu Rare Earth.

Jiangsu Rare Earth

In June 2011, Chinalco established Jiangsu Rare Earth by consolidating four rare earth companies in Jiangsu Province. Jiangsu Rare Earth engages in research and development, isolation, smelting and sale of rare earth metal oxides and compounds, and nano rare earth materials. Jiangsu Rare Earth's product offering includes lanthanum oxide, cerium oxide, praseodymium oxide, neodymium oxide, praseodymium, neodymium, terbium oxide, dysprosium oxide, europium oxide, erbium oxide, gadolinium, samarium oxide, yttrium oxide, yttrium and europium.

Guangxi Rare Earth

Guangxi Rare Earth was established in July 2011 by Chinalco with two joint venture partners, Guangxi Non-ferrous Metals Group Co., Ltd. and Grirem Advanced Metals Co., Ltd. The Group is the controlling shareholder of Guangxi Rare Earth, which is well positioned to exploit the undeveloped rare earth resources in the Guangxi Autonomous Region of the PRC. Guangxi Rare Earth is engaged in rare earth exploration, mining, extraction, fabrication and trading. Guangxi Rare Earth's product offering includes light, medium and heavy rare earth oxides and concentrates such as lanthanum (鑭), cerium (鈰), praseodymium (鐠), neodymium (釹) and dysprosium (鏑), terbium (鋱) and magnets.

China Rare Earth Group

China Rare Earth Group was established in December 2021 by, among others, Chinalco, China Minmetals Corporation Limited (中國五礦股份有限公司) and Ganzhou Rare Earth Group Co., Ltd. (贛州稀土集團有限公司) to realise the complementary advantages of rare earth resources and to coordinate the development of the rare earth industry, primarily focusing on rare earth technology research and development, exploration and development, separation and smelting, deep processing, downstream applications, complete sets of equipment, industrial incubation, technical consulting services, and import and export trading businesses. The equity interest of the Group in China Rare Earth & Metals will be transferred to China Rare Earth Group. China Rare Earth Group is a central state-owned enterprise with diversified shareholding and is directly supervised by SASAC.

Raw Materials

The Group's Rare Earth business' primary raw material is mixed rare earth oxide, such as high yttrium mixed rare earth oxides, medium yttrium and rich europium mixed rare earth oxides, and low yttrium and low europium mixed rare earth oxides, which the Group acquires through external sourcing and its own production facilities. The Group extracts the mixed rare earth elements from the ores and refines them to produce rare earth metals.

Sales and Marketing

A unified transportation and sales mechanism for rare earth metals has been established in the PRC. Major industries in which the customers of the Group's rare earth metals business engage include neodymium iron and boron magnets, ceramic and rare earth metals.

Engineering and Technical Services

The Group's engineering and technical services business is conducted through Chalieco, which is a leading technology, engineering services and equipment provider in the non-ferrous metals industry in the PRC and is capable of providing fully integrated engineering solutions covering the complete value chain of various stages in the nonferrous metals industry chain. Chalieco was listed on the Hong Kong Stock Exchange in July 2012 under the stock code 2068 and on the Shanghai Stock Exchange since August 2018 (stock code 601068).

For the years ended 31 December 2019 and 2020, the Group's engineering and technical services business contributed RMB31.06 billion and RMB23.03 billion, respectively, to the Group's total operating revenue, representing approximately 8.70 per cent. and 6.27 per cent., respectively, of the Group's total operating revenue for the corresponding periods, before taking into account intra-group elimination.

Leveraging its advanced technology, Chalieco maintains engineering design and consultancy as its key business, which drives the development of its engineering and construction contracting business, as well as its equipment manufacturing and equipment trading businesses. Chalieco has also expanded its business to include providing engineering services in other sectors, such as ferrous metallurgy, transportation, power, oil, petrochemicals, construction materials, environmental protection, municipal and public utility construction and new materials, and its business has grown rapidly in overseas non-ferrous metals markets in recent years. Chalieco regards technological innovation as its core competency and has developed a series of proprietary technologies relating to mining, smelting and metal material processing.

Chalieco ranked 312nd on the 2020 list of China's top 500 companies announced by Fortune China. Meanwhile, for the 2020 "Top 150 Global Design Firms", "Top 225 International Design Firms", "Top 250 Global Contractors" and "Top 250 International Contractors" announced by Engineering News — Record (ENR), a magazine in the U.S., Chalieco was shortlisted again and ranked at 94th, 163rd, 88th and 233rd, respectively.

Chalieco has advanced technologies in the nonferrous metals industry and a strong capability for continuous technological innovation. The subsidiaries of Chalieco include four of the first eight nonferrous metal design institutes that were under the former Ministry of Metallurgical Industry, namely, Shenyang Aluminum & Magnesium Engineering & Research Institute Co., Ltd. (瀋陽鋁鎂設計研究院有限公司), Guiyang Aluminum & Magnesium Design Institute Co., Ltd. (貴陽鋁鎂設計研究院有限公司), Changsha Engineering & Research Institute Limited for Nonferrous Metallurgy (長沙有色冶金設計研究院有限公司) and China Nonferrous Metals Processing Technology Co., Ltd. (中色科技股份有限公司) (which has acquired the core business of Luoyang Engineering & Research Institute for Nonferrous Metals Processing (洛陽有色金屬加工設計研究院有限公司) and two widely recognised survey and design institutions in the industry, namely, China Nonferrous Metals Changsha Investigation and Design Research Institute Co., Ltd. (中國有色金屬長沙勘察設計研究院有限公司) and Kunming Survey and Design Institute Co., Ltd. of China Nonferrous Metals Industry (中國有色金屬昆明勘察設計研究院有限公司). As at 31 December 2020, Chalieco had six state-level engineering and technology research centres and technology centres, two national post-doctoral scientific research work stations, 14 province-level technology centres, two province-level expert and academician work stations, one province-level post-doctoral innovation and practice hub, and two province-level engineering labs.

Chalieco operates four reportable business segments, namely, engineering design and consultancy, engineering and construction contracting, equipment manufacturing and trading.

Engineering design and consultancy

Engineering design and consultancy has historically been the key business of Chalieco, covering mining, ore dressing, smelting and processing in the non-ferrous metal industry, geological survey and building construction in the construction industry, as well as engineering design in energy, chemical and environmental protection segments. Chalieco's main customers are non-ferrous metal smelting and processing enterprises, and employers in construction and other industries.

Chalieco's technicians have expertise in over 40 professional fields such as process design, equipment design, electrical automation, general layout and transportation design, civil engineering, public facilities construction, environmental protection, project budget and technical economy, and have provided engineering design and consultancy services for over 2,000 key construction projects of the state and various industries as well as over 100 overseas projects. Chalieco has established leading market positions in various fields of the PRC non-ferrous metals industry.

Engineering and construction contracting

Leveraging its strengths in engineering design and consultancy, Chalieco has successfully developed engineering and construction contracting operations, which became a driver of growth for Chalieco. Chalieco's engineering and construction contracting business covers metallurgy industry, housing construction, highways, building materials, electricity, water conservancy, chemical industry, mining, municipal utilities, steel structure and other fields. It adopts a couple of engineering and construction contracting business modes, including traditional contracting such as engineering, procurement, and construction (EPC), engineering and procurement (EP), procurement and construction (PC) and project management contract and also explores other engineering contracting modes such as public private partnership (PPP).

The engineering and construction contracting model of Chalieco is centred around its core competency in engineering design and consultancy and highlights the crucial role of engineering design in quality control, expense control and progress control during the course of an engineering and construction contracting project. This model distinguishes Chalieco from other engineering general contractors that focus on construction and project management and has been increasingly recognised and accepted by its customers.

With its technology and experience, Chalieco has established a leading position in China's non-ferrous metal industry, particularly in the area of engineering contracting for the aluminium industry. In recent years, Chalieco has undertaken many large-scale EPC projects at home and abroad. It has taken the initiative to proactively develop in the emerging markets, which mainly include Vietnam, Venezuela, Peru, India, Congo Kinshasa, Equatorial Guinea, Bolivia, Azerbaijian, Saudi Arabia, Laos, Indonesia, Zambia and Guinea.

Equipment manufacturing

Equipment manufacturing is a high-technology industry that Chalieco has prioritised for development. The equipment manufacturing operations of Chalieco mainly focuses on producing equipment by utilising proprietary and patented technologies of Chalieco. Main products of this segment include customised core metallurgical and processing equipment, environmental protection equipment, mechanical and electronic equipment, industrial automation systems and mine safety monitoring and emergency response intelligent systems. Chalieco's products are used in many areas in the non-ferrous metal industry chain, including mining, ore dressing, smelting and metal material processing. It is a leading manufacturer of non-ferrous metal rolling mills in China. Products of this segment have been exported to countries such as Vietnam, India, Brazil, Nigeria, Pakistan and Indonesia.

Trading

Since 2013, pursuant to its related diversification strategy and in order to strengthen cost and risk control, Chalieco has adopted a centralised procurement approach when appropriately adjusting and broadening its business scope. In establishing the centralised procurement platform, Chalieco expanded the equipment and raw material trading business related to its principal operations, which is managed largely by China Aluminum International Engineering Equipment Co., Ltd. (中鋁國際工程設備有限公司). In 2020, Chalieco's trading business was under active transformation and its direction was shifting to centralised procurement of internal engineering equipment, which has led to a shrink in scale of its original business.

Recent Developments

Following the stabilisation of the COVID-19 pandemic and continuous economic recovery in the PRC, Chalieco spared no effort to promote high-quality corporate development, actively carried out construction business and enhanced cost management, thereby its production, operation and profitability remained stable and sound. This has led to an increase in the net profit of Chalieco for the nine months ended 30 September 2021 as compared to the corresponding period in 2020. As at 30 September 2021, other non-current assets of Chalieco increased as compared to 31 December 2020, primarily due to the fact that investment in project construction continued to increase as the Yunnan Miyu Highway project is currently under construction. As at 30 September 2021, notes payable of Chalieco increased as compared to 31 December 2020 as Chalieco increasingly paid construction costs with notes.

Based on the preliminary calculations by Chalieco, it is expected that the net profit attributable to shareholders of Chalieco and net profit attributable to shareholders of Chalieco after deducting non-recurring profit and loss for the year ended 31 December 2021 will be at a loss. Although the overall production and operation of Chalieco in 2021 has shown improvements as compared with the corresponding period of the preceding year, under the impacts of the unfavourable business conditions of China Aluminum International Engineering Equipment Co., Ltd., a wholly-owned subsidiary of Chalieco, and the risks of unrecoverability of certain receivables and unrealisation of inventories, according to the relevant regulations under PRC GAAP as well as the accounting policies and accounting estimates implemented by Chalieco, it is estimated that China Aluminum International Engineering Equipment Co., Ltd. will record a larger amount of impairment provisions made on receivables and inventories for the year ended 31 December 2021, resulting in the operating loss of Chalieco for the year. Such preliminary calculations and estimates were based on the unaudited consolidated management accounts of the Chalieco for the year ended 31 December 2021 and the information currently available to Chalieco. Such preliminary calculations and estimates have not been reviewed by the independent auditor of Chalieco and are subject to finalisation or necessary adjustments upon further review.

Ancillary Businesses

The Group also carries on a number of ancillary businesses in support of its principal businesses, including industrial and property services, capital and financial services, and trade and logistic services. The Group also operates other services including natural resources development and overseas investment through various subsidiaries and affiliates of the Group.

For the years ended 31 December 2019 and 2020, the Group's other businesses contributed RMB12.85 billion and RMB4.45 billion, respectively, to the Group's total operating revenue, representing approximately 3.60 per cent. and 1.21 per cent., respectively, of the Group's total operating revenue for the corresponding periods, before taking into account intra-group elimination.

Capital Financial Services

The Group's financial services business is principally conducted through Chinalco Finance Co., Ltd. (中鋁財務有限責任公司, "**Chinalco Finance**"), in which Chinalco holds 99 per cent. of its equity interest. Chinalco Finance is a registered non-bank financial institution in the PRC. In July 2011, Chinalco Finance was licensed by the China Banking and Insurance Regulatory Commission to provide various types of financial services, such as deposit taking, settlement, bill discounting, provision of entrusted loans and financial consultancy to other members within the Group and commenced operation. Chinalco Capital Holdings Company Limited (中鋁資本控股有限公司), established in 2015 in the PRC, is a platform for the purpose of facilitating the Group's internal financing.

Mineral Resources Development

The Group actively engages in the development of mineral resources within and outside China through Chalco Hong Kong Ltd., CMC, Aluminum Corporation of China Overseas Holdings Limited (中鋁海外控股有限公司) and Selwyn Chihong Mining Ltd. The Group's mineral resources portfolio spans across bauxite, copper, iron ore, coal, zinc, lead, and rare earth metals.

Overseas Investment

In recent years, the Group has accelerated its overseas expansions and aims to become a leading international resources conglomerate.

In 2008, the Group acquired a 12.0 per cent. equity interest in Rio Tinto (representing 9.33 per cent. of the shares of the Rio Tinto Group) together with Alcoa. After Alcoa's exit, the Guarantor became the single largest shareholder of Rio Tinto. As at 31 December 2020, the Guarantor, through its wholly-owned subsidiary, Shining Prospect, held more than 14 per cent. of issued share capital of Rio Tinto. This interest gives Chinalco a voting power of over 11 per cent. in the Rio Tinto Group on a joint decision matter.

In July 2010, the Guarantor signed a joint development agreement with Rio Tinto for the establishment of a joint venture company to develop Areas 3 and 4 of the Simandou Project in southeastern Guinea. In November 2011, Chinalco Iron Ore Holding (中鋁鐵礦控股), in which the Group holds a 75 per cent. equity interests, was established to participate in the development of the Simandou Project. The Simandou Project is one of the largest known undeveloped high-grade (66.5 per cent.) iron ore orebodies in the world with approximately 2.76 billion tonnes of mineral resources. In May 2014, the project company, on behalf of Rio Tinto, Chinalco Iron Ore Holding (中鋁鐵礦控股) and International Finance Corporation (a division of the World Bank), entered into a framework agreement with the Guinean state government which lays down the blueprint for the development of Areas 3 and 4 of the Simandou Project. Rio Tinto and the Guarantor, who respectively own 45.05 per cent. and 39.95 per cent. of the Simandou Project, intend to continue to work with the government of Guinea to explore other options to realise value from the world-class Simandou iron ore deposit. The government of Guinea owns a 15 per cent. stake in the project.

QUALITY CONTROL

The Group has established and implemented strict quality control systems at various stages of the production processes for its respective products in accordance with applicable industry standards. The Group requests its quality management department to make regular checks on each batch of its products. In addition, the Group engages independent quality control institutions to make inspections on its products at least once a year at its manufacturing sites and customers facilities, respectively, to ensure the quality of its products.

For the years ended 31 December 2019 and 2020, the Group had not experienced any material disputes with the Group's customers or return of goods due to the quality of the Group's products.

EMPLOYEES

As at 31 December 2020, the Group had 162,733 employees. The table below sets forth the number of the Group's employees by function as at 31 December 2020:

	As at 31 December 2020	
	(number)	**(%)**
Function		
Administration staff	28,071	17.2
Sale and marketing staff	3,246	2.0
Engineers and technicians	24,325	14.9
Production staff	99,349	61.1
Other staff	7,742	4.8
Total	**162,733**	**100.0**

The Group has workers' unions at the plant level that protect employees' rights and welfare benefits, organise educational programmes, encourage employee participation in management decisions and mediate disputes between individual employees and the Group. All employees are union members. The Group has not experienced any strikes or other labour disturbances that have interfered with its operations, and the Group believes that it maintains good relationships with its employees.

The remuneration package of the Group's employees includes salary, bonuses and allowances. Employees also receive welfare benefits including medical care, housing subsidies, childcare and education, retirement and other miscellaneous items.

In accordance with applicable PRC regulations, the Group participates in pension contribution plans organised by provincial and municipal governments, under which each of the Group's plants is required to contribute an amount equal to a specified percentage of its employees' salaries, bonuses and various allowances. The amount of contribution as a percentage of the employees' salary is, on average, approximately 20.0 per cent., depending in part on the location of the plant. The Group has made all required pension contributions up to 31 December 2020. The Group provides to the Group's employees various social welfare benefits through various institutions owned by the Guarantor and its other affiliates or through third parties.

CORPORATE SOCIAL RESPONSIBILITY

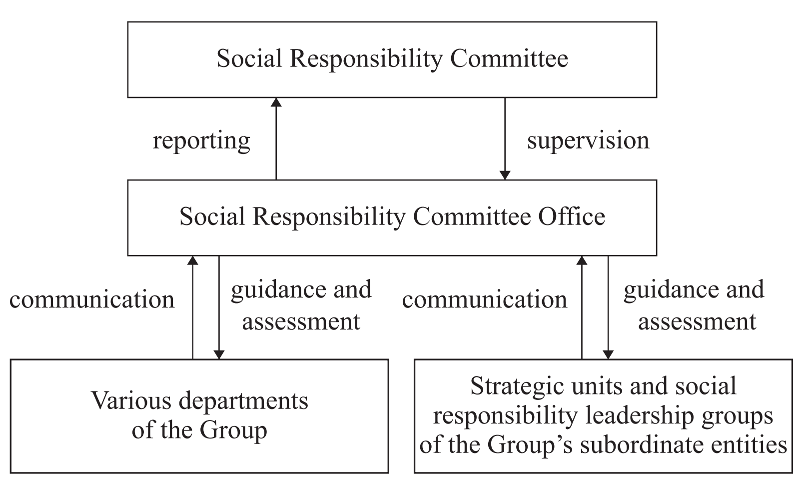
Through transparent and responsible decision-making, efficient use of the Group's resources, sustainable development of domestic and foreign mineral resources, and adopting economic and green methods, the Group strives to make valuable contribution to all relevant stakeholders and to realise harmonious economic, environmental and societal development. The Group is guided by a number of overarching philosophies in its fulfilment of corporate social responsibilities:

- ***Integrity:*** The Group promotes the sustainable development of a responsible industrial chain and supply chain, and seeks to lay a solid foundation of trust by building a strategic platform for cooperation and sharing. The Group closely cooperates with, among others, domestic and foreign enterprises, local governments and higher education institutions to establish information resource sharing mechanisms. By strengthening customer communication, the Group provides customers with high-quality services to meet their diverse needs.

- ***Compliance:*** The Group has established a comprehensive system of compliance management, clearly identifying key areas and positions of compliance management responsibilities. Compliance requirements form an integral part of the Group's business decision-making process and project management, while all employees are trained to heighten awareness of compliance requirements.

- ***Corporate Governance:*** By comprehensively reorganising its management and control systems, management structure and management process, the Group pursues transformation to a goal-driven, value-creation-driven management philosophy. Based on the framework of the seven core areas of ISO26000, the international standard for social responsibility, the Group identified five areas of responsibility, namely, corporate governance, employee rights, environmental protection, fair operation and community support. The Group has prescribed clear responsibility management indicators and formed a management framework covering the strategic level, operation level and basic level.

- ***Social Responsibility Management:*** The Group has established a robust system to manage its sustainable development and to coordinate its fulfilment of corporate social responsibilities, including management systems for corporate governance, employee rights, environmental protection, fair operations and community support. The table below summarises the organisation structure for the Group's social responsibility management:



Environment Protection

The Group's operations are subject to a wide variety of PRC national and local environmental laws and regulations as well as international standards, including those governing mineral extraction, waste discharge, generation, treatment and disposal of hazardous materials, land reclamation, and air and water emissions. To enforce these standards, national environmental protection authorities have imposed discharge fees that increase for each incremental amount of discharge beyond the limit set by the regulation. The relevant PRC government authorities are authorised to order any entities with operations that exceed discharge limits to take remediation measures, which are subject to the relevant authorities' approval, or order the closure of any operations that fail to comply with applicable regulations.

The pollutants discharged from the Group's alumina refining process include red mud, wastewater and gas emissions and particulates. The Group's primary aluminium production process generates fluorides, pitch fume and particulates. It is illegal to release these pollutants untreated, or those after treatment but still not complying with discharge limits, the discharge of these pollutants must comply with national and local discharge limits. Each of the Group's alumina refineries, primary aluminium smelters and other production plants has its own waste treatment facilities onsite or has developed other methods to dispose of industrial waste in compliance with applicable environmental laws and regulations. The Group was granted ISO14001 accreditations issued by China Quality Certification Centre and the International Certification Network in 2004. In 2013, the Group passed the review and the accreditations were renewed. The Group established and implemented the Standard of Occupational Health, Safety and Environmental Protection Management System, improved the audit mechanism of the three-level environmental protection system of the Group, sector and enterprise. Certain subsidiaries of the Group apply for ISO14001 certification where necessary.

The Group incorporates pollution prevention and control into the whole process of its operation and adopts standardised management in reducing emission of the three wastes, namely, waste gas, wastewater and solid waste, so as to minimise impact to the environment. The Group has established a strict system for its emission of waste gas, wastewater and industrial residue with a standard higher than relevant standards of the state and industry. In order to better implement the concept of low-carbon economy, the Group includes environmental indexes into its development and production plans. For the years ended 31 December 2018, 2019 and 2020, the Group invested on average approximately RMB3.27 billion per annum in areas of environmental protection.

The Group strives to increase its energy efficiency by implementing new production techniques and technologies, upgrading its production facilities, optimising its production process and enhancing its logistics and operations management. The Group has incorporated clean technology and processes into its operations with a view to promote the concept of "zero emission" plants. Since 2009, in terms of the industrial wastewater (excluding mine water) emission, the Group has achieved its target of "zero emission". In addition, the Group is focused on the reduction of greenhouse gas emission and continuing technological innovation to promote low-carbon technology.

The Group adopts a "zero tolerance" policy in environmental management. In case of any environmental incident, the Group will immediately take response measures or follow its emergency response plan, classify the incident and accordingly report it to the government and notify surrounding residents. If one of the Group's listed companies is involved, the Group makes appropriate announcements to comply with the relevant regulations.

Furthermore, the Group adheres to the concept of "Responsible and Green Mining" and pays special attention to environmental restoration and conserves biodiversity to minimise effects of operational activities on the local environment. For the years ended 31 December 2018, 2019 and 2020, the Group has reclaimed 59.3 million, 48.7 million and 65.7 million metres squared, respectively, of mining area.

The Group believes that its operations are in compliance with currently applicable national, provincial or international environmental regulations in all material respects and its business activities have not caused any pollution that might have a material effect on the Group's operation, financial condition and reputation.

Green Initiative

Adhering to an environmental and ecological friendly development strategy, the Group has consistently promoted energy conservation and emissions reduction, environmental protection, cleaner production processes and low-carbon economic development. The Group launched the "Chinalco Joint Carbon Emission Reduction Campaign" at the Climate Conference in Paris and hosted the Chinalco Carbon Emission Reduction Festival. The Guarantor also sponsored the "Joint Carbon Emissions Reduction Appeal" initiative and released the "Chinalco Carbon Emissions Reduction Report" in conjunction with its supply chain partners including CECEP, COSCO and Geely Motor and social organisations such as China Social Responsibility 100 Forum (CASS) and GoldenBee CSR Research Institute.

The Group's subsidiary, Chalco, has set annual targets for reducing energy consumption and energy costs of its leading products, improving energy management systems, and reducing power generation costs. For the year ended 31 December 2020, Chalco has generated approximately 2,610 megawatt wind power and 334 megawatt solar power. For the year ended 31 December 2020, renewable energy accounted for 49.98 per cent. of the energy used in the Group's electrolytic aluminium production, which was the highest ratio of renewable energy among aluminium enterprises in the PRC. The green power accumulatively used by Chalco Qinghai branch could reduce the thermal power consumption by approximately 5.01 billion kilowatts, representing decreases in standard coal consumption by approximately 615 kilotonnes and in carbon dioxide emissions by approximately 1,133 kilotonnes. Chalco's subsidiary Lanzhou Aluminum actively carried out transfer of power generation rights into new energy, and utilised clean energy of approximately five billion kilowatts, accounting for 89.6 per cent. of the total energy utilised. In 2020, Chalco has outperformed its 2020 annual energy consumption targets, being:

Indicator	Unit	2020 Target	2020 Performance
Energy consumption per RMB10,000 of production value (2015 price)	Metric tonnes of standard coal per RMB10,000	2.72	1.97
Aluminium electrolytic alternating current power consumption	Kilowatts per metric ton	13,180	13,069
Total energy consumption for alumina	Kilogram of standard coal per metric ton	402.42	357.40

Indicator	Unit	2020 Target	2020 Performance
Standard coal consumption for electricity supply	Grams of standard coal per kilowatts	334	333.26
Total energy consumption for carbon	Metric tonnes of standard coal per metric ton	1.03	1.02

For the year ended 31 December 2020, the Group's wind power generation capacity and photovoltaic power generation capacity was 1.61 million kilowatts and 0.2 million kilowatts, respectively. For the year ended 31 December 2020, the Group's energy consumption per RMB10,000 of production value amounted to 0.9627 tonnes of standard coal, as compared to 4.3621 tonnes of standard coal for the year ended 31 December 2001. The Group's sulphur dioxide emissions and nitrogen oxides emissions decreased to 61,486 tonnes and 14,935 tonnes, respectively, for the year ended 31 December 2020, as compared to 69,023 tonnes and 45,340 tonnes, respectively, for the year ended 31 December 2019.

On 8 June 2021, the Guarantor published its "2020 Carbon Emissions Reduction Report" outlining its strategies and achievements in reducing its carbon footprint, which includes the major milestones set out in the table below:

Year	Milestone Event
2016	Refined the Group's energy saving and emissions reduction organisation system, set up energy efficiency research teams, and built a three-level energy management structure ("three-level" referring to headquarter-level, strategic-unit-level and operating-entity-level).
	Organised and conducted examination of the sources of carbon emissions, cooperated with third parties to carry out verification.
2017	Established the "Chinalco Carbon Emissions Reduction Festival" (中鋁降碳節), carried out joint carbon emissions reduction initiatives and released the Guarantor's first "Carbon Emissions Reduction Report".
	44 of the Group's entities achieved "zero" discharge of industrial wastewater.
	Participated in the trial of the national carbon allowance allocation.
	Organised the Group's electrolytic aluminium enterprises to calculate carbon allowance surplus and deficiencies.
	The Group's first overhaul slag harmless production line was completed and put into operation by Baotou Aluminum.

Year	Milestone Event
2018	Established Chinalco Environmental Protection and Energy Conservation Group Co., Ltd. (中鋁環保節能集團有限公司) to build a new low-carbon energy-saving platform. The first in the non-ferrous industry to promulgate interim carbon assets management measures. Tackled "small, scattered and messy pollution" (小散亂污), clarified plans for the shutdown and transfer of 26 enterprises or production lines. Promulgated the "Interim Regulations on Solid Waste Management of Aluminum Corporation of China" (中國鋁業集團有限公司固體廢物管理暫行規定). The thermal power boilers of all of the Group's enterprises in the "2 +26" urban areas (which refers to Beijing, Tianjin and 26 other major cities in the PRC) achieved ultra-low emissions.
2019	Established Chinalco Intelligent Technology Development Co., Ltd. (中鋁智能科技發展有限公司) to build a new platform for the intelligent industry. The Group deployed its ecological environment data reporting system. Through the soil remediation project of Guizhou Aluminium Plant, the Group took its first steps in the field of ecological restoration, and mastered the advanced technology and development capabilities for the remediation of heavy metal contaminated soil in the non-ferrous industry. Compiled carbon emissions reports, inventory reports and carbon emission monitoring plans for 26 of the Group's entities.
2020	Six of the Group's enterprises were selected as "National Green Factories" (國家級綠色工廠). All of the Group's 21 milestone environmental protection projects achieved their respective goals. The new version of the ecological environment data reporting system was put into trial operation, and made advancements towards "smart environmental protection" in the construction of environmental information technology.

| | The first domestic wet oxidation desulphurisation and decarbonisation demonstration line was completed and put into operation by Zunyi Alumina. |
| | Chinalco Environmental Protection and Energy Conservation Group Co., Ltd. (中鋁環保節能集團有限公司) passed the review of the Green Manufacturing Public Service Platform of the MIIT to become a third-party evaluation agency for green manufacturing. |

The Group adopts a five-pronged approach in its carbon emissions reduction efforts, namely:

- ***Philosophy:*** guiding employees to embrace the concept of carbon emissions reduction, vigorously creating a strong corporate culture for energy saving and carbon emissions reduction, so that the goals of green manufacturing, low-carbon development, energy saving, green consumption and transitioning from fossil energy to clean energy are deeply rooted in the minds of employees;

- ***Production:*** optimising production lines to reduce energy consumption and carbon emissions by promoting intelligent manufacturing products, utilisation of renewable energy sources, reducing metal remelting and increasing product yields;

- ***Management:*** utilising big data, cloud computing and other information technologies to promote modern standardised management and implementation of the Group's carbon emissions reduction strategies;

- ***Technology:*** accelerating the research and development of energy-saving and emissions-reduction technologies; and

- ***Lifestyle:*** advocating a minimalist lifestyle and promoting the concepts of carbon emissions reduction to the community, in particular, educating employees on water conservation, food waste reduction, energy conservation and eco-friendly lifestyles.

The Group has stepped up efforts to tackle key and difficult technical problems, promoted the development of low-cost green mining technologies, research and development of energy-saving emission reduction technologies for the aluminium-copper-lead-zinc smelting industry, and research and development of high-efficiency and energy-saving clean production technologies for rare earth metals, leading the high-quality development of the non-ferrous metal industry. Environmental protection technologies such as the harmless disposal of aluminium electrolysis overhaul slag, the comprehensive utilisation of aluminium electrolysis waste cathode resources, the in-situ ecological restoration of red mud yards, and the comprehensive management of flue gas are widely used by subsidiaries of the Group.

The Group established a precise and tailored occupational health, safety and environmental protection management system, and urges its production and operation enterprises to carry out occupational health, safety and environmental protection work, establish a long-term mechanism, and improve environmental protection management capabilities. In February 2021, the Group underwent central ecological environmental protection inspection and actively responded to suggestions in the environmental management, pollution control, ecological protection and restoration of construction projects made by the inspection team. A total of RMB3.28 billion was invested in safety and environmental protection throughout the year ended 31 December 2020, which was used for environmental protection investment in infrastructure projects, tailings ponds, desulphurisation and denitrification and other environmental protection technology transformation projects.

Awards and Accolades

The Group has received numerous awards and accolades in recognition of the implementation of its environmental, social and governance (ESG) philosophies. The table below sets forth certain examples of the awards received and milestones achieved.

Chinalco	Top three in the non-ferrous metal industry in China's Corporate Social Responsibility Development Index 2021
	Ranked 13th in China's Top 300 Social Responsibility Development Index 2021
	Selected as one of the first 10 "ESG Demonstration Companies" in China in the "13th Blue Book of Corporate Social Responsibility" (第十三屆《企業社會責任藍皮書》 organised by the China Social Responsibility Hundreds Forum (中國社會責任百人論壇) in 2021
	Achieve the highest rating of "5 Stars" for its social responsibility reports of 2020 and 2019
Chalco	Named as one of the 50 "ESG Pioneers", ranking fourth among 440 central state-owned enterprises, in the "ESG Blue Book of Listed Companies of Central Enterprises 2021" (中央企業上市公司ESG藍皮書2021) issued by SASAC and Zerenyun Research Institute (責任雲研究院)
	Selected as a constituent of the Hang Seng (China A) Corporate Sustainability Index in 2021
	Issued RMB400 million ultra-short-term financing green bonds in 2021
Yunnan Copper	Named as one of the 50 "ESG Pioneers", ranking 28th among 440 central state-owned enterprises, in the "ESG Blue Book of Listed Companies of Central Enterprises 2021" (中央企業上市公司ESG藍皮書2021) issued by SASAC and Zerenyun Research Institute (責任雲研究院)

Health and Workplace Safety

The Group strives to ensure production safety, strengthen the occupational health and safety system, and improve workplace conditions so as to promote its employees' mental and physical health.

The Group is committed to a target of zero accidents in all of its activities and have implemented industry best practices in accident prevention. The Group attaches great importance to workplace safety and regard workers' safety as its top priority. For the years ended 31 December 2019 and 2020, there has not been any material accident in the Group's business operations. Production safety managers of the Group's subsidiaries go through regular trainings to improve their capabilities and work performance. For the years ended 31 December 2019 and 2020, the Group arranged physical examination related occupational health for all of its employees. The Group also conducts regular emergency drills to enhance its employees' ability to respond to emergencies.

The Group explored and developed a new model of production safety management that centralises all organisational levels and employees. Under this management model, an Occupational Health, Safety and Environment Committee, headed by principal executives, has been set up in the Group's headquarters, business segments, subsidiaries as well as their affiliated plants and mines. Each Occupational Health, Safety and Environment Committee and relevant responsible persons regularly supervise, check and improve the workplace conditions, and ensure the provision of protective equipment and conduct occupation health trainings. In line with the requirements of ISO45001 management system, the Group also incorporates contractor management into its Health, Safety and Environment management system so as to ensure contractors' management and construction could meet its standard procedures. The Group will continue to provide training and appropriate and sufficient resources and materials for employees and contractors to work safely and effectively.

The labour unions of the Group's subsidiaries value the role of inspection in identifying and correcting any situation that may cause accidents to workers. They perform regular inspections on safety and labour protection and are focused on finding habitual violations of safety rules.

The Group believes that it is in compliance with the relevant laws and regulations on labour and workplace safety in all material aspects.

Sustainable Development

In order to achieve rational and efficient mining, the Group takes proactive measures to improve production methods, upgrade processes and technologies, as well as improve tailings recovery rate. The Group also tries to build "digitalised" mines to improve efficiency.

In addition, the Group strives to enhance energy management and continuously promotes energy efficiency. The Group has implemented an accountability system and an evaluation system for energy conservation, facilitates the research and development and expansion of energy-efficient technologies, and strives to reduce energy intensity and minimise environmental impacts throughout all production processes.

Furthermore, the Group aims to build a greener industry chain through conserving resources, mitigating adverse impacts and maximising the utilisation of renewable resources. The Group has implemented measures to recycle solid waste. For example, the Group has implemented technical tests of carbon-slag-free anode production technologies to reduce pollutant emissions. The Group completed the second-stage industrial test of its waste cathode resource utilisation technology to achieve full recovery of crushed graphite from waste cathode and completed the expanded test of high-speed rail red mud mass separation to achieve total emission reduction of red mud. In terms of disposal of furnace slag from overhaul maintenance electrolytic aluminium furnaces, the Group successfully developed the technology of harmless disposal of furnace slag, reducing furnace slag emissions by 10 per cent. and setting a new national benchmark for aluminium electrolysis enterprises.

Community Relations

As the Group considers good community relationships to be an essential part of its long-term success in China and around the world, the Group plans to continue its efforts in maintaining and promoting community relationships. The Group established a communication mechanism and regularly communicates with relevant local communities and actively makes contributions to community activities. The Group championed corporate citizenship during business expansion into overseas markets and has won widespread recognition and positive reputation among Chinese and foreign partners.

Minera Chinalco Perú S.A., which is 99.9999 per cent. owned by the China Copper, has entered into an agreement related to "zero emission of wastewater" with Peru Government, pursuant to which Minera Chinalco Perú S.A. would design and construct water collection and treatment system for Morococha mining district. In 2011, Minera Chinalco Perú S.A. completed the construction of Kingsmill water treatment centre, which is able to treat all wastewater from the production activities of Morococha mining district and significantly improve the living quality of local residents. The Toromocho Project was awarded No. 1 Best Practices for Sustainable Investment in the Asia-Pacific Economic Cooperation region. In the spirit of a responsible mining company, the Group aims to grow in harmony with indigenous people, honouring the commitment to value and respect resources, host countries and local residents in mining areas.

In general, the Group actively engages in communication with the local government, community and social groups to understand their needs from the impact of the Group's corporate decisions and operations on their communities and seek mutual interests based on friendly consultations. When entering or leaving the host communities, the Group considers the concerns of various local stakeholders, consults with the local government and residents and assesses the impact on the local community to ensure compliance with applicable regulations and standards as well as internal procedures in order to minimise local impact and prevent damage to community development. For the years ended 31 December 2019 and 2020, there was no dispute arising from entering or leaving the host communities.

Poverty Alleviation

The Group developed the Qinghai and Tibet Poverty Relief Campaign and is actively involved in local public welfare programs in these regions. The Group was involved in establishing the three major platforms for communication, technology assistance and education in Qinghai. The Guarantor is also designated as the official poverty relief provider in Tibetan-inhabited regions in Yunnan province and Lüliang, as well as the Yangxin county in Hubei.

For the year ended 31 December 2020, the Group made external donations totalling RMB110 million, of which RMB68.2 million and RMB42.4 million were charitable donations and relief donations, respectively. In response to the COVID-19 pandemic, the Group contributed RMB30 million for the purposes of frontline pandemic control. The Group donated RMB10 million to Yangxin County, Huangshi City, Hubei Province, which is a designated poverty alleviation county, while party members contributed RMB5.1 million. A cumulative total of RMB260 million has been invested in various poverty alleviation funds and some 200 poverty alleviation projects have been established, benefiting and lifting a population of 112,000 out of poverty.

Employees of the Group actively participate in volunteering activities. 140,000 employees of the Group have actively participated in poverty alleviation and support, and other public welfare activities including teaching aid, charitable donations and voluntary blood donations. The Group has 393 youth volunteer organisations with 13,702 registered volunteers that have participated in a total of 91,200 hours of volunteering activities.

INSURANCE

The Group maintains insurance coverage for its assets, including but not limited to fixed assets and floating assets. The Group also has limited coverage for accidents and natural disasters such as typhoons, tornados, floods, landslides and lightning strikes. In addition, the Group transfers risks by choosing various insurance products.

The Group is not only covered under the injury and accidental death insurance provided by the local government labour departments but also separately maintains insurance such as overseas and domestic personal accident insurance. In addition, the Group has purchased environmental damage insurance to fulfil the requirement by the PRC government and to pursue its social responsibility.

LEGAL COMPLIANCE

The Group is required to obtain and maintain valid permits, licences and certificates from various governmental authorities to conduct the Group's businesses, including, among others, those required for the Group's mining and trading of alumina products and its coal mining operations.

As at the date of this Offering Circular, the Group has obtained and maintained all the permits, licences and certificates material to its operations.

The Group is from time to time involved in legal proceedings arising in the ordinary course of its business, including as plaintiff or defendant in litigation or arbitration proceedings. To the best of its knowledge after due enquiry, no member of the Group is aware of any current or pending litigation or arbitration proceedings against the Group or any of its senior management team members that could have a material adverse effect on its businesses, financial condition and results of operations.

DIRECTORS AND SENIOR MANAGEMENT

The Group has established a sound modern corporate organisational structure and effective mechanisms for division of responsibilities and checks and balances, and discloses corporate information with a high degree of transparency. Out of the organisational structure, Chinalco's directors, and senior management are as follows.

Directors

The following table sets forth information regarding the Guarantor's directors as at the date of this Offering Circular:

Name	Age	Position
YAO Lin (姚林)	56	Chairman and Secretary of the Communist Party Committee
LIU Xiangmin (劉祥民)	59	Director, General Manager and Deputy Secretary of the Communist Party Committee
AO Hong (敖宏)	60	Director and Deputy Secretary of the Communist Party Committee
ZHONG Jun (鐘俊)	67	Independent Director
ZHANG Yuanrong (張元榮)	66	Independent Director
REN Shuhui (任書輝)	61	Independent Director
NIE Xiaofu (聶曉夫)	64	Independent Director
CAO Yuanzheng (曹遠征)	67	Independent Director
MAO Shiqing (毛世清)	54	Employee Director

Mr. YAO Lin, aged 56, has been the Board Chairman and Secretary of the Communist Party Committee of the Guarantor since October 2019. Mr. Yao holds a doctoral degree from University of Science and Technology Beijing in mechanical and electronic engineering. He formerly served as the Secretary of the Communist Party Committee and director of Cold-rolled Sheet Mill of New Steel Rolling Co. Ltd of Ansteel Group Co. Ltd (鞍山鋼鐵集團公司新軋鋼股份有限公司), the general manager of New Steel Rolling Co. Ltd of Ansteel Group Co. Ltd, the deputy general manager and member of Communist Party Committee of Ansteel Group Co. Ltd (鞍山鋼鐵集團公司) and concurrently the director of Pangang Group Co.,Ltd (攀鋼集團有限公司), the director, general manager and deputy secretary of Communist Party Committee of the Anshan Iron and Steel Group Corporation (鞍鋼集團有限公司) (renamed as Ansteel Group Co. Ltd in December 2017), and the board chairman and Secretary of the Communist Party Committee of Ansteel Group Co. Ltd.

Mr. LIU Xiangmin, aged 59, has been the Director, General Manager and a Deputy Secretary of the Communist Party Committee of the Guarantor since November 2020. Mr. Liu graduated from Central South University, majoring in non-ferrous metallurgy with a doctoral degree in engineering and is a senior engineer. Mr. Liu formerly served as a member of Communist Party Committee and deputy director of Zhongzhou Aluminium Plant (中州鋁廠) and concurrently as the director of Alumina Plant of Zhongzhou Aluminium Plant, the member of Communist Party Committee and chairman of Coordinating Committee of Aluminum Corporation of China Zhongzhou Company (中國鋁業公司中州地區企業), the general manager of Aluminum Corporation of China Limited Zhongzhou Branch (中國鋁業股份有限公司中州分公司), the executive director, vice president and member of Executive Committee of

Aluminum Corporation of China, the member of Communist Party Committee, deputy general manager and chief safety officer of Aluminum Corporation of China, the executive director and senior deputy director of Aluminum Corporation of China Limited, the member of Communist Party Committee and deputy general manager of the State Power Investment Corporation Limited (國家電力投資集團有限公司).

Mr. AO Hong, aged 60, is currently a Director, a Deputy Secretary of the Communist Party Committee and the Chairman of the Labour Union of the Guarantor. He joined the Guarantor in 2005 as a member of the Communist Party Committee and Deputy General Manager. Mr. Ao graduated from Central South University with a doctoral degree in management science and engineering. He is a professor-level senior engineer with over 30 years of work experience in enterprises of non-ferrous metals industry. He successively served as deputy dean of Beijing General Research Institute for Non-ferrous Metals (北京有色金屬研究總院) and concurrently chairman of GRINM Semiconductor Materials Co., Ltd. (有研半導體矽材料股份有限公司), chairman of Guorui Electronics Co., Ltd. (國瑞電子股份有限公司), chairman of Guo Jing Micro-electronic Holding, Limited (國晶微電子控股公司) in Hong Kong, dean of Chinalco Research Institute of Science and Technology (中鋁科學技術研究院) as well as chairman of China Rare Earth & Metals. Mr. Ao is currently a non-executive director of Chalco.

Mr. ZHONG Jun, aged 67, is currently an Independent Director of the Guarantor. Mr. Zhong formerly served as the general manager of Zhejiang Electric Power Construction Co. Ltd (浙江省電力建設總公司), the deputy director-general of Department of Engineering Construction of State Grid Corporation of China (國家電力公司), a director, deputy general manager and deputy secretary of the Communist Party Committee of State Grid Liaoning Electric Power Supply Co. Ltd (遼寧省電力有限公司), a member of the Preparation Team of China Datang Corporation Ltd (中國大唐集團公司), the deputy general manager and a member of Communist Party Committee of China Datang Corporation Ltd, a director, general manager and a member of Communist Party Committee of China Southern Power Grid (中國南方電網有限責任公司).

Mr. ZHANG Yuanrong, aged 66, is currently an Independent Director of the Guarantor. He graduated from Beijing University of Posts and Telecommunications where he majored in international communication. Mr. Zhang is a senior international business engineer. He formerly served as a cadre of International Business Department in General Post Office of the Ministry of Posts and Telecommunications (中華人民共和國郵電部), the general manager of Minmetals Trading Limited (五礦貿易有限責任公司), a vice president and a member of the Communist Party Committee of Minerals Import and Export Corporation (中國五金礦產進出口總公司), a deputy general manager and a member of the Communist Party Committee of China Minmetals Corporation (中國五礦集團有限公司) ("China Minmetals") as well as the vice chairman and deputy general manager of China Minmetals Corporation Limited (中國五礦股份有限公司).

Mr. REN Shuhui, aged 61, is currently an Independent Director of the Guarantor. Mr. Ren formerly served as the director of Qinghai Qiaotou Power Plant (青海橋頭發電廠), the assistant director (general manager) of Qinghai Electric Power Bureau (Co. Ltd), the deputy director-general (deputy general manager) and a member of Communist Party Committee of Qinghai Electric Power Bureau (Co. Ltd), the general manager and secretary of the Communist Party Committee, the general manager of Qinghai Electric Power Co. Ltd, the deputy general manager and a member of Communist Party Committee, the deputy general manager and deputy secretary of Communist Party Committee, a director and deputy secretary of Communist Party Committee of China Huadian Corporation Ltd (中國華電).

Mr. NIE Xiaofu, aged 64, is currently an Independent Director of the Guarantor. Mr. Nie formerly served as the general manager of Weaponry Industry Science and Technology Development Co. Ltd of South-west Weaponry Industry Bureau of China North Industries Group Corporation Limited (兵器工業總公司西南兵工局兵工科技開發公司), the general manager of Wanyou Import & Export Co. Ltd (萬友進出口公司), the deputy director of Chongqing Dajiang Vehicle Plant (重慶大江車輛總廠), the deputy director of South-west Weaponry Industry Bureau (西南兵工局), the director of Economic Operations of China South Industries Group Co. Ltd (兵器裝備集團), the deputy general manager and deputy secretary of Communist Party Committee of China South Industries Group Co. Ltd.

Mr. CAO Yuanzheng, aged 67, is currently an Independent Director of the Guarantor. Mr. Cao formerly served as the director of Office of Academic Research of China Society of Economic Reform of National Development and Reform Commission (國家體改委中國經濟體制改革研究所), the deputy director of Research Institute of Comparative Economic Systems (比較經濟體制研究室), the first vice dean of China Society of Economic Reform (經濟體制改革研究院), the executive vice president and chief economist of BOC International Holdings Limited (中銀國際控股有限公司), the chief economist of the Bank of China Limited (中國銀行) and an external director of China Datang Corporation (中國大唐).

Mr. MAO Shiqing, aged 54, is currently the Employee Director of the Guarantor. Mr. Mao is a senior economist. Mr. Mao formerly served as the director of Propaganda Department of Communist Party Committee, the vice chairman of Trade Union and the Youth League Work Department of Shanxi Aluminum Plant (山西鋁廠), the director of Corporate Culture Division of Party-Masses Work Department, the director of Party Construction and Political Work Department, Secretary of Youth League Committee and deputy director of Party-Masses Work Department of Aluminum Corporation of China Limited (中國鋁業公司), the director of Party-Masses Work Department, Secretary of Youth League Committee and Deputy Secretary of Communist Party Committee of the Guarantor.

Senior Management

The following table sets forth information regarding the senior management of the Guarantor as at the date of this Offering Circular:

Name	Age	Position
YAO Lin (姚林)	56	Chairman and Secretary of the Communist Party Committee
LIU Xiangmin (劉祥民)	59	Director, General Manager and Deputy Secretary of the Communist Party Committee
AO Hong (敖宏)	60	Director and Deputy Secretary of the Communist Party Committee
XU Zhiwu (許質武)	60	Head of Discipline Inspection Team and Member of the Communist Party Committee
LIU Jianping (劉建平)	54	Deputy General Manager and Member of the Communist Party Committee
CHEN Qi (陳琪)	59	Deputy General Manager and Member of the Communist Party Committee
YE Guohua (葉國華)	53	Chief Accountant and Member of the Communist Party Committee
DONG Jianxiong (董建雄)	54	Deputy General Manager and Member of the Communist Party Committee

Please see the subsection headed "*Directors*" for the description of experience of Mr. Yao Lin, Mr. Liu Xiangmin and Mr. Ao Hong.

Mr. XU Zhiwu, aged 60, is currently the Head of the Discipline Inspection Team and a Member of the Communist Party Committee of the Guarantor. Mr. Xu graduated from Beijing Institute of Technology with a master's degree majoring in engineering management. He formerly served as a teacher and deputy dean of Department of Engineering, deputy head of the Personnel Office, head of Finance Department of Beijing Institute of Technology, deputy chief accountant of the Financial Accounting Bureau of China Ordnance Industries Group Corporation Limited (中國兵器工業總公司), general manager, the leader and secretary of the Communist Party Committee of North Industrial Group Finance Limited (北方工業集團財務有限責任公司), general manager, the vice chairman, deputy secretary and the secretary of the Communist Party Committee of North Industrial Group Finance Company Limited (兵工財務有限責任公司), assistant to the general manager of China North Industries Group Company Corporation Limited (中國兵器工業集團公司) as well as director, the secretary of the Commission of Discipline Inspection and Standing Communist Party Committee of Anshan Iron and Steel Group Corporation (鞍鋼集團有限公司).

Mr. LIU Jianping, aged 54, is currently a Deputy General Manager and a Member of the Communist Party Committee of the Guarantor. He holds a master's degree from Renmin University of China in commodity studies. Mr. Liu formerly served as the deputy division-head of the Personnel Department of China Grain Reserves Group Limited Company (中國儲備糧管理總公司), deputy head of the Second Section of the Fifth Bureau, the Section Director of the First Section of Training Centre of Central Organization Department (中組部), head of the Forth Section of the First Bureau of Enterprise Leaders Management of SASAC, general manager of Human Resources Department (Working Department of Veteran Cadre) of the Chalco as well as the assistant to the general manager, the deputy dean and dean of Human Resources Department of the Guarantor. Currently, he also serves as the chairman of China Copper.

Mr. CHEN Qi, aged 59, is currently a Deputy General Manager and a Member of the Communist Party Committee of the Guarantor. He graduated from Nanjing University of Aeronautics and Astronautics, majoring in management science and engineering and holds a doctoral degree in management. He formerly served as a lecturer, deputy director of Department Office and head of Faculty Division of Human Resources Department of Zhenjiang Shipbuilding Institute (鎮江船舶學院), the deputy dean and dean of Fourth Management Engineering Department of East China Institute of Shipbuilding Industry (華東船舶工業學院), the dean and secretary of Committee for Discipline Inspection of Beijing Shipbuilding Industry Managers Training Institute (北京船舶工業管理幹部學院), the director-general of General Office and secretary of leading party group of China State Shipbuilding Corporation Limited (中國船舶工業集團公司), the member of Communist Party Committee and deputy general manager of China State Shipbuilding Corporation Limited.

Mr. YE Guohua, aged 53, is currently the Chief Accountant and a Member of the Communist Party Committee of the Guarantor. Mr. Ye graduated from Shanghai University of Finance and Economics, majoring in accounting, with a bachelor's degree in economics and is a senior accountant. Mr. Ye has extensive experience in financial management and accounting. He had successively served as the director of the accounting department of the refinery of Shanghai Gaoqiao Petrochemical Company (上海高橋石油化工公司), the deputy chief accountant and head of the accounting department of Sinopec Shanghai Gaoqiao Branch (中國石化股份公司上海高橋分公司), the chief financial officer, executive director, a member of the Party Committee, deputy general manager of Sinopec Shanghai Petrochemical Company Limited (上海石油化工股份有限公司), the director of the accounting department of China Petroleum & Chemical Group Corporation (中國石油化工集團公司), the chairman of Century Bright International Investment Company (盛駿國際投資有限公司), the chairman of Sinopec Insurance Limited (中石化保險有限公司), the vice chairman of Taiping & Sinopec Financial Leasing Co., Ltd. (太平石化金融租賃有限責任公司), a director of Sinopec Finance Co., Ltd. (中石化財有限責任公司), and a director of Sinopec Oilfield Service Corporation (中石化石油工程技術服務股份有限公司). Mr. Ye is also the chairman of the Supervisory Committee of Chalco.

Mr. DONG Jianxiong, aged 54, is currently a Deputy General Manager and a Member of the Communist Party Committee of Aluminum Corporation of China. Mr. Dong graduated from Xi'an University of Architecture and Technology, majoring in non-ferrous metallurgy, with a bachelor's degree and is a senior engineer. He formerly served as the general Party branch secretary and manager of No. 3 Electrolytic Aluminium Plant of Baotou Aluminium Plant (包頭鋁廠), the deputy chief engineering and director of Production Equipment Department of Baotou Aluminium Co. Ltd (包頭鋁業股份有限公司), the assistant general manager of Baotou Aluminium (Group) Co. Ltd (包頭鋁業(集團)有限責任公司), the deputy general manager of Baotou Aluminium Co. Ltd, the secretary of Communist Party Committee, director, deputy general manager and chairman of the Labour Union of Baotou Aluminium (Group) Co. Ltd, the deputy general manager of Baotou Aluminium Co. Ltd, the secretary of Communist Party Committee and chairman of the Labour Union of China Great Wall Aluminium Co. Ltd (中國長城鋁業公司), the general manager of Aluminum Corporation of China Limited Henan Branch, the executive director of China Great Wall Aluminium Co. Ltd, the board chairman of Chinalco Mining Co. Ltd (中鋁礦業有限公司), the secretary of the Communist Party Committee and board chairman of Guangxi Huasheng New Materials Co. Ltd (廣西華升新材料有限公司).

PRC LAWS AND REGULATIONS

This section summarises the principal PRC laws and regulations which are relevant to the Group's business and operations as at the date of this Offering Circular. As this is a summary, it does not contain a detailed analysis of the PRC laws and regulations which are relevant to the Group's business and operations.

THE PRC LEGAL SYSTEM

The PRC legal system is based on the PRC Constitution and is made up of written laws, regulations, directives, local regulations and rules, laws of Special Administrative Regions and laws resulting from international treaties entered into by the PRC government. In general, PRC court judgments do not constitute binding precedents. However, they are used for the purposes of judicial reference and guidance.

The National People's Congress of the PRC (the "**NPC**") and the Standing Committee of the NPC are empowered by the PRC Constitution to exercise the legislative power of the State. The NPC has the power to amend the PRC Constitution and enact and amend basic laws governing State agencies and civil, criminal and other matters. The Standing Committee of the NPC is empowered to enact and amend all laws except for the laws that are required to be enacted and amended by the NPC.

The State Council is the highest organ of the State administration and has the power to enact administrative rules and regulations. The ministries and commissions under the State Council are also vested with the power to issue orders, directives and regulations within the jurisdiction of their respective departments. All administrative rules, regulations, directives and orders promulgated by the State Council and its ministries and commissions must be consistent with the PRC Constitution and the national laws enacted by the NPC. In the event of any contravention, the Standing Committee of the NPC has the power to annul such administrative rules, regulations, directives and orders which contradict the PRC Constitution and the national laws.

The State Council has the power to alter or annul any inappropriate rules of the ministries and commissions under the State Council. Local people's congresses or their standing committees of the provinces, autonomous regions and municipalities directly under the Central Government may, in light of the specific conditions and actual needs of their respective administrative areas, enact local regulations, **provided that** such regulations do not contravene the PRC Constitution, the national laws and the administrative regulations. The people's congresses or their standing committees of certain large cities may, in light of the specific local conditions and actual needs, enact local regulations, **provided that** they do not contravene the PRC Constitution, the national laws, the administrative regulations and the local regulations of their respective provinces or autonomous regions, and they shall submit the regulations to the standing committees of the people's congresses of the provinces or autonomous regions for approval before implementation.

The people's governments of the provinces, autonomous regions, municipalities directly under the Central Government and certain large cities may enact rules in accordance with the national laws and administrative regulations and the local regulations of their respective provinces, autonomous regions or municipalities.

In relation to certain matters except for the coercive measures and punishment with respect to crime and criminal penalty, deprivation of a citizen's political rights or restriction of personal liberty, and judicial system, the NPC or its Standing Committee may empower the State Council to enact administrative regulations. After such administrative regulations have been tested in practice and when the conditions are ready for enacting a law on the aforementioned matters, the State Council shall propose to the NPC and the Standing Committee of NPC in a timely manner for enacting such law.

The PRC Constitution vests the power to interpret laws in the Standing Committee of the NPC. The Supreme People's Court has the power to give general interpretation on the application of laws in judicial proceedings, according to Resolution of the Standing Committee of the NPC Providing an Improved Interpretation of the Law (《全國人民代表大會常務委員關於加強法律解釋工作的決議》). The State Council and its ministries and commissions are also vested with the power to interpret rules and regulations that they have promulgated. At the regional level, the power to interpret regional rules and regulations is vested in the regional legislative and administrative bodies which promulgated such laws.

THE PRC JUDICIAL SYSTEM

Under the PRC Constitution and the Organic Law of the People's Courts of PRC (《中華人民共和國人民法院組織法》), the judicial system consists of the Supreme People's Court, the local courts at various levels, and special courts.

The local courts are comprised of the basic-level courts, the intermediate courts and the superior courts. The basic-level courts are comprised of civil, criminal, administrative and other divisions. The intermediate courts are organized into divisions similar to those of the basic-level courts. The superior courts supervise the basic-level and intermediate courts. The people's procuratorate at various levels also have the right to exercise legal supervision over the civil proceedings of courts of the same and lower levels. The Supreme People's Court is the highest judicial body that supervises the administration of justice by all other courts.

The Civil Procedure Law of the PRC (《中華人民共和國民事訴訟法》), which was adopted on 9 April 1991 and amended on 28 October 2007, 31 August 2012 and 27 June 2017, respectively, sets forth the criteria for taking a civil action, jurisdiction of the courts, procedures to follow for taking a civil action and enforcing a civil judgment or order. All parties to a civil action conducted within the PRC must comply with the Civil Procedure Law. A foreign individual or enterprise generally has the same litigation rights and obligations as a citizen or legal person of the PRC. If a foreign country's judicial system limits the litigation rights of PRC citizens and enterprises, the PRC courts may apply the same limitations to the citizens and enterprises of that foreign country within the PRC.

The courts employ a two-tier appellate system. A party may appeal against a first trial judgment or order of a local court to the court at a higher level. Second-trial judgments or orders made by the higher level and the first-trial judgments or orders made by the Supreme People's Court are final. However, if the Supreme People's Court or a higher level court discovers error in an effective judgment made by a lower court, or the president of a people's court discovers error in an effective judgment made by the court which he/she presides, a retrial may be implemented subject to the judicial supervision procedures.

Generally, civil cases are initially heard by a local court of the municipality or province in which the defendant resides. The parties to a contract may, through written consent, exercise choice of forum, **provided that** it's either the plaintiff's or the defendant's place of residence, the place of execution or implementation of the contract or the place of the object of the contract. the choice of forum may not violate the stipulations of grade jurisdiction and exclusive jurisdiction in any case.

If any party to a civil action refuses to comply with a judgment or order made by a court or an award granted by an arbitration panel in the PRC, the aggrieved party may apply to the court to request for enforcement of the judgment, order or award. The statute of limitation to apply for such enforcement is two years. If a party fails to comply with a judgment made by the court within the stipulated time, the court will, upon application by any party to the action, mandatorily enforce the judgment.

A party seeking enforcement of a judgment or order of a court against a party located outside the PRC and does not own any property in the PRC may apply to a foreign court with proper jurisdiction for recognition and enforcement of said judgment or order. A foreign judgment or ruling may also be recognised and enforced by a PRC court in accordance with the PRC enforcement procedures if the PRC has entered into, or acceded to, an international treaty with the relevant foreign country, which provides for such recognition and enforcement, or if the judgment or ruling satisfies the court's examination in accordance with the principle of reciprocity, unless the court finds the recognition or enforcement of such judgment or ruling will result in violation of the legal principles of the PRC, its sovereignty or security, or for reasons of social and public interests.

FOREIGN EXCHANGE CONTROLS

The legal currency of the PRC is the Renminbi ("**RMB**"), which is subject to PRC foreign exchange controls and may not be exchanged into foreign currency at any time.

On 21 July 2005, PBOC announced that PRC will implement a regulated and managed floating exchange rate system based on market supply and demand and by reference to a basket of currencies starting from 21 July 2005. PBOC will announce the closing price of a foreign currency such as the US dollars traded against RMB in the inter-bank foreign exchange market after closing quotation on each business day, setting the central parity for trading of RMB on the following business day.

On 30 March 2015, SAFE issued the "Notice of the SAFE on Reforming the Administrative Approach Regarding the Settlement of the Foreign Exchange Capitals of Foreign-invested Enterprises" (《國家外匯管理局關於改革外商投資企業外匯資本金結匯管理方式的通知》) ("**Circular 19**") effective from 1 June 2015, and "Notice of the General Affairs Department of the SAFE on the Relevant Operating Issues concerning the Improvement of the Administration of Payment and Settlement of Foreign Currency Capital of Foreign-funded Enterprises" (《國家外匯管理局綜合司關於完善外商投資企業外匯資本金支付結匯管理有關業務操作問題的通知》) and "Supplementary Notice of the General Affairs Department of the SAFE on the Relevant Operating Issues concerning the Improvement of the Administration of Payment and Settlement of Foreign Currency Capital of Foreign-funded Enterprises" (《國家外匯管理局綜合司關於完善外商投資企業外匯資本金支付結匯管理有業務操作問題的補充通知》) were repealed concurrently. The "Circular of the SAFE on Reforming and Regulating Policies on the Control over Foreign Exchange Settlement of Capital Account" (《國家外匯管理局關於改革和規範資本項目結匯管理改策的通知》) ("**Circular 16**") was promulgated and became effective on 9 June 2016. According to Circular 19 and Circular 16, foreign-invested enterprises may conduct willingness settlement of their foreign exchange capital, and their settled capital may only be used for purposes within its approved business scope and may not be used for securities investment or any investment or wealth management other than banks' principal guaranteed products, unless otherwise provided for by any law or regulation. In addition, the settled funds of a foreign-invested enterprises may not be used to grant loans to non-affiliated enterprises unless expressly granted in its approved business scope, and may not be used to build or purchase any real estate not for its own use with the exception of real estate enterprises.

NDRC CIRCULAR 2044

On 14 September 2015, the NDRC issued the Notice on Promoting the Reform of the Filing and Registration System for Issuance of Foreign Debt by Enterprises (《國家發展改革委關於推進企業發行外債備案登記制管理改革的通知》發改外資[2015]2044號) ("**Circular 2044**"), effective on the same date. According to Circular 2044, domestic enterprises and their overseas controlled entities shall procure the registration of any debt securities issuance outside the PRC from NDRC prior to the issuance and report issuance information to NDRC within 10 working days after the completion of each issuance. No legal consequences is prescribed in Circular 2044 on non-compliance with the pre-issue registration requirement. The Guarantor obtained the pre-issuance registration certificate in respect of the offering of the Bonds from NDRC on 7 December 2021. Meanwhile, there is no specification on the legal consequences of non-compliance with the post-issuance filing under Circular 2044. The Guarantor will undertake to notify NDRC of the particulars of the issue of the Bonds within 10 business days after the Issue Date.

Cross-Border Guarantee Laws

On 12 May 2014, the SAFE promulgated the Provisions on the Foreign Exchange Administration of Cross-Border Guarantees (《國家外匯管理局關於發布〈跨境擔保外匯管理規定〉的通知》) and its implementation guidelines (collectively, the "**Circular 29**"), which came into force on 1 June 2014. Circular 29 classifies cross-border guarantee into three types:

- Nei Bao Wai Dai (內保外貸) (the "**NBWD**"): a guarantee provided by an onshore guarantee provider for a debt owing by an offshore debtor to an offshore creditor.

- Wai Bao Nei Dai (外保內貸) (the "**WBND**"): a guarantee provided by an offshore guarantee provider for a debt owing by an onshore debtor to an onshore creditor.

- Other Types of Cross-border Guarantee (其他形式跨境擔保): any cross-border guarantee other than NBWD and WBND.

In respect of NBWD, in case where the onshore guarantee provider is a non-bank financial institution, it shall conduct a registration of the relevant guarantee with SAFE within 15 business days after the execution of relevant guarantee contract. In the event of any changes to the major clauses of the relevant guarantee contract, such onshore guarantee provider shall conduct a change registration for the relevant guarantee.

Pursuant to the Circular 29, the funds borrowed offshore shall not be directly or indirectly repatriated to or used onshore by means of loans, equity investments or securities investments without SAFE approval. Pursuant to the Notice of the State Administration of Foreign Exchange on Further Promoting the Reform of Foreign Exchange Administration and Improving the Examination of Authenticity and Compliance (《國家外匯管理局關於進一步推進外匯管理改革完善真實合規性審核的通知》) (the "**SAFE Circular 3**") issued by SAFE in January 2017, the funds from overseas loans under the NBWD are allowed to be repatriated into the PRC for domestic use; the debtors can repatriate, directly or indirectly, the funds under the NBWD for domestic use through issuing loans to or equity participation in domestic institutions. Further, according to the Policy Q&As (Issue II) on the Notice of the State Administration of Foreign Exchange on Further Promoting the Reform of Foreign Exchange Administration and Improving Examination of Authenticity and Compliance (《國家外匯管理局關於進一步推進外匯管理改革完善真實合規性審核的通知》政策實務解答(二)) (the "**SAFE Q&A**"), in case where the offshore debtor transfers the funds borrowed offshore by means of foreign loans onshore, the onshore borrower shall meet the relevant requirements for foreign debt administration and control the scale of funds repatriated according to the relevant requirements of the mode of macro-prudential management of full-covered cross-border financing or the mode required under the Administration Measures for Registration of Foreign Debts (《外債登記管理辦法》). In case where the offshore debtor transfers the funds by means of equity investment onshore, it shall meet the requirements from the competent authorities in the area of foreign direct investment.

Pursuant to the Circular 29, upon the enforcement of NBWD, the onshore guarantee provider can pay to the offshore creditor directly (by effecting remittance through an onshore bank) where the NBWD has been registered with SAFE. In addition, if any onshore security provider under a NBWD provides any security or guarantee for an offshore bond issuance, the offshore issuer's equity shares must be held directly or indirectly by the onshore security provider. Moreover, the proceeds from any such offshore bond issuance must be applied towards such offshore investment project(s) with equity connections from the onshore security provider, and relevant offshore institutions/projects have obtained the approval, registration, filing or confirmation from the competent authorities pursuant to PRC laws.

The Guarantor will unconditionally and irrevocably guarantee the due payment of all sums expressed to be payable by the Issuer under the Bonds. The Guarantor's obligations in respect of the Guarantee are contained in the Deed of Guarantee. The Deed of Guarantee will be executed by the Guarantor on or before the Issue Date. Under Circular 29, the Deed of Guarantee does not require any pre-approval by SAFE and is binding and effective upon execution.

The Guarantor is required to submit the Deed of Guarantee to the local branch of SAFE for registration within 15 business days after its execution. The SAFE registration is a post-signing registration requirement.

Pursuant to the Circular 29, the local branch of SAFE will go through a procedural review (as opposed to a substantive examination process) of the Guarantor's application for registration. Upon completion of the review, the local branch of SAFE will issue a registration document evidencing the completion of the registration by the Guarantor.

Under Circular 29:

- the non-registration of NBWD with the local branch of SAFE will not impact the validity of the security under PRC laws, although SAFE may impose penalties on the Guarantor if submission for registration is not carried out within the stipulated time frame of 15 business days; and

- there may be hurdles at the time of remittance (if any cross-border payment is to be made by the Guarantor under the Deed of Guarantee in respect of the Bonds) as domestic banks require evidence of SAFE registration in order to effect such remittance, although this does not affect the validity of the Deed of Guarantee in respect of the Bonds.

The Terms and Conditions of the Bonds will provide that the Guarantor will file or cause to be filed the Deed of Guarantee with SAFE after execution of the Deed of Guarantee in accordance with, and within the time period prescribed by, Circular 29 and use its all reasonable endeavour to complete the registration and obtain a registration certificate from SAFE (or any other document evidencing completion of registration issued by SAFE) on or before 5:00 p.m. (Hong Kong time) on the day falling 150 PRC Business Days (as defined in the Terms and Conditions of the Bonds) after the Issue Date.

EXCHANGE RATE INFORMATION

PRC

The People's Bank of China (the "**PBOC**") sets and publishes daily a base exchange rate with reference primarily to the supply and demand of Renminbi against a basket of currencies in the markets during the prior day. The PBOC also takes into account other factors such as the general conditions existing in the international foreign exchange market. Since 1994, the conversion of Renminbi into foreign currencies, including Hong Kong dollars and U.S. dollars, has been based on rates set by the PBOC, which are set daily based on the previous day's inter-bank foreign exchange market rates and current exchange rates in the world financial markets. From 1994 to 20 July 2005, the official exchange rate for the conversion of Renminbi to U.S. dollars was generally stable. On 21 July 2005, the PRC government changed its decade-old policy of pegging the value of the Renminbi to that of the U.S. dollar only, to allow the value of the Renminbi to fluctuate within a narrow and managed band based on market supply and demand and by reference to a basket of currencies. This change in policy has resulted in a significant appreciation of the Renminbi against the U.S. dollar.

The PRC government has made further adjustments to the exchange rate system. The PBOC authorised the China Foreign Exchange Trading Centre, effective since 4 January 2006, to announce the central parity exchange rate of certain foreign currencies against the Renminbi at 9:15 a.m. on each business day. This rate is set as the central parity for the trading against the Renminbi in the inter-bank foreign exchange spot market and the over the counter exchange rate for that business day. On 18 May 2007, the PBOC enlarged, effective on 21 May 2007, the floating band for the trading prices in the inter-bank spot exchange market of Renminbi against the U.S. dollar from 0.3 per cent. to 0.5 per cent. around the central parity rate. This allows the Renminbi to fluctuate against the U.S. dollar by up to 0.5 per cent. above or below the central parity rate published by the PBOC. On 19 June 2010, the PBOC announced that in view of the recent economic situation and financial market developments in China and abroad, and the balance of payments situation in China, it has decided to proceed further with reform of the Renminbi exchange rate regime and to enhance the Renminbi exchange rate flexibility. According to the announcement, the exchange rate floating bands will remain the same as previously announced but the PBOC will place more emphasis on reflecting the market supply and demand with reference to a basket of currencies. On 12 April 2012, the PBOC announced that on 16 April 2012, the floating band for the trading prices in the inter-bank spot exchange market of Renminbi against the U.S. dollar would be enlarged from 0.5 per cent. to 1.0 per cent. around the central parity rate, allowing the Renminbi to fluctuate against the U.S. dollar by up to 1.0 per cent. above or below the central parity rate published by the PBOC. The PBOC announced on 15 March 2014 that since 17 March 2014, the floating band for the trading prices in the inter-bank foreign exchange spot market of Renminbi against the U.S. dollar was further expanded from 1 per cent. to 2 per cent. On each business day, the spread between the Renminbi and U.S. dollar buying and selling prices offered by the designated foreign exchange banks to their clients shall be within 3.0 per cent. of the published central parity of the U.S. dollar on that day, instead of 2.0 per cent. On 11 August 2015, the PBOC adjusted the mechanism for market makers to form the central parity rate by requiring them to consider the closing exchange rate of the last trading date, the supply and demand of foreign exchange and the rate change at primary international currencies. For three conservative days commencing 11 August 2015, the PBOC devalued the Renminbi against the U.S. dollar, leading to declines in the value of the Renminbi versus the U.S. dollar of up to 2.8 per cent. in currency markets and representing the largest single-day drop in the value of the Renminbi since 1994. On 11 December 2015, CFETS, a sub-institutional organisation of the PBOC, published the CFETS Renminbi exchange rate index for the first time which weighs the Renminbi based on 13 currencies, to guide the market in order to measure the Renminbi exchange rate from a new perspective. During 2016, along with the progressive interest rate increased by the U.S. Federal Reserve, the Renminbi accumulatively depreciated by 7.2 per cent. against the U.S. dollar.

Although PRC governmental policies were introduced in 1996 to reduce restrictions on the convertibility of the Renminbi into foreign currency for current account items, conversion of the Renminbi into foreign currency for capital items, such as foreign direct investment, loans or security, requires the approval of SAFE and other relevant authorities.

The following table sets forth the noon buying rates in Renminbi per U.S. dollar, as set forth in the H.10 statistical release of the Federal Reserve Bank of New York for the periods indicated:

	Renminbi per U.S Dollar Noon Buying Rate(1)			
Period	**End**	**Average**	**High**	**Low**
	(RMB per US$1.00)			
2013	6.0537	6.1412	6.2438	6.0537
2014	6.2046	6.1704	6.2591	6.0402
2015	6.4778	6.2869	6.4896	6.1870
2016	6.9430	6.6549	6.9580	6.4480
2017	6.5063	6.7569	6.9575	6.4773
2018	6.8755	6.6090	6.9737	6.2649
2019	6.9618	6.9014	7.1786	6.6822
2020	6.5250	6.9042	7.1681	6.5208
2021	6.3726	6.4508	6.5716	6.3435
2022				
January (through 7 January)	6.3769	6.3700	6.3822	6.3550

Note:

(1) Exchange rates between the Renminbi and the U.S. dollar represent the noon buying rates as set forth in the H. 10 statistical release of the Federal Reserve Board.

TAXATION

The following summary of certain British Virgin Islands, Hong Kong and PRC tax consequences of the purchase, ownership and disposition of Bonds is based upon applicable laws, regulations, rulings and decisions in effect as at the date of this Offering Circular, all of which are subject to change (possibly with retroactive effect). This discussion does not purport to be a comprehensive description of all the tax considerations that may be relevant to a decision to purchase, own or dispose of the Bonds and does not purport to deal with consequences applicable to all categories of investors, some of which may be subject to special rules. Persons considering the purchase of Bonds should consult their own tax advisers concerning the tax consequences of the purchase, ownership and disposition of Bonds.

British Virgin Islands

Payments of interest and principal on the Bonds will not be subject to taxation in the British Virgin Islands and no withholding will be required on the payment of interest and principal to any holder of the Bonds nor will gains derived from the disposal of the Bonds be subject to British Virgin Islands income or corporation tax, **provided that** the payments are made to persons who are not resident in the British Virgin Islands.

No estate, inheritance, succession or gift tax, rate, duty, levy or other charge is payable by persons who are not resident in the British Virgin Islands with respect to the Bonds.

There are currently no withholding taxes or exchange control regulations in the British Virgin Islands applicable to the Issuer.

If neither the Issuer nor any subsidiary holds an interest in real estate in the British Virgin Islands, no stamp duty is payable in respect of the issue of the Bonds or on an instrument of transfer in respect of the Bonds and all instruments relating to transfers of property to or by the Issuer and all instruments relating to transactions in respect of the shares, debt obligations or other securities of the Issuer and all instruments relating to other transactions relating to the business of the Issuer are exempt from payment of stamp duty in the British Virgin Islands.

Hong Kong

Withholding Tax

No withholding tax is payable in Hong Kong in respect of payments of principal or interest on the Bonds or in respect of any capital gains arising from the sale of the Bonds.

Profits Tax

Hong Kong profits tax is chargeable on every person carrying on a trade, profession or business in Hong Kong in respect of profits arising in or derived from Hong Kong from such trade, profession or business (excluding profits arising from the sale of capital assets).

Interest on the Bonds may be deemed to be profits arising in or derived from Hong Kong from a trade, profession or business carried on in Hong Kong in the following circumstances:

(a) interest on the Bonds is derived from Hong Kong and is received by or accrues to a corporation carrying on a trade, profession or business in Hong Kong;

(b) interest on the Bonds is derived from Hong Kong and is received by or accrues to a person, other than a corporation, carrying on a trade, profession or business in Hong Kong and is in respect of the funds of that trade, profession or business;

(c) interest on the Bonds is received by or accrues to a financial institution (as defined in the Inland Revenue Ordinance (Cap. 112) of Hong Kong (the "**IRO**")) and arises through or from the carrying on by the financial institution of its business in Hong Kong; or

(d) interest on the Bonds is received by or accrues to a corporation, other than a financial institution, and arises through or from the carrying on in Hong Kong by the corporation of its intra-group financing business (within the meaning of section 16(3) of the IRO).

Sums received by or accrued to a financial institution by way of gains or profits arising through or from the carrying on by the financial institution of its business in Hong Kong from the sale, disposal and redemption of Bonds will be subject to Hong Kong profits tax. Sums received by or accrued to a corporation, other than a financial institution, by way of gains or profits arising through or from the carrying on in Hong Kong by the corporation of its intra-group financing business (within the meaning of section 16(3) of the IRO) from the sale, disposal or other redemption of Bonds will be subject to Hong Kong profits tax.

Sums derived from the sale, disposal or redemption of Bonds will be subject to Hong Kong profits tax where received by or accrued to a person, other than a financial institution, who carries on a trade, profession or business in Hong Kong and the sum has a Hong Kong source unless otherwise exempted. The source of such sums will generally be determined by having regard to the manner in which the Bonds are acquired and disposed of.

In certain circumstances, Hong Kong profits tax exemptions (such as concessionary tax rates) may be available. Investors are advised to consult their own tax advisors to ascertain the applicability of any exemptions to their individual position.

Stamp Duty

No Hong Kong stamp duty will be chargeable upon the issue or transfer of a Bond.

PRC

The following summary describes the principal PRC tax consequences of ownership and disposition of the Bonds by beneficial owners who, or which, are not residents of mainland China for PRC tax purposes. These beneficial owners are referred to as (a) non-PRC Bondholders, or (b) beneficial owners who are entities or individuals located outside of the PRC in this "Taxation — PRC" section. In considering whether to invest in the Bonds, investors should consult their individual tax advisers with regard to the application of PRC tax laws to their particular situations as well as any tax consequences arising under the laws of any other tax jurisdiction.

Income Tax

Pursuant to the EIT Law and its implementation regulations, enterprises that are established under the laws of foreign countries and regions whose "*de facto* management bodies" are within the territory of the PRC are treated as PRC tax resident enterprises for the purpose of the EIT Law. The EIT Laws provide that the "*de facto* management body" of an enterprise is the organisation that exercises substantial and overall management and control over the production, employees, books of accounts and properties of the enterprise. If the relevant PRC tax authorities decide, in accordance with applicable tax rules and regulations, that the "*de facto* management body" of the Issuer is within the territory of the PRC, the Issuer may be treated as a PRC tax resident enterprise for the purpose of the EIT Law and income or gains paid with respect to the Bonds may considered to be derived from sources within the PRC.

Taxation on Interest

The EIT Law and its implementation regulations impose withholding tax at the rate of 10 per cent., or a lower rate if tax treaty benefits are available, on PRC-source income paid to a "non-resident enterprise" that does not have an establishment or place of business in the PRC or that has an establishment or place of business in the PRC but the relevant income is not effectively connected therewith. Pursuant to these provisions of the EIT Law, in the event the Issuer is considered to be a PRC resident enterprise by the PRC tax authorities in the future, interest payable to non-resident enterprise holders of the Bonds may be treated as income derived from sources within the PRC and be subject to such PRC withholding tax at a rate of 10 per cent. Further, in accordance with the Individual Income Tax Law of the PRC which was amended on 30 June 2011 and 31 August 2018, and took effect on 1 January 2019 and its implementation regulations, if the Issuer is considered to be a PRC tax resident enterprise, interest payable to non-resident individual holders of the Bonds may be treated as income derived from sources within the PRC and be subject to a 20 per cent. individual income tax which the Issuer would be obliged to withhold from payments of interests to non-resident individual holders of the Bonds. To the extent that the PRC has entered into arrangements relating to the avoidance of double-taxation with any jurisdiction, such as Hong Kong, that allow a lower rate of withholding tax, such lower rate may apply to qualified holders of the Bonds.

As confirmed by the Issuer, as at the date of this Offering Circular, the Issuer has not been given notice or informed by the PRC tax authorities that it is considered a PRC tax resident enterprise for the purpose of the EIT Law. On that basis, non-resident enterprise holders of the Bonds will not be subject to income tax imposed by any governmental authority in the PRC in respect of the holding of the Bonds or any repayment of principal and payment of interest made thereon. However, there is no assurance that the Issuer will not be treated as a PRC tax resident enterprise under the EIT Law and related implementation regulations in the future.

In addition, given the fact that the Guarantor is a PRC tax resident enterprise for the purpose of the EIT Law and, in the event that the Guarantor is required to fulfill its obligations under the Guarantee by making interest payments on behalf of the Issuer, such interest payments under the Guarantee may considered to be derived from sources within the PRC. In such case, the Guarantor may be obliged to withhold PRC tax at a rate of 10 per cent. on such payments to non-PRC resident enterprise holders of the Bonds and 20 per cent. for non-resident individual holders of the Bonds. To the extent that the PRC has entered into arrangements relating to the avoidance of double-taxation with any jurisdiction, such as Hong Kong, which allows a lower rate of withholding tax, such lower rate may apply to qualified holders of the Bonds.

Taxation on Capital Gains

The EIT Law and its implementation regulations impose a tax at the rate of 10 per cent., or a lower rate if tax treaty benefits are available, on income derived from sources within the PRC realised by a "non-resident enterprise" that does not have an establishment or place of business in the PRC or that has an establishment or place of business in the PRC but the relevant gain is not effectively connected therewith. The Individual Income Tax Law and its implementation regulations impose a tax at the rate of 20 per cent. on income derived from sources within the PRC realised by non-resident individuals. If the Issuer is considered a PRC resident enterprise by the PRC tax authorities in the future, and if the capital gains realised by holders of the Bonds are treated as income derived from sources within the PRC, such gains will be subject to such PRC tax. To the extent that the PRC has entered into arrangements relating to the avoidance of double-taxation with any jurisdiction, such as Hong Kong, that allow a lower rate of tax, such lower rate may apply to qualified non-resident holders of the Bonds.

VAT

On 23 March 2016, MOF and SAT issued the Circular of Full Implementation of Business Tax to VAT Reform (《關於全面推開營業稅改徵增值稅試點的通知》Caishui [2016] No. 36, "**Circular 36**") which provides for that the VAT pilot programme will cover construction industry, real estate industry, finance industry and life service industry on a nation-wide basis from 1 May 2016. Since then, the income derived from the provision of financial services which attracted business tax will be entirely replaced by, and subject to, VAT.

According to Circular 36, entities and individuals providing services within China are subject to VAT. The services are treated as being provided within China where either the service provider or the service recipient is located in the PRC. The services subject to VAT include the provision of financial services such as the provision of loans. It is further clarified under Circular 36 that the "loans" refers to the activity of lending capital for another's use and receiving the interest income thereon. Based on the definition of "loans" under Circular 36, the issuance of Bonds may be regarded as financial services by holders of the Bonds and the payments of the interest and other interest like earnings under the Bonds received by a holder of the Bonds from the Guarantor may be subject to VAT at the rate of 6 per cent. in the event that the Guarantor is required to discharge its obligations under the Guarantee. In addition, the holders of the Bonds shall be subject to the local levies at approximately 12 per cent. of the VAT payment and consequently, the combined rate of VAT and local levies would be around 6.72 per cent.

Where a holder of the Bonds who is an individual resells the Bonds, the VAT may be exempted according to Circular 36 if the resale of Bonds is treated as resale of financial products. Where a holder of the Bonds who is an entity located outside of the PRC resells the Bonds to an entity or individual located outside of the PRC and derives any gain, since neither the service provider nor the service recipient is located in the PRC, Circular 36 should not apply and the Issuer does not have the obligation to withhold the VAT or the local levies. However, where a holder of the Bonds who is an entity resells the Bonds, there is uncertainty as to the applicability of VAT if either the seller or buyer of Bonds is located inside the PRC.

Circular 36 has been issued quite recently, the above statement may be subject to further change upon the issuance of further clarification rules and/or different interpretation by the competent tax authority. There is uncertainty as to the application of Circular 36.

Stamp Duty

No PRC stamp duty will be imposed on non-PRC Bondholders either upon issuance of the Bonds or upon a subsequent transfer of Bonds to the extent that the register of holders of the Bonds is maintained outside the PRC and the issuance and the sale of the Bonds is made outside of the PRC.

The U.S. Internal Revenue Code of 1986 ("FATCA")

Pursuant to certain provisions of the U.S. Internal Revenue Code of 1986, commonly known as "**FATCA**", a "foreign financial institution" may be required to withhold on certain payments it makes ("**foreign passthru payments**") to persons that fail to meet certain certification, reporting, or related requirements. The Issuer or the Guarantor may be a foreign financial institution for these purposes. A number of jurisdictions have entered into, or have agreed in substance to, intergovernmental agreements with the United States to implement FATCA ("**IGAs**"), which modify the way in which FATCA applies in their jurisdictions. Under the provisions of IGAs as currently in effect, a foreign financial institution in an IGA jurisdiction would generally not be required to withhold under FATCA or an IGA from payments that it makes. Certain aspects of the application of the FATCA provisions and IGAs to instruments such as the Bonds, including whether withholding would ever be required pursuant to FATCA or an IGA with respect to payments on instruments such as the Bonds, are uncertain and may be subject to change. Even if withholding would be required pursuant to FATCA or an IGA with respect to payments on instruments such as the Bonds, such withholding would not apply prior to the date that is two years after the date on which final regulations defining foreign passthru payments are published in the U.S. Federal Register. However, if additional bonds (as described under "*Terms and Conditions of the Bonds — Further Issues*") that are not distinguishable from previously issued Bonds are issued after the expiration of the grandfathering period and are subject to withholding under FATCA, then withholding agents may treat all Bonds, including the Bonds offered prior to the expiration of the grandfathering period, as subject to withholding under FATCA. Holders should consult their own tax advisers regarding how these rules may apply to their investment in the Bonds.

DESCRIPTION OF CERTAIN DIFFERENCES BETWEEN PRC GAAP AND IFRS

The Guarantor's consolidated financial statements included in this Offering Circular have been prepared and presented in accordance with PRC GAAP. PRC GAAP are substantially in line with IFRS, except for certain modifications that still exist between PRC GAAP and IFRS, which might be relevant to the financial information of the Group included herein.

The following is a general summary of certain differences between PRC GAAP and IFRS related to the Group. The differences identified below are limited to those significant differences that are appropriate to the Group's financial statements. Since the summary is not meant to be exhaustive, there can be no assurance regarding the completeness of the summary. The Group has not prepared a complete reconciliation of the consolidated financial information and related footnote disclosure between PRC GAAP and IFRS and has not quantified such differences. Had any such quantification or reconciliation been undertaken by the Group, other potentially significant accounting and disclosure differences may be required that are not identified below. Additionally, no attempt has been made to identify possible future differences between PRC GAAP and IFRS as a result of prescribed changes in accounting standard. Regulatory bodies that promulgate PRC GAAP and IFRS have significant projects ongoing that could affect future comparisons such as this one. Finally, no attempt has been made to identify future differences between PRC GAAP and IFRS that may affect the financial information as a result of transactions or events that may occur in the future. Accordingly, no assurance is ***provided that*** *the following summary of differences between PRC GAAP and IFRS is complete.*

In making an investment decision, investors must rely upon their own examination of the Group, the terms of the offering and other disclosure contained herein. Investors should consult their own professional advisers for an understanding of the differences between PRC GAAP and IFRS and/or between PRC GAAP and other generally accepted accounting principles, and how those differences might affect the financial information contained herein.

Share reform scheme cost

In 2004, PRC listed companies under state control started to implement share reform schemes by encouraging holders of publicly tradable shares to allow non-publicly tradable shares to convert into tradable shares. One of the common ways to achieve this purpose is to pay cash directly to the holders of publicly tradable shares. Under PRC GAAP, such a payment is capitalised as the cost of long-term equity investments, financial assets held for trading or available-for-sale financial assets, as appropriate.

Under IFRS, such a payment is not allowed to be capitalised and, accordingly, a GAAP difference may be noted.

Provision for future development fund and work safety cost

Under PRC GAAP, in accordance with relevant regulations of the Chinese authorities, the Group has to accrue special reserves such as future development funds and work safety cost, which are presented as cost of expenses of the period and the amount that has been accrued, are presented in special reserve of owner's equity. Work safety cost, which belongs to cost of expenses, directly offset the special reserves. The accrued work safety reserve, which is used by enterprises and used to form fixed assets, shall be charged as "construction in progress", and recognised as a fixed asset upon the project being completed and reaching the expected operational standard. Meanwhile, the special reserves are offset in accordance with the cost of fixed asset formation, while the equivalent amount of accumulated depreciation is recorded. The fixed asset so formed shall cease to accrue depreciation in the following periods.

Pursuant to the IFRS, these expenditures should be recognised when incurred. Relevant capital expenditures are recognised as part of cost of non-current assets when they are incurred and depreciated according to the respective depreciation policy. The differences between the abovementioned standards give rise to differences in deferred tax.

Reversal of an impairment loss

Under PRC GAAP, once an impairment loss is recognised for a long-term asset (including fixed assets, intangible assets and goodwill, etc.), it shall not be reversed in any subsequent period.

Under IFRS, an impairment loss recognised in prior periods for an asset other than goodwill could be reversed if there has been a change in the estimates used to determine the asset's recoverable amount since the last impairment loss was recognised.

Related party disclosures

Under PRC GAAP, government-related entities are not treated as related parties. Under IFRS, government-related entities are still treated as related parties.

Fixed assets and intangible assets

Under PRC GAAP, only the cost model is allowed.

Under IFRS, an entity can choose either the cost model or the revaluation model as its accounting policy.

SUBSCRIPTION AND SALE

The Issuer and the Guarantor have entered into a subscription agreement with Bank of China Limited, BOCI Asia Limited, Standard Chartered Bank, UBS AG Hong Kong Branch, China Construction Bank (Asia) Corporation Limited, DBS Bank Ltd. and Haitong International Securities Company Limited (together, the "**Joint Lead Managers**") dated on or about 16 February 2022 (the "**Subscription Agreement**") pursuant to which, and subject to certain conditions contained in the Subscription Agreement, the Issuer has agreed to sell to the Joint Lead Managers, and the Joint Lead Managers have agreed to severally, but not jointly, subscribe and pay for the aggregate principal amount of the Bonds set forth opposite its name below at the issue price of 98.517 per cent.:

Joint Lead Managers	Principal amount of Bonds to be subscribed
	(US$)
Bank of China Limited	90,000,000
BOCI Asia Limited	138,000,000
Standard Chartered Bank	84,000,000
UBS AG Hong Kong Branch	96,000,000
China Construction Bank (Asia) Corporation Limited	60,000,000
DBS Bank Ltd.	60,000,000
Haitong International Securities Company Limited	72,000,000
Total	600,000,000

The Subscription Agreement provides that the Issuer and the Guarantor will jointly and severally indemnify the Joint Lead Managers and their affiliates against certain liabilities in connection with the offer and sale of the Bonds. The Subscription Agreement provides that the obligations of the Joint Lead Managers are subject to certain conditions precedent and entitles the Joint Lead Managers to terminate it in certain circumstances prior to payment being made to the Issuer.

In connection with the issue of the Bonds, BOCI Asia Limited (the "**Stabilisation Manager**") or any person acting on behalf of the Stabilisation Manager may, to the extent permitted by applicable laws and directives, over-allot the Bonds or effect transactions with a view to supporting the market price of the Bonds at a level higher than that which might otherwise prevail, but in so doing such, the Stabilisation Manager or any person acting on behalf of the Stabilisation Manager shall act as principal and not as agent of the Issuer or the Guarantor. However, there is no assurance that the Stabilisation Manager or any person acting on behalf of the Stabilisation Manager will undertake Stabilisation action. Any loss or profit sustained as a consequence of any such overallotment or stabilisation shall be for the account of the Joint Lead Managers.

The Joint Lead Managers and their respective affiliates are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, principal investment, hedging, financing and brokerage activities ("**Banking Services or Transactions**"). The Joint Lead Managers and their respective affiliates may have, from time to time, performed, and may in the future perform, various Banking Services or Transactions with the Issuer and the Guarantor for which they have received, or will receive, fees and expenses.

In connection with the offering of the Bonds, the Joint Lead Managers and/or their respective affiliates, or affiliates of the Issuer or the Guarantor, may act as investors and place orders, receive allocations and trade the Bonds for their own account and such orders, allocations or trading of the Bonds may be material. Such entities may hold or sell such Bonds or purchase further Bonds for their own account in the secondary market or deal in any other securities of the Issuer or the Guarantor, and therefore, they may offer or sell the Bonds or other securities otherwise than in connection with the offering of the Bonds. Accordingly, references herein to the offering of the Bonds should be read as including any offering of the Bonds to the Joint Lead Managers and/or their respective affiliates, or affiliates of the Issuer or the Guarantor as investors for their own account. Such entities are not expected to disclose such transactions or the extent of any such investment, otherwise than in accordance with any applicable legal or regulatory requirements. If such transactions occur, the trading price and liquidity of the Bonds may be impacted.

Furthermore, it is possible that a significant proportion of the Bonds may be initially allocated to, and subsequently held by, a limited number of investors. If this is the case, the trading price and liquidity of trading in the Bonds may be constrained. The Issuer, the Guarantor and the Joint Lead Managers are under no obligation to disclose the extent of the distribution of the Bonds amongst individual investors, otherwise than in accordance with any applicable legal or regulatory requirements.

In the ordinary course of their various business activities, the Joint Lead Managers and their respective affiliates make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers, and may at any time hold long and short positions in such securities and instruments. Such investment and securities activities may involve securities and instruments of the Issuer and/or the Guarantor, including the Bonds and could adversely affect the trading price and liquidity of the Bonds. The Joint Lead Managers and their affiliates may make investment recommendations and/or publish or express independent research views (positive or negative) in respect of the Bonds or other financial instruments of the Issuer or the Guarantor, and may recommend to their clients that they acquire long and/or short positions in the Bonds or other financial instruments of the Issuer or the Guarantor.

General

The distribution of this Offering Circular or any offering material and the offering, sale or delivery of the Bonds is restricted by law in certain jurisdictions. Therefore, persons who may come into possession of this Offering Circular or any offering material are advised to consult with their own legal advisers as to what restrictions may be applicable to them and to observe such restrictions. This Offering Circular may not be used for the purpose of an offer or invitation in any circumstances in which such offer or invitation is not authorised. No action has been taken or will be taken in any jurisdiction that would permit a public offering of the Bonds, or possession or distribution of this Offering Circular or any amendment or supplement thereto or any other offering or publicity material relating to the Bonds, in any country or jurisdiction where action for that purpose is required.

United States

The Bonds and the Guarantee have not been and will not be registered under the Securities Act. Subject to certain exceptions, the Bonds and the Guarantee may not be offered and sold or delivered within the United States. Each Joint Lead Manager has represented, warranted and agreed that it will not offer, sell or deliver any Bonds or the Guarantee within the United States.

In addition, until 40 days after the commencement of the offering of the Bonds and the Guarantee, an offer or sale of the Bonds or the Guarantee within the United States by any dealer (whether or not participating in the offering) may violate the registration requirements of the Securities Act.

PROHIBITION OF SALES TO EEA RETAIL INVESTORS

Each Joint Lead Manager has represented and agreed that it has not offered, sold or otherwise made available and will not offer, sell or otherwise make available any Bonds which are the subject of the offering contemplated by this Offering Circular in relation thereto to any retail investor in the European Economic Area. For the purposes of this provision:

(a) the expression "**retail investor**" means a person who is one (or more) of the following:

   (i) a retail client as defined in point (11) of Article 4(1) of Directive 2014/65/EU (as amended, "**MiFID II**"); or

   (ii) a customer within the meaning of Directive (EU) 2016/97 (the "**Insurance Distribution Directive**"), where that customer would not qualify as a professional client as defined in point (10) of Article 4(1) of MiFID II.

(b) the expression an "**offer**" includes the communication in any form and by any means of sufficient information on the terms of the offer and the Bonds to be offered so as to enable an investor to decide to purchase or subscribe for the Bonds.

PROHIBITION OF SALES TO UK RETAIL INVESTORS

Each Joint Lead Manager has represented and agreed that it has not offered, sold or otherwise made available and will not offer, sell or otherwise make available any Bonds which are the subject of the offering contemplated by this Offering Circular in relation thereto to any retail investor in the United Kingdom. For the purposes of this provision:

(a) the expression "**retail investor**" means a person who is one (or more) of the following:

   (i) a retail client, as defined in point (8) of Article 2 of Regulation (EU) No 2017/565 as it forms part of domestic law by virtue of the European Union (Withdrawal) Act 2018 ("**EUWA**"); or

   (ii) a customer within the meaning of the provisions of the Financial Services and Markets Act 2000 (the "**FSMA**") and any rules or regulations made under the FSMA to implement Directive (EU) 2016/97, where that customer would not qualify as a professional client, as defined in point (8) of Article 2(1) of Regulation (EU) No 600/2014 as it forms part of domestic law by virtue of the EUWA.

(b) the expression an "**offer**" includes the communication in any form and by any means of sufficient information on the terms of the offer and the Bonds to be offered so as to enable an investor to decide to purchase or subscribe for the Bonds.

United Kingdom

Each Joint Lead Manager has represented, warranted and agreed that:

(a) it has only communicated or caused to be communicated and will only communicate or cause to be communicated an invitation or inducement to engage in investment activity (within the meaning of Section 21 of the Financial Services and Markets Act 2000 (the "**FSMA**")) received by it in connection with the issue or sale of the Bonds in circumstances in which Section 21(1) of the FSMA does not apply to the Issuer or the Guarantor; and

(b) it has complied and will comply with all applicable provisions of the FSMA with respect to anything done by it in relation to the Bonds in, from or otherwise involving the United Kingdom.

British Virgin Islands

Each Joint Lead Manager has represented and agreed that no invitation has been or will be made directly or indirectly to any person resident in the British Virgin Islands to subscribe for any of the Bonds but the Bonds may be acquired by British Virgin Islands persons who receive the offer of the Bonds outside of the British Virgin Islands and in a manner which does not contravene the laws of the jurisdiction in which such offer is received.

Hong Kong

Each Joint Lead Manager has represented, warranted and agreed that:

(a) it has not offered or sold and will not offer or sell in Hong Kong, by means of any document, any Bonds other than (a) to "professional investors" as defined in the Securities and Futures Ordinance (Cap. 571) of Hong Kong (the "**SFO**") and any rules made under the SFO; or (b) in other circumstances which do not result in the document being a "prospectus" as defined in the Companies (Winding Up and Miscellaneous Provisions) Ordinance (Cap. 32) of Hong Kong (the "**C(WUMP)O**") or which do not constitute an offer to the public within the meaning of the C(WUMP)O; and

(b) it has not issued or had in its possession for the purposes of issue, and will not issue or have in its possession for the purposes of issue, whether in Hong Kong or elsewhere, any advertisement, invitation or document relating to the Bonds, which is directed at, or the contents of which are likely to be accessed or read by, the public of Hong Kong (except if permitted to do so under the securities laws of Hong Kong) other than with respect to Bonds which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" as defined in the SFO and any rules made under the SFO.

Singapore

Each Joint Lead Manager has acknowledged that this Offering Circular has not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, each Joint Lead Manager has represented and agreed that it has not offered or sold any Bonds or caused the Bonds to be made the subject of an invitation for subscription or purchase and will not offer or sell any Bonds or cause the Bonds to be made the subject of an invitation for subscription or purchase, and has not circulated or distributed, nor will it circulate or distribute, this Offering Circular or any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the Bonds, whether directly or indirectly, to any person in Singapore other than (i) to an institutional investor (as defined in Section 4A of the Securities and Futures Act (Chapter 289) of Singapore, as modified or amended from time to time (the "**SFA**")) pursuant to Section 274 of the SFA, (ii) to a relevant person (as defined in Section 275(2) of the SFA) pursuant to Section 275(1) of the SFA, or any person pursuant to Section 275(1A) of the SFA, and in accordance with the conditions specified in Section 275 of the SFA, or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA.

Where the Bonds are subscribed or purchased under Section 275 of the SFA by a relevant person which is:

(a) a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or

(b) a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary of the trust is an individual who is an accredited investor, securities or securities-based derivatives contracts (each term as defined in Section 2(1) of the SFA) of that corporation or the beneficiaries' rights and interest (howsoever described) in that trust shall not be transferred within six months after that corporation or that trust has acquired the Bonds pursuant to an offer made under Section 275 of the SFA except:

    (i) to an institutional investor or to a relevant person, or to any person arising from an offer referred to in Section 275(1A) or Section 276(4)(i)(B) of the SFA;

    (ii) where no consideration is or will be given for the transfer;

    (iii) where the transfer is by operation of law;

    (iv) as specified in Section 276(7) of the SFA; or

    (v) as specified in Regulation 37A of the Securities and Futures (Offers of Investments) (Securities and Securities-based Derivatives Contracts) Regulations 2018.

The PRC

Each Joint Lead Manager has represented and agreed that the Bonds are not being offered or sold and may not be offered or sold, directly or indirectly, in the People's Republic of China (for such purposes, not including the Hong Kong and Macau Special Administrative Regions or Taiwan), except as permitted by the applicable laws of the People's Republic of China.

Japan

The Bonds have not been and will not be registered under the Financial Instruments and Exchange Act of Japan (Act No. 25 of 1948, as amended, the "**Financial Instruments and Exchange Act**"). Accordingly, each Joint Lead Manager has represented and agreed that it has not, directly or indirectly, offered or sold and will not, directly or indirectly, offer or sell any Bonds in Japan or to, or for the benefit of, any resident of Japan (which term as used herein means any person resident in Japan, including any corporation or other entity organised under the laws of Japan) or to others for re-offering or re-sale, directly or indirectly, in Japan or to, or for the benefit of, any resident of Japan except pursuant to an exemption from the registration requirements of, and otherwise in compliance with, the Financial Instruments and Exchange Act and other relevant laws and regulations of Japan.

GENERAL INFORMATION

1. **Clearing Systems:** The Bonds have been accepted for clearance through Euroclear and Clearstream under Common Code 243555795 and ISIN XS2435557959.

2. **Legal Entity Identifier:** The Legal Entity Identifier (LEI) Code of the Issuer is 5493003PX4GYVUD3CQ19.

3. **Authorisations:** The Issuer has obtained all necessary consents, approvals and authorisations in connection with the issue and performance of its obligations under the Bonds, the Trust Deed and the Agency Agreement. The issue of the Bonds was authorised by the resolutions passed at a meeting of the board of directors of the Issuer on 20 December 2021. The Guarantor has obtained all necessary consents, approvals and authorisations in connection with the giving and performance of the Guarantee. The giving of the Guarantee was authorised by resolutions of the board of directors of the Guarantor dated 9 October 2021 and resolutions of the general manager meeting of the Guarantor dated 8 October 2021.

4. **NDRC Registration:** Pursuant to the Notice on Promoting the Reform of the Filing and Registration System for Issuance of Foreign Debt by Enterprises (《國家發展改革委關於推進企業發行外債備案登記制管理改革的通知》發改外資 [2015] 2044號) promulgated by the NDRC on 14 September 2015 which came into effect immediately, the Guarantor has registered the issuance of the Bonds with the NDRC and has obtained a certificate dated 7 December 2021 from the NDRC evidencing such registration which as at the date of this Offering Circular, remain in full force and effect.

5. **No Material Adverse Change:** Save as disclosed in this Offering Circular, there has been no material adverse change in the financial or trading position or prospects of the Group since 31 December 2020. There has been no material adverse change in the financial or trading position or prospects of the Issuer since the date of its incorporation.

6. **Litigation:** Except as disclosed in this Offering Circular, none of the Issuer, the Guarantor or any other member of the Group is involved in any litigation or arbitration proceedings that the Issuer, the Guarantor, as the case may be, believes are material in the context of the Bonds nor are any of the Issuer, the Guarantor aware that any such material proceedings are pending or threatened.

7. **Available Documents:** Copies of the Guarantor's audited financial statements as at and for the years ended 31 December 2019 and 2020, the Trust Deed, the Agency Agreement, the Deed of Guarantee and the Articles of Association of each of the Issuer and the Guarantor in effect as at the Issue Date are available for inspection by Bondholders from the Issue Date, following prior written request and satisfactory proof of holding and identity and subject, in the case of each of the foregoing documents other than the Agency Agreement, to the same having first been provided to the Principal Paying Agent by the Issuer or the Guarantor, at the specified office of the Principal Paying Agent at 20 Pedder Street, Central, Hong Kong at all reasonable times during its normal business hours, so long as any of the Bonds are outstanding.

8. **Financial Statements:** This Offering Circular contains Guarantor's audited consolidated financial information as at and for the years ended 31 December 2019 and 2020 which is derived from its audited consolidated financial statements for the year ended 31 December 2020 and have been audited by ShineWing CPAs. The audited consolidated financial statements of Guarantor were prepared in accordance with PRC GAAP.

9. **Listing:** Application will be made to the Hong Kong Stock Exchange for listing of, and permission to deal in, the Bonds by way of debt issues to Professional Investors only, and such permission is expected to become effective on or about 25 February 2022.

INDEX TO THE FINANCIAL STATEMENTS

Aluminum Corporation of China

Financial Statements with Auditors' Report

For the Year of 2020

CONTENTS **Page**

信永中和
ShineWing

信永中和会计师事务所
ShineWing
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AUDITOR'S REPORT

XYZH/2021BJAA161381

To Aluminum Corporation of China

1. Opinion

We have audited the accompanying financial statements of Aluminum Corporation of China (the "Chinalco Group"), which comprise the consolidated and parent company's Balance sheet as at 31 December 2020, and the consolidated and parent company's Income statement of year 2020, the consolidated and parent company's Statement of changes in owners' equity and the consolidated and parent company's Cash flow statement for the year then ended and other explanatory notes.

In our opinion, the accompanying financial statements present fairly, in all material respects the consolidated financial position of Chinalco Group as of 31 December 2020, and its consolidated financial performance and its consolidated cash flows for the year then ended in accordance with Accounting Standards for Business Enterprises.

2. Basis for Opinion

We conducted our audit in accordance with the Auditing Standards for Chinese Certified Public Accountants. Our responsibilities under those standards are further described in the "CPA's Responsibilities for the Audit of the Financial Statements" section of our report. We are independent of the Group in accordance with the ethical requirements that are relevant to our audit of the financial statements in the Chinese Institute of Certified Public Accountants' Code of Ethics for Professional Accountants, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

3. Emphasis of Matter

We remind the users of financial statements to pay attention that, as of 31 December 2020, the subsidiary of Chinalco Group, Shining Prospect Pte Ltd., holds 183 million shares of Rio Tinto Group, of which the book value is RMB 101.753 billion. As 31 December 2020, the closing price of Rio Tinto Group is GBP 54.70 pounds per share, and the total market value of Rio Tinto Group shares held by Shining Prospect Pte Ltd. is RMB 88.773 billion, which is RMB 12.98 billion less compared to its book value. As of 31 December 2020, Shining Prospect Pte Ltd., is the sole majority shareholder of Rio Tinto Group, and its investment purpose is not for a short-term holding. Therefore, the Rio Tinto Group shares are classified as available-for-sale financial assets and measured at historical cost. Our opinion is not qualified in respect of this matter.

4. Other Information

Management of Chinalco Group (the "Management") is responsible for other information. Other information includes the information covered in Chinalco Group's 2020 annual report, but does not include the financial statements and our audit report.

Our audit opinion on the financial statements does not cover the other information and we do not express any form of assurance conclusion on other information.

In connection with our audit of the financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit process or otherwise appears to be materially misstated.

If, based on the work we have performed, we conclude that there is a material misstatement of other information, we are required to report that fact. We have nothing to report in this regard.

5. Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management of Chinalco Group is responsible for the preparation of the financial statements in accordance with Accounting Standards for Business Enterprises to achieve fair presentation and design, implementation and maintenance of necessary internal control to enable the financial statements are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Management is responsible for assessing the Chinalco Group's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the Management either intends to liquidate the Chinalco Group or to cease operations, or have no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Chinalco Group's financial reporting process.

6. Auditor's Responsibility for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with auditing standards will always detect a material misstatement when it exists. Misstatement can arise from fraud or error and are generally considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with China Standards on Auditing (CSA), we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

(1) Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

(2) Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of internal control.

(3) Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the Management.

(4) Conclude on the appropriateness of the Management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Chinalco Group 's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, we shall modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Chinalco Group to cease to continue as a going concern.

(5) Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

(6) Obtain sufficient and appropriate audit evidence on the financial information of entities or business activities of the Chinalco Group to express an audit opinion on the financial statements. We are responsible for the direction, supervision and performance of the group audit, and assume full responsibility for the audit opinion.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

ShineWing Certified Public Accountants

Certified Public Accountant of China

Certified Public Accountant of China

Beijing, China

28 April 2021

This auditor's report and the accompanying notes to the financial statements are simplified English translation of the Chinese auditor's report. In case of doubt as to the presentation of these documents, the Chinese version shall prevail.

Consolidated Balance Sheet

For the year ended 31 December 2020

Prepared by: ALUMINUM CORPORATION OF CHINA

Currency: CNY

Items	Closing balance	Opening balance
Current assets:		
Monetary funds	48,787,804,494.63	51,787,474,584.71
△Settlement reserves		
△Loans to banks and other financial institutions		100,000,000.00
☆Financial assets held for trading	177,069,820.52	3,648,235,426.06
Financial assets measured at fair values through profit or loss	419,994,097.62	521,300,342.42
Derivative financial assets	20,997,596.76	9,396,579.34
Notes receivable	1,839,215,235.24	2,252,286,019.68
Accounts receivable	19,608,209,220.09	19,101,875,907.72
☆Receivables financing	5,401,381,367.75	2,671,341,115.53
Advances to suppliers	4,286,774,502.97	5,105,555,583.10
△Insurance Premium receivable		
△Reinsurance accounts receivable		
△Reinsurance reserves receivable		
Other receivables	9,426,643,267.64	12,863,235,474.68
Including: Dividends receivables	602,188,142.35	344,361,420.69
△Financial assets purchased under reverse repurchase agreements		
Inventories	51,905,013,913.97	52,653,952,981.74
Including: Raw materials	16,246,974,157.79	15,588,423,603.54
Merchandise (Finished goods)	11,361,568,087.49	11,470,768,279.08
☆Contract assets	7,280,336,107.50	12,991,002,767.06
Assets held for sale		
Non-current assets due within one year	3,528,946,949.91	63,613,182.97
Other current assets	7,700,071,439.10	7,328,146,483.52
Total current assets	**160,382,458,013.70**	**171,097,416,448.53**
Non-current assets:		
△Loans and advances	46,295,000.00	44,055,000.01
☆Debt investments		
Financial assets available-for-sale	114,738,129,049.62	120,822,756,950.71
☆Other debt investments		
Held-to-maturity investments		1,203,755,623.65
Long-term receivables	6,184,570,894.94	4,003,634,911.72
Long-term equity investments	27,140,450,745.57	28,401,699,717.40
☆Other equity instrument investments	1,267,485,649.10	1,948,786,663.87
☆Other non-current financial assets	54,858,959.00	53,571,500.00
Investment properties	3,908,164,492.22	3,998,216,955.46
Fixed assets	205,694,923,407.26	192,683,468,320.04
Including: Cost	350,322,521,380.94	330,600,829,481.36
Accumulated depreciation	131,899,134,438.10	122,358,320,156.60
Provision for fixed assets impairment	16,808,725,171.66	15,880,827,649.82
Construction in progress	18,335,601,702.85	34,385,586,365.23
Bearer biological assets		
Oil and gas assets		
☆Right-of-use assets	1,545,952,094.56	3,982,291,693.75
Intangible assets	57,692,150,494.99	58,767,125,122.75
Development expenditures	553,573,398.18	361,376,500.71
Goodwill	11,374,160,062.33	11,387,689,552.88
Long-term prepaid expenses	1,856,362,466.09	1,916,971,694.89
Deferred tax assets	4,365,905,948.70	4,553,251,701.38
Other non-current assets	17,263,262,229.97	12,738,418,836.94
Including: Specifically reserved assets		
Total non-current assets	**472,021,846,595.38**	**481,252,657,111.39**
Total assets	**632,404,304,609.08**	**652,350,073,559.92**

Consolidated Balance Sheet (continued)

For the year ended 31 December 2020

Prepared by: ALUMINUM CORPORATION OF CHINA　　　　Currency: CNY

Items	Closing balance	Opening balance
Current liabilities:		
Short-term loans	91,491,438,773.21	95,882,938,394.81
△Borrowings from central bank		
△Loans from banks and other financial institutions	650,000,000.00	1,100,000,000.00
☆Financial liabilities held for trading	44,563,787.86	71,429,707.82
Financial liabilities measured at fair values through profit or loss	129,214,479.29	18,291,901.26
Derivative financial liabilities	503,481,937.72	51,919,229.17
Note payables	14,557,736,392.24	14,012,858,904.32
Account payables	38,188,978,014.99	39,866,876,704.69
Advances from customers	2,117,614,830.66	2,655,265,877.05
☆Contract liabilities	4,552,183,008.70	3,986,608,796.61
△Financial assets sold under repurchase agreements	2,159,700,000.00	1,681,679,687.53
△Deposits from customers and interbank deposits	86,985,458.55	220,823,194.09
△Funds from securities trading brokerage business		
△Funds from securities underwriting business		
Employee benefits payable	2,348,142,157.26	2,817,293,892.38
Including: Salary payable	519,011,571.04	988,994,863.88
Welfare expense payable	111,490,558.53	99,819,509.17
#Including：Bonus and welfare fund		
Tax and surcharge payable	2,720,902,236.35	2,331,629,217.04
Including: Tax payable	2,629,687,724.80	2,294,060,044.53
Other payables	16,845,011,874.84	22,324,508,913.24
Including: Dividends payable	1,219,019,645.19	1,504,807,816.98
△Fees and commissions payable	15,314,413.22	13,409,179.81
△Reinsurance accounts payable		
Liabilities held for sale		
Non-current liabilities due within one year	34,324,615,336.53	41,257,986,854.11
Other current liabilities	27,600,865,934.73	37,396,179,526.30
Total current liabilities	**238,336,748,636.15**	**265,689,699,980.23**
Non-current liabilities：		
△Insurance contract reserves		
Long-term borrowings	115,821,513,170.92	83,191,378,056.09
Bonds payable	36,815,553,929.35	48,794,139,866.28
Including: Preference shares		
Perpetual debts		
☆Lease liabilities	115,380,703.60	123,259,823.96
Long-term payables	2,669,454,902.03	4,860,004,469.58
Long-term employee benefits payable	1,440,309,472.10	1,788,560,828.96
Provisions	3,674,558,437.06	3,500,114,803.77
Deferred income	681,113,943.81	2,236,783,907.01
Deferred tax liabilities	5,043,151,516.51	5,032,392,035.76
Other non-current liabilities	261,329,784.76	510,194,799.17
Including: Specifically reserved funds		
Total non-current liabilities	**166,522,365,860.14**	**150,036,828,590.58**
Total liabilities	**404,859,114,496.29**	**415,726,528,570.81**
Owner's equity (or Shareholders' equity)：		
Paid-in capital（or share capital）	25,200,000,000.00	25,200,000,000.00
State-owned capital	25,200,000,000.00	25,200,000,000.00
Capital from state-owned entities		
Collective capital		
Private capital		
Foreign invested capital		
#Less: capital redemption		
Paid-in capital (or share capital), net	25,200,000,000.00	25,200,000,000.00
Other equity instruments	118,570,114,193.43	120,574,567,264.14
Including: Preference shares		
Perpetual debts	118,570,114,193.43	120,574,567,264.14
Capital reserve	27,085,820,206.91	25,474,948,904.89
Less: Treasury shares		
Other comprehensive income	-6,216,875,244.69	2,675,607,010.90
Including: Foreign currency translation difference	-6,996,538,056.85	1,611,456,432.02
Special reserves	413,500,075.44	345,837,366.53
Surplus reserves	1,419,398,973.78	1,419,398,973.78
Including: Statutory surplus reserve	1,419,398,973.78	1,419,398,973.78
Discretionary surplus reserve		
#Reserve fund		
#Enterprise development fund		
#Return for investment by profit		
△General Risk Preparation	555,812,147.09	470,108,755.23
Retained Earnings	-58,291,159,719.00	-55,088,265,770.48
Total owners' equity (or shareholders' equity) attributable to the paren	**108,736,610,632.96**	**121,072,202,504.99**
*Minority interests	118,808,579,479.83	115,551,342,484.12
Total owners' (or shareholders') equity	**227,545,190,112.79**	**236,623,544,989.11**
Total liabilities and owners' (or shareholders') equity	**632,404,304,609.08**	**652,350,073,559.92**

The Financial Statements are signed by the following persons:

Legal Representative: 姚林印　　**Chief Financial Officer:**　　**Head of Accounting Department:** 兰卓淑印

Consolidated Income Statement

Year of 2020

Prepared by: ALUMINUM CORPORATION OF CHINA | **Currency: CNY**

Items	Current Year	Prior Year
1. Total Operating Revenue	**367,019,908,218.41**	**356,817,106,715.58**
Including: Revenue	366,631,576,744.45	356,425,316,870.71
△Interest income	362,040,832.93	368,537,507.47
△Premiums earned		
△Fee and commission income	26,290,641.03	23,252,337.40
2. Total Operating Costs	**361,401,433,511.82**	**354,494,041,954.88**
Including: Cost of sales	327,581,643,972.77	319,914,673,905.36
△Interest expenses	180,059,341.86	95,164,521.79
△Service charge and commission fee	7,329,612.09	3,978,913.65
△Surrender value		
△Net claims paid		
△Net appropriation for insurance contracts reserves		
△Dividend expenses for policyholders		
△Reinsurance expenditures		
Taxes and surcharges	3,478,539,441.25	3,084,698,076.80
Selling expenses	3,618,023,611.58	3,930,770,377.27
Administrative expenses	10,110,261,302.25	10,288,513,902.25
Research and development expenses	3,142,165,984.74	2,631,903,347.96
Financial expenses	13,283,410,245.28	14,544,338,909.80
Including: Interest expense	13,060,803,191.57	15,001,485,573.31
Interest income	1,095,531,367.89	866,464,477.28
Foreign exchange losses, net (gains expressed with "-")	483,483,450.29	-85,822,610.22
Others		
Add: Other income	373,301,818.91	760,530,249.68
Investment income (losses expressed with "-")	7,615,769,386.61	11,881,499,797.22
Including: Investment income from associates and joint ventures	380,141,819.19	702,426,162.04
☆Gains from derecognition of financial assets measured at amortized costs		
△Foreign exchange gains (losses expressed with "-")	-26,801,570.10	7,212,713.52
☆Gains on hedge of a net position (losses expressed with "-")		
Profit / (loss) from changes in fair value (losses expressed with "-")	26,651,908.01	-22,719,490.94
☆ Credit impairment losses (losses expressed with "-")	-1,908,110,123.49	-1,177,026,880.35
Asset impairment losses (losses expressed with "-")	-4,958,658,877.97	-6,827,342,821.26
Gains on disposal of assets (losses expressed with "-")	140,082,476.36	-1,519,723,037.69
3. Operating profit (losses expressed with "-")	**6,880,709,724.92**	**5,425,495,290.88**
Add:Non-operating income	868,449,368.81	729,257,815.37
Including: Government grants	293,492,149.47	264,004,756.04
Less: Non-operating expenses	966,022,526.29	1,093,179,184.41
4. Total profits (total losses expressed with "-")	**6,783,136,567.44**	**5,061,573,921.84**
Less:Income tax expenses	2,595,164,922.38	2,036,767,762.10
5. Net profit (net losses expressed with "-")	**4,187,971,645.06**	**3,024,806,159.74**
A. Classified by ownership		
Net profits attributable to owners of the Parent Company	2,214,061,930.57	1,887,624,556.07
*Minority interests	1,973,909,714.49	1,137,181,603.67
B. Classified by continuing and discontinued operations		
Net profit from continued operations	4,187,971,645.06	3,024,806,159.74
Net profit from discontinued operations		
6. Other comprehensive income net of income tax	**-10,087,545,985.96**	**2,068,900,717.56**
Attributable to owners of the parent	-8,892,482,255.59	2,060,816,674.23
A. Items that cannot be reclassified subsequently to profit or loss	-27,679,078.93	846,544.65
1. Remeasurement of defined benefit liability/(asset)	-2,088,428.40	-16,311,536.74
2. Other comprehensive income cannot be reclassified to profit or loss under equity method	-803,854.61	
☆3. Change in fair value of other equity instruments	-24,786,795.92	17,158,081.39
☆4. Change in fair value of the enterprise's own credit risk		
5. Others		
B. Items that may be reclassified subsequently to profit or loss subsequently:	-8,864,803,176.66	2,059,970,129.58
1. Other comprehensive income can be reclassified to profit or loss under equity method	-632,787.25	93,499,204.56
☆2. Debt instrument measured at fair value through other comprehensive income - Changes in fair value		
3. Gains or losses on changes in fair value of available-for-sale financial	9,546,582.43	103,299,371.58
☆4. Other comprehensive income from reclassification of financial assets		
5. Gains or losses on reclassification of held-to-maturity investments to available-for-sale financial assets		
☆6. Debt instrument measured at fair value through other comprehensive income - Credit loss allowance		
7. The effective portion of gains or losses on cash flow hedges	-265,722,482.97	-21,017,968.78
8. Foreign currency financial statements translation differences	-8,607,994,488.87	1,889,081,763.70
9. Others		-4,892,241.48
*Attributable to non-controlling interests	-1,195,063,730.37	8,084,043.33
7. Total comprehensive income:	**-5,899,574,340.90**	**5,093,706,877.30**
Attributable to owners of the parent company	-6,678,420,325.02	3,948,441,230.30
* Attributable to minority interests	778,845,984.12	1,145,265,647.00
8. Earnings per share		
Basic earnings per share		
Diluted earnings per share		

The Financial Statements are signed by the following persons:

Legal Representative: **Chief Financial Officer:** **Head of Accounting Department:**

Consolidated Cash Flow Statement

Year of 2020

Prepared by: ALUMINUM CORPORATION OF CHINA | Currency: CNY

Items	Current Year	Prior Year
1. Cash flows from operating activities:		
Cash received from the sale of goods or rendering of services	334,893,062,442.32	325,227,652,738.06
△Net increase in customer deposits and due to banks and other financial institutions	37,474,874.41	1,951,397,766.59
△Net increase in borrowings from the Central Bank		
△Net increase in borrowings from other financial institutions	-450,000,000.00	1,658,838,800.00
△Net cash received for insurance premium from original insurance contacts		
△Net cash received from reinsurance contracts		
△Net increase in deposits and investments from policyholders		
△Net increase in disposal of financial asset at fair value through profit or loss		
△Cash received for interest, fees and commissions	247,971,752.95	260,653,030.99
△Net increase in borrowings from banks		
△Net cash increase under repurchase agreements	-570,779,687.53	-1,472,750,711.31
△Net increase received from securities trading brokerage business		
Refunds of taxes and surcharges	1,590,737,502.43	1,018,518,991.96
Other cash receipts relating to operating activities	22,712,909,107.29	16,369,745,861.80
Sub-total of cash inflows from operating activities	**358,461,375,991.87**	**345,014,056,478.09**
Cash paid for goods and services	268,546,651,389.27	267,018,848,588.77
△Net increase in loans and advances to customers	827,215,042.74	64,249,175.84
△Net increase in deposits in the central bank, and due from banks and other financial institutions	-1,027,366,902.99	-76,696,116.54
△Cash paid for claims in insurance contracts		
△Net increase in loans to banks and other financial institutions	-100,000,000.00	100,000,000.00
△Cash paid for interest, fees and commissions	96,816,982.65	109,452,481.66
△Cash paid for dividends for policyholders		
Cash paid to and on behalf of employees	23,569,593,464.66	23,293,446,152.68
Cash paid for taxes and surcharges	12,408,188,410.94	11,893,932,223.89
Other cash payments relating to operating activities	23,432,504,085.00	16,967,762,762.98
Sub-total of cash outflows from operating activities	**327,753,602,472.27**	**319,370,995,269.28**
Net cash flows from operating activities	**30,707,773,519.60**	**25,643,061,208.81**
2. Cash flows from investing activities:		
Cash received from disposal of investments	37,017,407,355.38	41,121,097,558.54
Cash received from investment income	6,492,821,407.63	8,767,236,942.95
Net cash received from disposal of fixed, intangible and other long-term assets	2,339,912,348.36	2,515,529,406.68
Net cash received from disposal of subsidiaries and other operatioanl units	1,605,103,562.63	213,111,280.54
Other cash receipts relating to investing activities	6,285,972,648.57	2,484,650,264.20
Sub-total of cash inflows from investing activities	**53,741,217,322.57**	**55,101,625,452.91**
Cash paid for purchase and construction fixed, intangible and other long-term assets	21,228,015,852.69	22,013,974,537.22
Cash paid for acquisition of investments	35,692,684,480.98	43,046,629,150.92
△Net increase in mortgage loans		
Net cash paid for obtaining subsidiaries and other business unit	10,491,503.82	109,789,235.07
Other cash payments relating to investing activities	6,752,750,700.60	348,453,836.01
Sub-total of cash outflows from investing activities	**63,683,942,538.09**	**65,518,846,759.22**
Net cash flows from investing activities	**-9,942,725,215.52**	**-10,417,221,306.31**
3. Cash flows from financing activities:		
Cash received from investments capital contributions	10,437,466,636.31	23,340,491,202.37
Including: Cash received from capital contributions from minority owners of subsidiaries	8,437,466,636.31	4,447,313,685.64
Cash received from borrowings	325,576,916,290.77	230,076,968,145.59
△Proceeds from issue of debt securities		
Other cash receipts relating to financing activities	10,539,180,137.64	14,509,909,823.73
Sub-total of cash inflows from financing activities	**346,553,563,064.72**	**267,927,369,171.69**
Cash repayments of borrowings	338,002,722,456.81	251,554,115,350.95
Cash payments for distribution of dividends or profits or settlement of interest expenses	19,598,464,810.16	21,303,864,955.58
Including: Subsidiaries' cash payments for distribution of dividends or profits to non-controlling shareholders	1,465,566,264.70	977,102,349.47
Other cash payments relating to financing activities	9,562,984,282.10	16,895,180,646.82
Sub-total of cash outflows from financing activities	**367,164,171,549.07**	**289,753,160,953.35**
Net cash flows from financing activities	**-20,610,608,484.35**	**-21,825,791,781.66**
4. Effect of foreign exchange rate on cash and cash equivalents	**-1,912,199,296.06**	**180,100,841.05**
5. Net increase in cash and cash equivalents	**-1,757,759,476.33**	**-6,419,851,038.11**
Add: Opening balance of cash and cash equivalents	45,343,026,020.40	51,762,877,058.51
6. Closing balance of cash and cash equivalents	**43,585,266,544.07**	**45,343,026,020.40**

The Financial Statements are signed by the following persons:

Legal Representative: 姚林之印 **Chief Financial Officer:** **Head of Accounting Department:**

Consolidated Statement of Changes in Owners' Equity

Year of 2020

Prepared by: ALUMINUM CORPORATION OF CHINA

Currency: CNY

Items	Current Year													
	Owner's equity attributable to owners of parent company												Minority interests	Total owner's equity
	Paid-in Capital (Share capital)	Other equity instruments			Capital reserves	Less: Treasury shares	Other comprehensive income	Special reserves	Surplus reserves	△General risk preparation	Retained earnings	Sub-total		
		Preference shares	Perpetual debts	Others										
I. Closing balance of prior year	25,200,000,000		120,574,567,264.14		25,474,948,904.89		2,675,607,010.90	345,837,366.53	1,419,398,973.78	470,108,755.23	-55,088,265,770.48	121,072,202,504.99	115,551,342,484.12	236,623,544,989.11
Add: Changes of accounting policies														
Correction of prior period errors														
Others														
II. Opening balance of current year	25,200,000,000		120,574,567,264.14		25,474,948,904.89		2,675,607,010.90	345,837,366.53	1,419,398,973.78	470,108,755.23	-55,088,265,770.48	121,072,202,504.99	115,551,342,484.12	236,623,544,989.11
III. Changes in current year (decrease expressed with "-")			-2,004,453,070.71		1,610,871,302.02		-8,892,482,255.59	67,662,708.91		85,703,391.86	-3,202,893,948.52	-12,335,591,872.03	3,257,236,995.71	-9,078,354,876.32
(i) Total comprehensive income							-8,892,482,255.59				2,214,061,930.57	-6,678,420,325.02	778,845,984.12	-5,899,574,340.90
(ii) Owners contributions and reduction of capital			-2,004,453,070.71		1,610,871,302.02						-1,904,005,888.76	-2,297,587,657.45	5,271,325,614.21	2,973,737,956.76
1. Capital contribution from owners														
2. Capital contributions from other equity instruments holders			-2,004,453,070.71									-2,004,453,070.71		-2,004,453,070.71
3. Share-based payments recognised in shareholders' equity														
4. Others					1,610,871,302.02						-1,904,005,888.76	-293,134,586.74	5,271,325,614.21	4,978,191,027.47
(iii) Extraction and use of special reserves								67,662,708.91				67,662,708.91	71,638,999.79	139,301,708.70
1. Appropriation of special reserves								736,656,122.88				736,656,122.88	1,018,901,939.54	1,755,558,062.42
2. Use of special reserves								-668,993,413.97				-668,993,413.97	-947,262,939.75	-1,616,256,353.72
(iv) Profit Distribution										85,703,391.86	-3,512,949,990.33	-3,427,246,598.47	-2,864,573,602.41	-6,291,820,200.88
1. Appropriation of surplus reserve														
Including: Statutory surplus														
Discretionary surplus reserve														
#Reserve fund														
#Enterprise expansion fund														
#Return investment by profit														
2. Appropriation of general risk preparation										85,703,391.86	-85,703,391.86			
3. Profit distributed to owners (or shareholders)													-2,058,121,839.80	-2,058,121,839.80
4. Others											-3,427,246,598.47	-3,427,246,598.47	-806,451,762.61	-4,233,698,361.08
(v) Transfer within owners' equity														
1. Capitalization of capital reserve														
2. Capitalization of surplus reserve														
3. Loss offset by surplus reserves														
4. Transfer of changes in defined benefit plans to retained earnings														
#5. Transfer of other comprehensive income to retained earnings														
6. Others														
IV. Closing balance of current year	25,200,000,000		118,570,114,193.43		27,085,820,206.91		-6,216,875,244.69	413,500,075.44	1,419,398,973.78	555,812,147.09	-58,291,159,719.00	108,736,610,632.96	118,808,579,479.83	227,545,190,112.79

The Financial Statements are signed by the following persons:

Legal Representative: 姚林之印

Chief Financial Officer:

Head of Accounting Department: 单淑兰印

Consolidated Statement of Changes in Owners' Equity (Continued)

Year of 2020

Prepared by: ALUMINUM CORPORATION OF CHINA

Currency: CNY

Items	Prior Year													
	Owner's equity attributable to owners of parent company												Minority interests	Total owner's equity
	Paid-in Capital (Share capital)	Other equity instruments			Capital reserves	Less: Treasury stock	Other comprehensive income	Special reserves	Surplus reserves	△General risk preparation	Retained earnings	Sub-total		
		Preference shares	Perpetual debts	Others										
I. Closing balance of prior year	25,200,000,000.00		113,608,604,999.99		24,516,190,207.34		591,940,305.76	238,034,415.60	1,419,398,973.78	467,451,848.77	-50,699,457,132.46	115,342,163,618.78	99,348,724,168.79	214,690,887,787.57
Add: Changes of accounting policies														
Correction of prior period errors														
Others							9,371,428.71				-9,371,428.71			
II. Opening balance of current year	25,200,000,000.00		113,608,604,999.99		24,516,190,207.34		601,311,734.47	238,034,415.60	1,419,398,973.78	467,451,848.77	-50,708,828,561.17	115,342,163,618.78	99,348,724,168.79	214,690,887,787.57
III. Changes in current year (decrease expressed with "-")			6,965,962,264.15		958,758,697.55		2,074,295,276.43	107,802,950.93		2,656,906.46	-4,379,437,209.31	5,730,038,886.21	16,202,618,315.33	21,932,657,201.54
(i) Total comprehensive income							2,060,816,674.23				1,887,624,556.07	3,948,441,230.30	1,145,265,647.00	5,093,706,877.30
(ii) Owners contributions and reduction of capital			6,965,962,264.15		1,006,454,462.10						-1,152,371,178.15	6,820,045,548.10	16,633,853,293.61	23,453,898,841.71
1. Capital contribution from owners													6,498,125,707.52	6,498,125,707.52
2. Capital contributions from other equity instruments holders			6,965,962,264.15									6,965,962,264.15	11,097,649,486.36	18,063,611,750.51
3. Share-based payments recognised in shareholders' equity														
4. Others					1,006,454,462.10						-1,152,371,178.15	-145,916,716.05	-961,921,900.27	-1,107,838,616.32
(iii) Extraction and use of special reserves								107,802,950.93				107,802,950.93	82,422,339.72	190,225,290.65
1. Appropriation of special reserves								925,009,589.85				925,009,589.85	651,660,445.15	1,576,670,035.00
2. Use of special reserves								-817,206,638.92				-817,206,638.92	-569,238,105.43	-1,386,444,744.35
(iv) Profit Distribution					-47,695,764.55					2,656,906.46	-5,101,211,985.03	-5,146,250,843.12	-1,658,922,965.00	-6,805,173,808.12
1. Appropriation of surplus reserve														
Including: Statutory surplus														
Discretionary surplus reserve														
#Reserve fund														
#Enterprise expansion fund														
#Return investment by profit														
2. Approptiation of general risk preparation										2,656,906.46	-2,656,906.46			
3. Profit distributed to owners (or shareholders)													-1,002,685,358.72	-1,002,685,358.72
4. Others					-47,695,764.55						-5,098,555,078.57	-5,146,250,843.12	-656,237,606.28	-5,802,488,449.40
(v) **Transfer within owners' equity**							13,478,602.20				-13,478,602.20			
1. Capitalization of capital reserve														
2. Capitalization of surplus reserve														
3. Loss offset by surplus reserves														
4. Transfer of changes in defined benefit plans to retained earnings														
#5. Transfer of other comprehensive income to retained earnings							13,478,602.20				-13,478,602.20			
6. Others														
IV. Closing balance of current year	25,200,000,000.00		120,574,567,264.14		25,474,948,904.89		2,675,607,010.90	345,837,366.53	1,419,398,973.78	470,108,755.23	-55,088,265,770.48	121,072,202,504.99	115,551,342,484.12	236,623,544,989.11

The Financial Statements are signed by the following persons:

Legal Representative: 姚林之印

Chief Financial Officer:

Head of Accounting Department: 卓兰淑印

Aluminum Corporation of China

Notes to the financial statements for the year ended 31 December 2020

Note 1 Basic Information About the Company

Aluminum Corporation of China (Chinalco) (hereinafter referred to as "the Company" or "company") is a state-owned enterprise established in Beijing in 2001, approved by "The approval on Related Issues about the Formation of Aluminum Corporation of China by the State Council" (Guo Han [2001] No.12) and "Notice on Issuance of 'Aluminum Corporation of China Formation Plan' and 'Aluminum Corporation of China Regulation'" (Guo Jing Qi Gai [2001] No. 146).

The Company was set up on the basis of several stated-owned aluminum enterprises under the central government. The establishment of the Group mainly included 8 aluminum enterprises (Shandong Aluminum Company, China Great Wall Aluminum Co., Ltd, Aluminum Corporation of China Guizhou Aluminum Plant, Aluminum Corporation of China Shanxi Aluminum Plant, Pingguo Aluminum Company, China Great Wall Aluminum Zhongzhou Aluminum Plant, Qinghai Aluminum Industry Co., Ltd and Shanxi Carbon Factory), 2 construction companies (The Sixth Metallurgical Construction Company of China National Nonferrous Metals Industry and the Twelfth Metallurgical Construction Company of China National Nonferrous Metals Industry), and 2 R&D units (Zhengzhou Light Metal Research Institute and Luoyang Nonferrous Metal Fabrication Design and Research Institute).

In 2017, according to the approval of the state-owned Assets Reform [2017] No. 1172, the Company implemented a restructuring of the enterprises under the ownership of the whole people. After the restructuring, the type was a limited liability company (state-owned), and the registered capital after the restructuring was RMB 25,200,000,000.00.

In 2019, upon the approval of the State-owned Assets Supervision and Administration Commission of the State Council (hereinafter referred to as "SASAC"), the 10% state-owned equity of the Company after audited was transferred to the National Council for Social Security Fund on 31 December 2018 as the transfer base date.

The unified social credit code of the Company is 911100007109279199. The registered capital is RMB 25,200,000,000.00. The legal representative of the Company is Yao Lin. The registered address of the headquarters is in the 18th, 22nd, and 28th floors, No. 62, Xizhimen North Street, Haidian District, Beijing. The Company's business period is from 6 December 2017 to no fixed term. The Company and all its subsidiaries are collectively referred to as the "Group".

The Group's business scope includes: bauxite mining (limited to the mining of Chinalco Guizhou Maochang Bauxite Mine, valid until 30 December 2038); dispatch labor to undertake foreign projects suitable for its strength, scale and performance; the operating and management of state-owned assets and state-owned equity; aluminum, copper, rare earth and related nonferrous metal mine products, smelting products, processing products and carbon products production and sale; production, exploration design, engineer construction EPC and construction and installation; equipment manufacture; technology development and technology service; import and export business. (The Company shall independently choose business projects and carry out business activities according to law; projects that must be approved according to law, business activities shall be carried out in accordance with the approved contents after being approved by relevant departments; the Company shall not engage in business activities of projects prohibited or restricted by this municipality's industrial policies.)

The Group's investor and the ultimate controlling party are State-owned Assets Supervision and Administration Commission (SASAC).

Note 2 Basis of Preparation of Financial Statements

The financial statements of the Group have been prepared on going concern basis, according to the actual transactions and events, in accordance with Accounting Standards for Business Enterprises and supplementary regulations issued and revised by the Ministry of Finance, and based on the accounting policies and estimates described in Note 4 "Significant Accounting Policies and Accounting Estimates"

Note 3 Compliance with Accounting Standards for Business Enterprises

The financial statements of the Group conform to the requirements of the accounting standards for business enterprises, which truthfully and completely reflect the financial position of the Group as of 31 December 2020 and the financial performance and cash flows of the Group for year 2020.

Note 4 Significant Accounting Policies and Accounting Estimates

4.1 Financial year

The financial year of the Group is calendar year from 1 January to 31 December.

4.2 Functional currency

Renminbi ("RMB") is the currency of the primary economic environment in which the Company and its domestic subsidiaries operate. Therefore, the Company and its domestic subsidiaries adopt RMB as their functional currency. The overseas subsidiaries of the Company determine their functional currency based on the currency of the primary economic environment. The Group's presentation currency is RMB.

4.3 Basis of accounting and principle of measurement

According to Accounting Standards for Business Enterprises, the financial statements of the Group are prepared using the accrual basis. Except for certain financial instruments, the financial statements use historical cost method. If an asset is impaired, the Group recognizes an impairment loss according to relevant accounting standards.

4.4 Business combination

As the merging party, the assets and liabilities obtained in a business combination under the same control of the Group are measured at the book value of the combined party in the consolidated statement of the ultimate controlling party on the combining date. The difference between the book value of the acquired net assets and the book value of the combined consideration paid shall be adjusted to the capital reserve; if the capital reserve is insufficient to offset, the retained earnings shall be adjusted.

The identifiable assets, liabilities and contingent liabilities of the acquiree acquired in a business combination not under the same control are measured at their fair value on the acquisition date. The merger cost contains the fair value of the cash or non-cash assets, issued or assumed liabilities, the fair value of the equity securities issued and the sum of various direct related expenses incurred in the business combination (in a business combination realized through multiple transactions, the combination cost is the sum of the costs of each single transaction). The difference between the merger cost and the fair value of the acquiree's identifiable net assets obtained in the merger is recognized as goodwill; if the merger cost is less than the fair value of the acquiree's identifiable net assets acquired in the merger, first review the fair value of the identifiable assets, liabilities and contingent liabilities obtained in the merger, as well as the fair value of the non-cash assets or equity securities issued for the merger consideration. After the review, if the merger cost is still less than the fair value of the identifiable net assets of the acquiree obtained in the merger, the difference shall be included in the current non-operating income of the merger.

4.5 Preparation of consolidated financial statements

1. Scope of the consolidation

The Group includes all controlled subsidiaries and structured entities into the scope of consolidated financial statements.

2. Preparation of consolidated financial statements

If a subsidiary uses accounting policies or reporting period other than those adopted by the Group, appropriate adjustments are made to those subsidiaries' financial statements in preparing the consolidated financial statements.

All significant intragroup balances, transactions and unrealized profits are eliminated upon consolidation. The share of the owner's equity of the subsidiary that does not belong to the parent company and the share of the current net profit and loss, other comprehensive income and total comprehensive income that belongs to minority shareholders' equity are respectively listed in the item "minority shareholders' equity, minority shareholders' profit and loss, other comprehensive income belonging to minority shareholders and total comprehensive income belonging to minority shareholders" in the consolidated financial statements.

For a subsidiary acquired through a business combination under common control , its financial performance and cash flows, from the beginning of the period when the combination occurs to date of combination, are appropriately presented in the consolidated statement of comprehensive income and consolidated statement of cash flows; the comparative information in the statement of financial position shall be adjusted at the same time. When preparing the comparative consolidated financial statements, the relevant items of the financial statements of the previous year are adjusted, which is deemed as the reporting entity formed after the merger has existed since the time when the ultimate controller began to control.

If the equity of the investee under the same control is obtained through multiple transactions, and finally form business combination, the treatment method in the consolidated financial statement shall be supplementally disclosed during the reporting period when the control is obtained. For example: Acquire the equity of an investee under the same control through multiple transactions, and finally form a business combination.When preparing the comparative statement, within the time limit when the Group and the combined party are both under the control of the ultimate controlling party, the related assets and liabilities of the combined party shall be incorporated into the comparative statement of the consolidated financial statements of the Group. For the net assets increased due to the merger, adjust the corresponding items under the owner's equity in the comparative statement. In order to avoid double counting the value of the net assets of the merged party, for the long-term equity investment held by the Group before the merger is reached, first determine the later of the following two (a) the date of acquiring the original equity (b) the day when the Group and the merged party are in the ultimate control of the same party. Then, from the later date to the consolidation date, the relevant gains and losses, other comprehensive income and other net asset changes are used to offset the initial retained earnings and current gains and losses during the comparative reporting period.

For subsidiaries acquired in a business combination not under the same control, operating results and cash flows shall be included in the consolidated financial statements from the day when the Group obtains control. When preparing consolidated financial statements, the financial statements of subsidiaries are adjusted based on the fair value of the identifiable assets, liabilities and contingent liabilities determined on the purchase date.

To obtain equity of investees under different control through multiple transactions, and finally form a business combination, the treatment method in the consolidated financial statements shall be supplementally disclosed during the reporting period when the control is obtained. For example: in the case of acquiring equity of an investee under the same control through multiple transactions and finally forming a business combination, when preparing a consolidated statement, the equity of the acquiree held before the purchase date should be remeasured in accordance with the fair value of the equity. And the difference between the fair value and its book value is included in the current investment income.The equity of the purchased party held before the purchase date, involving other comprehensive income calculated by the equity method and other changes in owner's equity except net profit and loss, other comprehensive income and profit distribution, shall be converted to investment profit and loss in the current period of the purchase date , Except for other comprehensive income arising from changes in net liabilities or net assets of the investee's re-measurement of the defined benefit plan.

If the Group partially disposal equity investments without losing control, the difference between the sum of fair value of the consideration received from the disposal of equity investments plus fair value of any investment retained, and the Group's previous pro rata share in the former subsidiary's net assets calculated since acquisition date, shall be used to adjust the capital premium or equity premium, if the capital reserve is insufficient to offset, the retained earnings shall be adjusted.

If the Group loses control of a subsidiary due to partial disposal of equity investments or other reasons, the Group recognizes any investment retained in the former subsidiary at its fair value on the date that control is lost. Excess of the sum of fair value of the consideration received from the disposal of equity investments and fair value of any investment retained, over the Group's previous pro rata share in the former subsidiary's net assets calculated since acquisition date, shall be recognized in investment income in the period when control is lost and offset goodwill. Other comprehensive income related to the equity investment of the original subsidiary shall be transferred into investment profit and loss in the period of which the right of control is lost.

Under circumstances that the group disposes of equity investment in a subsidiary through multiple transactions step by step until it loses control, if the disposal of equity investment in a subsidiary until the loss of control is treated as a package transaction, accounting for each transaction will be treated as a single transaction of disposal of the subsidiary and losing control. However, before the loss of control, the difference between each disposal price and the net asset share of the subsidiary corresponding to the disposal investment is recognized as other comprehensive income in the consolidated financial statements, and transferred to the investment profit and loss of the current period when the control right is lost.

4.6 Classifications of joint venture arrangements and accounting treatment of joint operations

The joint venture arrangement of the Group includes joint operation and joint venture. For joint operation projects, the Group, as the joint venture party in joint operation, recognizes the assets held and liabilities undertaken separately, and the assets held and liabilities undertaken by shares, and recognizes the relevant income and expenses separately or by shares according to relevant agreements. Where the purchase or sale of assets does not constitute a business with the joint operation, only the part of the profits and losses arising from the transaction attributable to other participants in the joint operation shall be recognized.

4.7 The determine criteria of cash and cash equivalents

Cash comprises cash on hand and deposits that can be readily withdrawn on demand. Cash equivalents are short-term (usually due within 3 months from the acquisition date), highly liquid investments that are readily convertible to known amounts of cash and which are subject to an significant risk of changes in value.

4.8 Foreign currency transactions and translation to the presentation currency

1. Foreign currency transaction*s*

The Group's foreign currency transactions convert foreign currency amounts into RMB based on the spot exchange rate on the transaction date. At the balance sheet date, foreign currency monetary items shall be translated by applying the spot exchange rate at the balance sheet date. The difference between the translated functional currency amount and the original functional currency amount (changes of exchange rate) is recognized in profit and loss, except the exchange rate changes of principal and interest of foreign specific borrowed loan for production activities and construction of assets eligible for capitalization.

2. Translation of financial statements denominated in foreign currencies

Assets and liabilities in the statement of financial position are translated at the spot exchange rate at the reporting date; Equity items for statement of financial position presented, other than “undistributed profits”, are translated at the spot exchange rate of the date of transaction. Income and expenses in the statement of comprehensive income are translated at the average exchange rate for the current period. The conversion difference of the foreign currency statement resulting from the above conversion is listed in the "other comprehensive income" item of owner's equity. Foreign currency cash flow is converted using the spot exchange rate on the date of the cash flow. The impact of exchange rate changes on cash is shown separately in the cash flow statement.

4.9 Financial assets and financial liabilities

The relevant accounting policies of the Group's "Companies that have not yet implemented the new financial instruments standards" are as follows:

1. Financial assets

The Group recognizes a financial asset or a financial liability when the Group becomes party to the contractual provisions of the instrument.

(1) Classification, recognition basis and measurement method of financial assets

Financial assets are divided into the following four categories at the time of initial recognition: Financial assets measured at fair value through profit or loss (including trading financial assets and financial assets designated to be measured at fair value through profit or loss), Held-to-maturity investments, loans and receivables, available-for-sale financial assets.

The Group classifies financial instruments that meet one of the following conditions can be initially recognized as financial assets measured at fair value through profit and loss: the purpose of obtaining the financial assets is to sell them in a short period of time; they are part of a portfolio of identifiable financial instruments under centralized management, and there is objective evidence to show the Company has recently adopted short-term profit-making methods to manage the portfolio; it is a type of derivatives, however, except for derivatives that are linked to one of the following equity instruments and must be settled by the delivery of the equity instrument: derivatives that are designated and effective hedging instruments, derivatives that belong to a financial guarantee contract and investment in equity instruments that do not have a quoted price in an active market and whose fair value cannot be reliably measured. Only financial instruments that meet one of the following conditions can be designated as financial assets measured at fair value through current profits and losses at the time of initial recognition: this designation can eliminate or significantly reduce the mismatch of profits and losses, which derived from the difference of measurement basis ; the official written documents of the Company's risk management or investment strategy have stated that the financial instrument portfolio is managed, evaluated and reported to key management personnel on the basis of fair value; contains one or A number of hybrid instruments with embedded derivatives, unless the embedded derivatives do not significantly change the cash flow of the hybrid instruments, or the embedded derivatives obviously should not be separated from the related hybrid instruments; including those that need to be separated but cannot be separated or obtained at the time of acquisition. A hybrid instrument with embedded derivatives that is separately measured on the subsequent balance sheet date.

Held-to-maturity investments refer to non-derivative financial assets that have a fixed maturity date, a fixed or determinable recovery amount, and the Group has a clear intention and ability to hold to maturity. The held-to-maturity investment adopts the actual interest rate method and is subsequently measured in accordance with amortized cost. The amortization or impairment and the gains or losses arising from derecognition are included in the current profit and loss.

Accounts receivable refers to non-derivative financial assets for which there is no quotation in the active market and the recovery amount is fixed or determinable. The actual interest rate method is used to carry out subsequent measurement based on amortized cost, and the amortization or impairment and the gains or losses arising from derecognition should be recognized in profit and loss in the current period.

Available-for-sale financial assets refer to non-derivative financial assets that are designated as available-for-sale at the time of initial recognition, and financial assets that are not classified into other categories.Among such assets, equity instrument investments that are not quoted in an active market and whose fair value cannot be reliably measured, and derivative financial assets that are linked to equity instruments and need to be settled through delivery of the equity instruments, are subsequently measured at cost. Other financial assets with active market quotations or no active market quotations but whose fair value can be reliably measured are measured at fair value, and changes in fair value are included in other comprehensive income.

(2) Recognition and measurement of transfers of financial assets

A financial asset that meets one of the following conditions shall be derecognized: (a) the contractual rights to the cash flows from the financial asset expire; (b) the Company transfers the financial asset, and it transfers substantially all the risks and rewards of the ownership of the financial asset to the transferee; (c) the Company transfers the financial asset, it neither transfers nor retains substantially all the risks and rewards of ownership of the financial asset, however, it has not retained control of the financial asset.

When a company neither transfers nor retains substantially all the risks and rewards of ownership of the financial asset, and has retained control of the financial asset, the Company shall continue to recognize the financial asset to the extent of its continuing involvement in the financial asset, and recognize an associated liability.

If the overall transfer of financial assets meets the conditions for derecognition, the difference between the carrying amount of the financial asset being transferred and the sum of consideration received and cumulative changes in fair value that have been previously recognized in other comprehensive income, shall be recognized in profit or loss.

If the partial transfer of financial assets meets the conditions for derecognition, the book value of the entire transferred financial assets will be allocated between the part that is derecognized and the part that continues to be recognized according to their respective relative fair values. The difference between the sum of the consideration received for the part derecognized and cumulative changes in fair value allocated to the part derecognized which have been previously recognized in other comprehensive income, and the carrying amount allocated to the part derecognized, shall be recognized in profit or loss.

(3) Testing and accounting treatment methods for financial asset impairment

Except for financial assets that are measured at fair value through profit and loss in the current period, the Group checks the book value of other financial assets on the balance sheet date. If there is objective evidence that a certain financial asset is impaired, provision for impairment should be provided.

According to the actual situation of the Company, the standards for determining the impairment of various available-for-sale financial assets should be clearly disclosed. Among them, for equity instrument investment, whether the fair value has experienced a "serious" or "non-temporary" decline and the specific quantitative standards, cost calculation method, the method of determining the fair value at the end of the year and the basis for determining the period of continuous decline should also be clearly disclosed.

2. Financial liabilities

(1) Classification, recognition and measurement of financial liabilities

At initial recognition, financial liabilities are classified as financial liabilities at fair value through profit or loss, or other financial liabilities. For financial liabilities at fair value through profit or loss, including transactional financial liabilities and financial liabilities designated as fair value at the initial recognition through current profit and loss related transaction costs are directly recorded in profit or loss; for other financial liabilities, related transaction costs are recorded in the amount initially recognized.

Financial liabilities that are measured at fair value and whose changes are included in the current profit and loss, including transactional financial liabilities and financial liabilities designated as fair value at the initial recognition and whose changes are included in the current profit and loss.(Relevant classification basis shall be disclosed with reference to the classification basis of financial assets). Follow-up measurement is carried out in accordance with fair value, and the gains or losses formed by changes in fair value and the dividends and interest expenses related to the financial liabilities are included in the current profit and loss.

Other financial liabilities (the specific contents of financial liabilities are disclosed according to the actual situation) adopt the effective interest rate method, and the subsequent measurement is carried out according to the amortized cost.

(2) Conditions for derecognition of financial liabilities

When the current obligations of the financial liabilities have been discharged in whole or in part, the recognition of the financial liabilities or the discharged part of the obligations shall be terminated. If the Company and the creditor sign an agreement to replace existing financial liabilities by assuming new financial liabilities, and the contract terms of the new financial liabilities are substantially different from those of the existing financial liabilities, the existing financial liabilities shall be derecognized and the new financial liabilities shall be recognized at the same time. If the Company makes substantial changes to all or part of the contractual terms of the existing financial liabilities, it shall terminate the recognition of the existing financial liabilities or part of the existing financial liabilities, and at the same time recognize the financial liabilities after the modified terms as a new financial liability. The difference between the book value of the derecognized part and the consideration paid shall be included in the current profit and loss.

3. Method for determining the fair value of financial assets and financial liabilities

For financial assets or financial liabilities in an active market, the fair value is determined based on the quoted prices in the active market; for financial assets or financial liabilities that do not exist in an active market, valuation techniques are used (including reference to the latest market price conducted by parties who are familiar with the market situation, reference to the current fair value of other financial instruments that are substantially the same, discounted cash flow method and option pricing model, etc.) to determine their fair value; Initially acquired or derived financial assets or financial liabilities assumed based on market transaction prices as the basis for determining their fair value.

4. Offsetting a financial asset and a financial liability

A financial asset and a financial liability shall not be offset and the net amount presented in the statement of financial position when, and only when, the Group: (a) currently has a legally enforceable right to set off the recognized amounts; and (b) intends either to settle on a net basis, or to realize the asset and settle the liability simultaneously. In all other circumstances, financial assets and financial liabilities are presented separately in the statement of financial position.

5. The distinction between financial liabilities and equity instruments with related treatment methods

The Group distinguishes between financial liabilities and equity instruments according to the following principles: (a) If the Group cannot unconditionally avoid the delivery of cash or other financial assets to fulfill a contractual obligation, the contractual obligation meets the definition of a financial liability. Although some financial instruments do not explicitly include the terms and conditions of the obligation to deliver cash or other financial assets, they may indirectly form contractual obligations through other terms and conditions. (b) If a financial instrument needs to be settled with or can be settled with the Group's own equity instruments, it is necessary to consider whether the Group's own equity instruments used to settle the instrument are used as a substitute for cash or other financial assets, or for the purpose of holding the instrument The party enjoys the remaining equity in the issuer's assets after deducting all liabilities. If it is the former, the instrument is a financial liability of the issuer; if it is the latter, the instrument is an equity instrument of the issuer. In some cases, a financial instrument contract stipulates that the Group must use or use its own equity instruments to settle the financial instrument, where the amount of contract rights or contract obligations is equal to the number of its own equity instruments available or to be delivered multiplied by its settlement The fair value at the time of the contract, regardless of whether the contractual rights or obligations are fixed, or are wholly or partly based on variables other than the market price of the Group's own equity instruments (such as interest rates, the price of a certain commodity or a certain financial instrument) The contract is classified as a financial liability.

When the Group classifies financial instruments (or its component parts) in the consolidated statements, it takes into account all the terms and conditions reached between the Group members and the holders of financial instruments. If the Group as a whole assumes the obligation to deliver cash, other financial assets, or settle settlements in other ways that cause the instrument to become a financial liability, the instrument should be classified as a financial liability.

Where financial instruments or their components are financial liabilities, relevant interest, dividends (or dividends), gains or losses, and gains or losses arising from redemption or refinancing are included in the current profit and loss by the Group.

If a financial instrument or its component parts belong to an equity instrument, when it is issued (including refinancing), repurchased, sold or cancelled, the Group treats it as a change in equity and does not recognize the fair value change of the equity instrument.

The relevant accounting policies of the Group's "Companies that have implemented the new financial instrument standards" are as follows:

1. Confirmation and termination of financial instruments

The Group recognizes a financial asset or financial liability when it becomes a party to a financial instrument contract. If the following conditions are met, the confirmation of financial assets (or part of financial assets, or part of a group of similar financial assets) shall be terminated:

(1) The contractual right to receive the cash flow of the financial asset is terminated;
(2) The financial asset has been transferred, and the Group has transferred almost all risks and rewards of the ownership of the financial asset to the transferee;
(3) The financial asset has been transferred. Although the Group has neither transferred nor retained almost all the risks and rewards related to the ownership of the financial asset, it has given up control of the financial asset.

When the current obligations of financial liabilities have been discharged in whole or in part, the Group shall terminate the recognition of the financial liabilities or the discharged part of the obligations. The difference between the book value of the derecognized part and the consideration paid shall be included in the current profit and loss.

2. Classification and measurement of financial assets

The Group's financial assets are classified at the time of initial recognition based on the business model of the Group' s corporate management of financial assets and the contractual cash flow characteristics of the financial assets: financial assets measured at fair value through profit and loss, financial assets as subsequently measured at amortized cost, financial assets that are measured at fair value and through other comprehensive income. Financial assets are measured at fair value at the time of initial recognition, but the accounts receivable or bills receivable arising from the sale of goods or the provision of services do not contain significant financing components or do not consider financing components of less than one year, the transaction price Initial measurement.

For financial assets that are measured at fair value through profit or loss, the relevant transaction costs are directly included in the current profit and loss, and the related transaction costs of other types of financial assets are included in the initial recognized amount.

The subsequent measurement of financial assets depends on their classification:

(1) Financial assets measured at amortized cost

For a financial asset measured at amortized cost, it is held within a business model whose objective is to hold financial assets in order to collect contractual cash flows, and its contractual cash flow characteristics are consistent with those of a basic lending arrangement, that is, the contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding. The Group applies effective interest method and subsequently measures this type of financial assets at amortized costs, a gain or loss arising from amortization or impairment is recognized in profit or loss. Such financial assets mainly include monetary funds, accounts receivable, other receivables and long-term receivables.

(2) Financial assets measured at fair value through other comprehensive income

Financial assets that meet the following conditions are classified as financial assets measured at fair value through other comprehensive income: it is held within a business model whose objective is to hold financial assets in order to collect contractual cash flows and the contract terms of the financial asset stipulate that the cash flow generated on a specific date is only the payment of the principal and the interest based on the outstanding principal amount. Such financial assets use the effective interest method to recognize interest income. Except for interest income, impairment losses and exchange differences recognized as current profits and losses, the other fair value changes are included in other comprehensive income. Such financial assets mainly include receivable financing. When financial assets are derecognized, the accumulated gains or losses previously included in other comprehensive income are transferred from other comprehensive income and included in the current profit and loss.

(3) Equity instrument investment measured at fair value through other comprehensive income

The Group irrevocably chooses to designate certain non-trading equity instrument investments as financial assets that are measured at fair value through other comprehensive income. Only relevant dividend income (except for dividend income that is explicitly recovered as part of the investment cost) is calculated in the current profit and loss. The subsequent changes in fair value are included in other comprehensive income, and no provision for impairment is required. When financial assets are derecognized, the accumulated gains or losses previously included in other comprehensive income are transferred from other comprehensive income and included in retained earnings. Such financial assets are listed as investments in other equity

(4) Financial assets measured at fair value through profit or loss

A financial asset is measured at fair value through profit or loss unless it is measured at amortized cost or at fair value through other comprehensive income in accordance with preceding paragraphs. The Group subsequently measures this type of financial assets at fair value; changes in fair values are recognized in profit or loss. Those with maturity exceeding one year from the balance sheet date and expected to be held for more than one year are listed as other non-current financial assets, and the rest are listed as trading financial assets.

3. Classification and measurement of financial liabilities

The Group's financial liabilities are classified into: financial liabilities measured at fair value through profits and losses, other financial liabilities, and derivatives designated as effective hedging instruments at the time of initial recognition. For financial liabilities that are measured at fair value through profit and loss, the relevant transaction costs are directly included in the current profit and loss, and the related transaction costs of other financial liabilities are included in the initial recognition amount.

The subsequent measurement of financial liabilities depends on its classification:

(1) Financial liabilities at fair value through profit or loss

Financial liabilities that are measured at fair value through profits and losses include transactional financial liabilities (including derivatives that belong to financial liabilities) and financial liabilities designated as fair value at the initial recognition through profits and losses.

It recognized as a transactional financial liability when meets one of the following conditions: the purpose of assuming the relevant financial liability is mainly to sell or repurchase in the near future; it is part of a centralized management of identifiable financial instrument portfolio, and there is objective evidence that the Company has adopted it recently Short-term profit-making mode; it is a derivative instrument, except for the derivative instrument that is designated as an effective hedging instrument, and the derivative instrument that conforms to the financial guarantee contract. Transactional financial liabilities (including derivatives that are financial liabilities) are subsequently measured at fair value. Except for hedge accounting, all changes in fair value are included in the current profit and loss.

Only when one of the following conditions is met can a financial liability be designated as a financial liability measured at fair value through profit and loss at the time of initial measurement: the accounting mismatch can be eliminated or significantly reduced; the formal written document of risk management or investment strategy has been It is stated that the financial instrument portfolio is managed, evaluated and reported to key management personnel on the basis of fair value; it contains one or more hybrid instruments with embedded derivatives, unless the embedded derivatives do not significantly change the cash flow of the hybrid instruments, Or the embedded derivative instruments should obviously not be separated from the related hybrid instruments; the hybrid instruments include embedded derivative instruments that need to be separated but cannot be separately measured at the time of acquisition or on the subsequent balance sheet date.

For such financial liabilities, subsequent measurement is carried out at fair value. Except for changes in fair value caused by changes in the Group's own credit risk, which are included in other comprehensive income, other changes in fair value are included in current profits and losses. Unless changes in fair value caused by changes in the Group's own credit risk are included in other comprehensive income which will cause or enlarge accounting mismatches in profit and loss, the Group will include all changes in fair value (including the amount affected by changes in its own credit risk) in current profit and loss.

After an enterprise designates a financial liability as a financial liability measured at fair value and whose changes are included in the current profit and loss at the time of initial recognition, it cannot be reclassified as other financial liabilities; other financial liabilities cannot be re-designated as fair value after initial recognition Financial liabilities that are measured and whose changes are included in the current profit and loss.

(2) Other financial liabilities

For such financial liabilities, the actual interest rate method is adopted and subsequent measurement is carried out based on amortized cost. Such financial liabilities include notes payable, accounts payable, other payables, loans and bonds payable. Such financial liabilities are initially measured at the fair value after deducting transaction costs, and the actual interest rate method is used for subsequent measurement. Those with a maturity of less than one year (including one year) are listed as current liabilities; those with a maturity of more than one year but due within one year (including one year) from the balance sheet date are listed as non-current liabilities due within one year. Current liabilities; the rest are listed as non-current liabilities.

4. Impairment of financial instruments

Based on the expected credit losses, the Group recognizes an impairment loss on a financial asset measured at amortized cost, a financial asset at fair value through other comprehensive income (debt instrument investment), a lease receivable, a contract asset or a financial guarantee contract, and records a credit impairment loss.

The Group considers reasonable and evidence-based information about past events, current conditions, and forecasts of future economic conditions, and uses the risk of default as the weight to calculate the difference between the contractual cash flow receivable and the expected cash flow received Probability-weighted amount of the present value to confirm the expected credit loss.

Regarding the financing of accounts receivable and accounts receivable formed from daily business activities such as selling goods and providing labor services, regardless of whether there is a major financing component, the Group measures the loss provision based on the expected credit loss for the entire duration. For lease receivables, the Group also chooses to measure the loss provision based on the expected credit loss for the entire duration.

For financial assets other than the above-mentioned simplified measurement methods, the Group assesses on each balance sheet date whether its credit risk has increased significantly since the initial recognition. If the credit risk has not increased significantly since the initial recognition, it is in the first stage. The Group measures the loss provision at the amount equivalent to expected credit losses in the next 12 months, and calculates interest income based on the book balance and the actual interest rate; if the credit risk has increased significantly since the initial recognition but no credit impairment has occurred, it is in the second stage, the Group measures the loss provision at the amount equivalent to the expected credit loss during the entire duration, and calculates the interest income based on the book balance and the actual interest rate; if credit impairment occurs after initial recognition, it is in the third stage, and the Group is based on the equivalent The loss allowance is measured by the amount of expected credit losses during the entire duration, and interest income is calculated based on the amortized cost and the actual interest rate. For financial instruments with relatively low credit risk on the balance sheet date, the Group assumes that their credit risk has not increased significantly since the initial recognition.

The Group has regard to: (a) Receivables from customers with excellent credit ratings and secured collateral arising from sales of goods and services provided based on a single assessment of expected credit losses; (b) Except for (a), receivables from sales of goods and services provided Evaluate the expected credit loss of accounts receivable based on the aging combination; (c) Other financial assets are based on a single evaluation of expected credit loss. When a single financial asset cannot evaluate the expected credit loss at a reasonable cost, the Group divides the portfolio based on the characteristics of credit risk Evaluation.

The Group will accrue or reverse the loss provision into the current profit and loss. For debt instruments that are held at fair value and whose changes are included in other comprehensive income, the Group adjusts other comprehensive income while recording impairment losses or gains in current profits and losses

5. Offsetting financial instruments

A financial asset and a financial liability shall be offset and the net amount presented in the statement of financial position when, and only when, the Group: (a) currently has a legally enforceable right to set off the recognized amounts; and (b) intends either to settle on a net basis, or to realize the asset and settle the liability simultaneously.

6. Financial guarantee contract

A financial guarantee contract refers to a contract in which the issuer pays a specific amount to the contract holder who has suffered losses when a specific debtor is unable to repay the debt in accordance with the terms of the debt instrument. Financial guarantee contracts are measured at fair value at the time of initial confirmation. Except for financial guarantee contracts designated as financial liabilities measured at fair value and whose changes are included in the current profit and loss, other financial guarantee contracts are determined on the balance sheet date after initial confirmation. The higher of the expected credit loss reserve amount and the initial recognition amount after deducting the accumulated amortization amount determined in accordance with the income recognition principle shall be subsequently measured.

7. Derivative financial instruments

The Group uses derivative financial instruments, such as forward commodity contracts to hedge commodity price risks. Derivative financial instruments are initially measured at the fair value on the day when the derivative transaction contract is signed, and subsequently measured at their fair value. Derivative financial instruments with a positive fair value are recognized as an asset, and those with a negative fair value are recognized as a liability.

Except for the gains or losses related to hedge, the gains or losses arising from changes in the fair value of derivatives are directly included in the current profits and losses.

8. Transfer of financial assets

If the Group has transferred almost all the risks and rewards in the ownership of financial assets to the transferee, it shall terminate the recognition of the financial assets; if it retains almost all the risks and rewards in the ownership of the financial assets, it shall not terminate the recognition of the financial assets.

If the Group neither transfers nor retains almost all the risks and rewards of the ownership of financial assets, it shall be dealt with in the following situations: if the control of the financial assets is abandoned, the financial assets shall be terminated and the resulting assets and liabilities shall be confirmed; If the financial asset is controlled, the relevant financial assets shall be recognized according to the extent of its continued involvement in the transferred financial assets, and the relevant liabilities shall be recognized accordingly.

For those who continue to be involved through the provision of financial guarantees for the transferred financial assets, the assets formed by the continued involvement shall be confirmed according to the lower of the book value of the financial assets and the amount of financial guarantees. The financial guarantee amount refers to the highest amount that will be required to be repaid among the consideration received.

4.10 Hedging Instruments

The relevant accounting policies of "companies that have not yet implemented the new financial instruments standards" are as follows:

1. The accounting treatment of non-commodity futures hedging, and the accounting treatment of commodity futures hedging before 1 January 2016

In order to avoid certain risks, the Group uses certain financial instruments as hedging instruments. The hedging that meets specified criteria shall apply hedge accounting. The Group's hedging include fair value hedge, cash flow hedge and hedge of a net investment in a foreign operation. The Company treats the hedging of the foreign exchange risk of the confirmed commitment as a cash flow hedge/fair value hedge.

At the beginning of the hedging, the Company records the relationship between the hedging tool and the hedged item, as well as the risk management objectives and strategies for conducting different hedging transactions. In addition, the Company will continue to evaluate the effectiveness of the hedging at the beginning and after the hedging to check whether the hedging is highly effective during the designated accounting period of the hedging relationship.

2. Fair value hedging

For a fair value hedge that meets the qualifying criteria, the gain or loss on the hedging instrument is recognized in profit or loss. The hedging gain or loss on the hedged item, which arises from hedged exposure, shall adjust the carrying amount of the hedged item, and be recognized in profit or loss.

When the Group revokes the designation of a hedging relationship, or when the hedging instrument expires or is sold, terminated or exercised, or the hedging relationship ceases to meet the qualifying criteria, the Group shall discontinue hedge accounting.

3. Cash flow hedges

For the derivatives designated as cash flow hedging and meeting the conditions, the part of the fair value change that belongs to the effective hedging is recognized as other comprehensive income, and the invalid hedging part is included in the current profit and loss.

If the hedging of the expected transaction causes the Company to subsequently recognize a financial asset or financial liability, the amount originally included in other comprehensive income will be transferred out during the same period when the asset or debt affects the profit and loss of the enterprise and included in the current profit and loss; If the Company expects that all or part of the net loss originally included in other comprehensive income cannot be compensated in the future accounting period, the part that cannot be compensated will be transferred out and included in the current profit and loss.

If the hedging of the expected transaction causes the Company to subsequently recognize a non-financial asset or non-financial liability, the amount originally included in other comprehensive income shall be transferred out in the same period when the non-financial asset or non-financial debt affects the Company's profit and loss , and included in the current profit and loss. If it is expected that all or part of the net loss originally included in other comprehensive income cannot be compensated in the future accounting period, the part that cannot be compensated is transferred out and included in the current profit and loss.

Except for the above circumstances, the amount originally included in other comprehensive income is transferred out in the same period when the expected transaction of the hedge affects the profit and loss, and is included in the current profit and loss.

When the Company cancels the designation of the hedging relationship, the hedging instrument has expired or been sold, the contract is terminated, exercised or no longer meets the conditions of hedging accounting, the use of hedging accounting shall be terminated. When hedge accounting is terminated, the accumulated gains or losses that have been included in other comprehensive income will be transferred out of other comprehensive income and included in profit or loss when the expected transaction occurs and is included in profit or loss. If the transaction is not expected to occur, the accumulated gains or losses included in other comprehensive income will be immediately transferred out and included in the current profit and loss.

4. Hedges of a net investment in a foreign operation

Hedges of a net investment in a foreign operation are accounted for similarly to cash flow hedges. The portion of the gain or loss on the hedging instrument that is determined to be an effective hedge shall be recognized in other comprehensive income, the ineffective portion shall be recognized in profit or loss.

The cumulative gain or loss on the hedging instrument that has been accumulated in other comprehensive income shall be reclassified from other comprehensive income to profit or loss on the disposal of the foreign operation.

5. Accounting treatment methods for commodity futures hedging

In order to avoid commodity price risks in spot operations, the Company designates commodity futures contracts as a hedging tool. Commodity futures hedges that meet the specified conditions will be hedged by the "Commodity Futures Hedging Business Accounting Treatment" from 1 January 2016. The following hedging accounting methods stipulated in the Interim Provisions (Cai Kuai [2015] No. 18) shall be processed, and the aforementioned hedging accounting methods will no longer be implemented for this type of business.

The Company's hedges include fair value hedges and cash flow hedges.

At the beginning of the hedging, the Company specifies the hedging relationship in written form, including records: the relationship between the hedging tool and the hedged item, as well as the risk management objectives and hedging strategy; the nature and quantity of the hedged item; The nature and quantity of the hedging instrument; the nature and identification of the risk of the hedge; the type of hedging (fair value hedge or cash flow hedge); the evaluation of the effectiveness of the hedging, including the economic relationship between the hedged item and the hedging instrument , Hedging ratio, analysis of the sources of hedging inefficiency; starting date of specifying the hedging relationship, etc. In addition, the Company will evaluate the existing hedging relationship to determine whether the hedging relationship should be terminated, or whether the designated hedging relationship should be terminated or whether the designated hedging relationship should be The number of hedged items or hedging instruments so as to maintain a hedge ratio that meets the requirements for hedging effectiveness (ie. "rebalancing").

If due to changes in risk management objectives, the Company can no longer specify the established hedging relationship; or the hedging instrument is liquidated or delivered at maturity; or the risk exposure of the hedged item disappears; or after considering rebalancing (if applicable), If the hedging relationship no longer meets the application conditions of hedging accounting, the hedging relationship shall be terminated.

(1) Fair value hedge

For fair value hedging, during the duration of the hedging relationship, the Company will include the gains or losses resulting from changes in the fair value of the hedging instruments into the current profits and losses. If the hedged item is an inventory, during the duration of the hedging relationship, the Company will include the fair value change of the hedged item into the current profit and loss, and adjust the book value of the hedged item at the same time. If the hedged item is a confirmed commitment, the accumulated fair value change of the hedged item after the hedging relationship is designated will be recognized as an asset or liability and included in the profit and loss of each relevant period.

When the hedging relationship is terminated, if the hedged item is inventory, the Company will transfer the book value of the hedged item and include it in the cost of sales when the inventory is sold; if the hedged item is a definite commitment to purchase goods, the Company will transfer the book value of the hedged item to the cost of sales. When the Company confirms the relevant inventory, the assets or liabilities formed by the accumulated fair value changes of the hedged item are transferred out and included in the initial cost of the inventory; if the hedged item is a definite commitment to sell goods, the Company will be hedged when the sale is realized. Assets or liabilities formed by changes in the cumulative fair value of the project during the period are transferred out and included in sales revenue.

(2) Cash flow hedge

For cash flow hedging, during the duration of the hedging relationship, the Company regards the part of the accumulated gains or losses of the hedging instrument that does not exceed the change in the present value of the accumulated expected cash flow of the hedged item as the effective hedging part (this part is hereinafter referred to as the hedging part). Period reserve) is included in other comprehensive income, and the excess part is included in the current profit and loss as the invalid hedging part.

When the hedging relationship terminates, if the hedged item is the expected purchase of goods, the Company will transfer its hedging reserve and include it in the initial cost of inventory when confirming the relevant inventory; if the hedged item is the expected sale of goods, the Company will When the sale is realized, the hedging reserve is transferred out and included in the sales revenue.

If the expected transaction subsequently becomes a confirmed commitment, and the Company designates the confirmed commitment as the hedged item in the fair value hedge, and transfers out its hedge reserve into the initial book value of the confirmed commitment. When the expected transaction is no longer expected to occur, the Company reclassifies its hedging reserve to current profit and loss. If the cumulative amount of the cash flow hedge reserve is a loss and the Company predicts that it will not be able to cover all or part of the loss in one or more future accounting periods, it should immediately reclassify the estimated unrecoverable loss to the current profit and loss.

The relevant accounting policies of "companies that have implemented the new financial instrument standards" are as follows:

According to the hedging relationship, the Company divides hedging into fair value hedging, cash flow hedging and overseas net investment hedging.

1. For hedging instruments that meet the following conditions at the same time, use the hedge accounting method for processing

(1) The hedging relationship is only composed of eligible hedging instruments and hedged items.

(2) At the beginning of the hedging, the Company officially designated the hedging tool and the hedged item, and prepared written documents on the hedging relationship and risk management strategies and risk management objectives for hedging.

(3) The hedging relationship meets the requirements for hedging effectiveness.

If the hedging meets the following conditions simultaneously , the hedging relationship shall be determined to meet the requirements for hedging validity:

(a) There is an economic relationship between the hedged item and the hedging instrument. This economic relationship makes the value of the hedging instrument and the hedged item change in opposite directions due to the same hedged risk.

(b) The influence of credit risk is not dominant in the value changes caused by the economic relationship between the hedged item and the hedging instrument.

(c) The hedging ratio of the hedging relationship is equal to the ratio of the Company's actual number of hedged items to the actual number of hedging instruments, but does not reflect the imbalance in the relative weights of the hedged items and the hedging instruments. This imbalance will lead to invalid hedges and may produce accounting results that are inconsistent with the hedge accounting objectives.

2. Accounting treatment of fair value hedges

(1) The gains or losses from hedging instruments are included in the current profits and losses. If a hedging instrument is selected to hedge a non-trading equity instrument investment (or its component parts) that is measured at fair value and whose changes are included in other comprehensive income, the gains or losses generated by the hedging instrument are included in other comprehensive income.

(2) The gain or loss of the hedged item due to the hedged risk exposure is included in the current profit and loss, and the book value of the confirmed hedged item that is not measured at fair value is adjusted. If the hedged item is a financial asset (or its component parts) that is measured at fair value and whose changes are included in other comprehensive income, the gain or loss resulting from the hedged risk exposure is included in the current profit and loss, and its book value has been fair Value measurement, no adjustment is required; the hedged item is the non-trading equity instrument investment (or its component parts) that the Company chooses to be measured at fair value and whose changes are included in other comprehensive income, and its profit formed by the hedged risk exposure Or the loss is included in other comprehensive income, and its book value has been measured at fair value and does not need to be adjusted.

If the hedged item is an unrecognized definite commitment (or its component parts), the cumulative change in fair value caused by the hedged risk after the hedging relationship is designated is recognized as an asset or liability, and the related gains or losses are included in Profit and loss for each relevant period. When a certain commitment is fulfilled to obtain an asset or assume a liability, the initial confirmation amount of the asset or liability is adjusted to include the accumulated change in the fair value of the confirmed hedged item.

(3) If the hedged item is a financial instrument (or its component parts) measured at amortized cost, the adjustment to the book value of the hedged item shall be amortized according to the actual interest rate recalculated on the amortization date and included in the current period profit and loss. The amortization can start from the adjustment date, but no later than the point when the hedged item is terminated and adjusted for hedging gains and losses. If the hedged item is a financial asset (or its component parts) that is measured at fair value and whose changes are included in other comprehensive income, the accumulated and recognized hedging gains or losses are amortized in the same way and included in the current period Profit and loss, but do not adjust the book value of the financial asset (or its component parts).

3. Accounting treatment of cash flow hedges

(1) The part of the gains or losses generated by hedging instruments that is valid for hedging shall be used as a cash flow hedging reserve and included in other comprehensive income. The amount of the cash flow hedge reserve is determined according to the lower of the absolute amounts of the following two items:

a) Accumulated gains or losses of hedging instruments since the beginning of hedging;
b) The cumulative change in the present value of the expected future cash flow of the hedged item since the beginning of the hedge. The amount of cash flow hedging reserve included in other comprehensive income in each period is the amount of change in cash flow hedging reserve for the current period.

(2) The part of the gains or losses generated by hedging instruments that is ineffective in hedging (that is, other gains or losses after deducting other comprehensive income) shall be included in the current profits and losses.

(3) The amount of cash flow hedge reserve shall be handled in accordance with the following regulations:

a) The hedged item is an expected transaction, and the expected transaction causes the Company to subsequently confirm a non-financial asset or non-financial liability, or the expected transaction of a non-financial asset or non-financial liability forms a determination applicable to fair value hedge accounting When making a commitment, the cash flow hedge reserve amount originally recognized in other comprehensive income is transferred out and included in the initial recognized amount of the asset or liability.

b) For the cash flow hedging that does not belong to the previous article, in the same period when the expected cash flow of the hedged affects the profit and loss, the cash flow hedging reserve amount originally recognized in other comprehensive income is transferred out and included in the current profit and loss.

c) If the amount of cash flow hedge reserve recognized in other comprehensive income is a loss, and the loss is expected to be irrecoverable in whole or in part in the future accounting period, when it is estimated that it cannot be compensated, the part that is expected to be unrecoverable will be removed from other comprehensive income. The transfer out of comprehensive income shall be included in the current profit and loss.

4. Hedging of net investment in overseas operations

The hedging of net investment in overseas operations, including the hedging of monetary items that are part of the net investment accounting treatment, is handled by the Company in accordance with regulations similar to cash flow hedge accounting:

(1) The part of the gains or losses formed by hedging instruments that is valid for hedging shall be included in other comprehensive income.

When disposing of overseas operations in whole or in part, the above-mentioned hedging instrument gains or losses included in other comprehensive income shall be transferred out accordingly and included in the current profits and losses.

(2) The part of the profit or loss formed by hedging instruments that is invalid for hedging shall be included in the current profits and losses.

5. Termination of the use of hedge accounting

In the event of one of the following situations, the use of hedge accounting shall be terminated:

(1) Due to changes in risk management objectives, the hedging relationship no longer meets the risk management objectives.

(2) The hedging instrument has expired, has been sold, the contract has been terminated, or has been exercised.

(3) There is no longer an economic relationship between the hedged item and the hedging instrument, or the impact of credit risk begins to dominate in the value changes caused by the economic relationship between the hedged item and the hedging instrument.

(4) The hedging relationship no longer satisfies the other conditions for the use of hedging accounting methods specified in this standard. In the case of applying the rebalancing of the hedging relationship, the enterprise should first consider the rebalancing of the hedging relationship, and then assess whether the hedging relationship meets the conditions for applying the hedging accounting method specified in this Standard.

The termination of hedging accounting may affect the whole or part of the hedging relationship. When only a part of the hedging relationship is affected, the remaining unaffected part still applies to hedging accounting.

6. Fair value selection of credit risk exposure

When using a credit derivative that is measured at fair value and whose changes are included in the current profit and loss to manage the credit risk exposure of a financial instrument (or its component parts), the financial instrument (or its component parts) can be initially recognized and subsequently measured When it is in or has not been confirmed, it shall be designated as a financial instrument measured at fair value and its changes shall be included in the current profit and loss, and written records shall be made at the same time, but the following conditions shall be met at the same time:

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

(1) The subject of financial instrument credit risk exposure (such as the borrower or loan commitment holder) is consistent with the subject involved in the credit derivative instrument;

(2) The repayment level of financial instruments is consistent with the repayment level of instruments that must be delivered in accordance with the terms of the credit derivatives.

4.11 Accounts receivable

Accounts receivable include accounts receivable, other receivables, etc.

The Group regards the following situations as the confirmation criteria for Allowance of accounts receivable:

1. Recognition and Measurement of Allowance for Doubtful Accounts of Receivables that are Individually Significant

criteria or amount standard for the single significant amount	More than 5 million
Recognition and Measurement of Allowance for Doubtful Accounts of Receivables that are Individually Significant	Perform an impairment test separately, and make provision for bad debts based on the difference between the present value of its future cash flow and its book value.

2. Measurement for Groups of Financial Assets with Shared Credit Risk Characteristics

Criteria	
Aging portfolio	Using aging analysis method for allowance for doubtful accounts
The method of accruing bad debt provision by combination (age analysis method, balance percentage method, other methods)	
Aging portfolio	Using aging analysis method for doubtful accounts

(1) The Group's provision for bad debts for accounts receivable using the general aging analysis method is as follows:

Aging	Percentage of allowance for doubtful accounts to trade receivables (%)	Percentage of allowance for doubtful accounts to other receivables (%)
Within 1 year	0	0
1-2 year	10	10
2-3 year	20	20
3-4 year	30	30
4-5 year	50	50
More than 5 years	100	100

(2) The Group's subsidiary China Aluminum International Engineering Corporation Limited.'s bad debt provision policy based on aging analysis method

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On the balance sheet date, for receivables with a significant single amount (the standard for a single large amount is RMB 5 million) and some receivables with a small single amount, it can be done without unnecessary additional cost or effort. If it evaluates its expected credit loss, it shall conduct impairment accounting separately and confirm the provision for bad debts. The remaining accounts receivable, except for the accounts receivable from the member units within the scope of consolidation, which are not provided for bad debts, combined with past experience, current conditions and future forecasts, as a combination, based on the aging analysis, the expected credit loss is estimated according to the corresponding ratio and make provision for bad debts. The specific method is as follows:

(a) Accounts Receivable

Aging	allowance for doubtful accounts to trade receivables (%)
Within 1 year	0.50
1-2 year	10.00
2-3 year	20.00
3-4 year	30.00
4-5 year	50.00
More than 5 years	100.00

(b) Long-term receivables

Aging	allowance for doubtful accounts to long-term receivables (%)
Before expiry date	0.50
Within 1 year overdue	10.00
1 to 2 years overdue	20.00
2 to 3 years overdue	30.00
3 to 4 years overdue	50.00
More than 4 years overdue	100.00

(c) The Group's subsidiary China Rare Earth Co., Ltd's bad debt provision policy based on aging analysis method

Aging	allowance for doubtful accounts to trade receivables (%)	allowance for doubtful accounts to other receivables (%)
Within 1 year (including 1 year, the same below)	5	5
1-2 years	30	30
2-3 years	50	50
3-4 years	70	70

Aging	allowance for doubtful accounts to trade receivables (%)	allowance for doubtful accounts to other receivables (%)
4-5 years	80	80
More than 5 years	100	100

3. Measurement of allowance for doubtful accounts of receivables that are individually not significant but are individually assessed for impairment

Reasons for single provision for bad debts	Uncertainty in recovery
The method of accruing bad debt provision	Perform an impairment test separately, and make provision for bad debts based on the difference between the present value of its future cash flow and its book value.

For other receivables such as notes receivables, prepayments, interest receivables, and long-term receivables, provision for bad debts is made based on the difference between the present value of its future cash flow and its book value.

4.12 Inventories

Inventories mainly include raw materials, packaging, low value assembles, work in progress and finished goods, etc.

Inventory counting is performed using the perpetual inventory system. when acquired, the cost of inventories shall be measured at the actual costs, which comprise costs of purchase, costs of conversion and other costs. During the physical flows of inventories, their cost shall be assigned by using the weighted average cost formula. Low-value consumables and packaging materials are amortized according to the number of times of use or one-off write-off method.

Inventories at the end of the period are priced based on the lower of cost and net realizable value. As for inventories that are damaged, fully or partially obsolete, or whose sales price is lower than cost, etc., the unrecoverable part of the cost is expected to be provided for inventory depreciation. Reserves for inventory depreciation of inventory commodities and bulk raw materials are drawn based on the difference between the cost of a single inventory item and its net realizable value; other raw and auxiliary materials with a large quantity and lower unit prices are drawn inventory depreciation reserves by category.

The net realizable value of the inventory of goods that are directly used for sale, such as inventory goods, products in progress, and materials for sale, is determined by the estimated selling price of the inventory minus estimated sales expenses and related taxes; The net realizable value of the material inventory held is determined by the estimated selling price of the finished product produced minus the estimated cost to be incurred at the time of completion, estimated selling expenses and relevant taxes.

4.13 Long-term equity investments

1. Judgment of having control, joint control or significant influence on the investee

The long-term equity investments of the Group mainly include equity investments held by the Group that can exercise control and significant influence on the investee, as well as equity investments in its joint ventures.

Control means that the Group has the power over the investee, enjoys variable returns by participating in the relevant activities of the investee, and has the ability to use the power over the investee to affect the amount of its return.

Joint control refers to the common control of an arrangement in accordance with relevant agreements, and the relevant activities of the arrangement must be agreed by the participants who share control rights before making decisions. A joint arrangement refers to an arrangement controlled by two or more parties. A joint venture refers to a joint arrangement in which the joint venture party only has the rights to the net assets of the arrangement.

Significant influence refers to the power to participate in decision-making on the financial and operating policies of the investee, but cannot control or jointly control the formulation of these policies with other parties. The determination of significant influence is mainly based on sending representatives to the investee's board of directors or similar authority to exercise significant influence through the right to speak in the financial and operating decision-making process of the investee; the Group directly or indirectly through its subsidiaries If there is clear evidence showing that more than 20% (inclusive) but less than 50% of the voting shares of the investee can not participate in the production and operation decision-making of the investee under such circumstances, it will not have a significant impact. When determining whether it can exert a significant influence on the investee, the Group will consider the voting shares of the investee directly or indirectly held by the Group on the one hand and also consider the impact of the current executable potential voting rights held by the Group and other parties after being converted into equity in the investee, such as the impact of current convertible warrants, share options and convertible corporate bonds issued by the invested entity.

2. The method of determining the cost of long-term equity investment, subsequent measurement and profit and loss recognition

Where cash payment, transfer of non-cash assets or debt assumption are used as the merger consideration, the initial investment cost of the long-term equity investment shall be the share of the book value of the acquired owner's equity of the merged party in the ultimate controlling party's consolidated financial statements on the merger date. The difference between the initial investment cost of long-term equity investment and the cash paid, the transferred non-cash assets, and the book value of the debt assumed shall be adjusted for the equity premium in the capital reserve; if the equity premium in the capital reserve is insufficient to offset, the adjustment shall be retained income.

If the issuance of equity securities is used as the merger consideration, the book value of the acquired owner's equity of the merged party in the ultimate controlling party's consolidated financial statements shall be used as the initial investment cost of the long-term equity investment on the merger date, and the total face value of the issued shares shall be used as the initial investment cost. Equity, the difference between the initial investment cost of long-term equity investment and the total face value of the issued shares, adjust the equity premium in the capital reserve; if the equity premium in the capital reserve is not enough to offset, adjust the retained earnings.

Business combination not under the same control: The Company uses the combination cost determined on the purchase date as the initial investment cost of the long-term equity investment.

Intermediary fees such as auditing, legal services, evaluation and consulting, and other related management fees incurred for business mergers are included in the current profits and losses when they are incurred; transaction costs of equity securities or debt securities issued as consideration for the merger are included in equity securities Or the initial recognition amount of debt securities.

In addition to the above-mentioned long-term equity investment obtained through a business combination, the long-term equity investment obtained by paying cash shall be based on the actual purchase price as the investment cost; the long-term equity investment obtained by issuing equity securities shall be based on the fair value of the issued equity securities As investment cost; long-term equity investment invested by investors shall be based on the value agreed in the investment contract or agreement as investment cost; long-term equity investment obtained by debt restructuring, non-monetary asset exchange, etc., shall be determined in accordance with relevant accounting standards.

The Group adopts the cost method for long-term equity investments that can exercise control over the investee; for investment in joint ventures and associates, it adopts the equity method for accounting.

When the cost method is used, long-term equity investment is priced at the initial investment cost. If the Group increases or recovers the cost of its investments in the investee, the cost of long-term equity investments shall be adjusted accordingly. Profits or cash dividends declared to be distributed by the investee are recognized as investment income.

Under equity method, when the initial cost of long-term equity investments exceeds the Group’s proportionate share in the acquisition-date fair values of the investee’s identifiable net assets, the initial cost of investments is not subject to adjustment; when the initial cost of investments is lower than the Group’s proportionate share in the acquisition-date fair values of the investee’s identifiable net assets, the difference shall be recognized in profit or loss, and the cost of investments shall be adjusted at the same time. After the long-term equity investment is obtained, the investment income and other comprehensive income shall be recognized according to the share of the net profit and loss and other comprehensive income realized by the invested entity that should be enjoyed or shared in the current year, and the book value of the long-term equity investment shall be adjusted at the same time; The portion of the profit or cash dividends declared by the investment unit shall be calculated, and the book value of the long-term equity investment shall be reduced accordingly; the investor shall adjust the long-term change of the owner's equity in addition to the net profit and loss, other comprehensive income and profit distribution of the invested unit. The book value of the equity investment is included in the owner's equity. When confirming the share of the net profit and loss of the investee, the net profit of the investee is calculated on the basis of the fair value of the identifiable assets of the investee when the investment is obtained, and in accordance with the Group's accounting policies and accounting period. Adjust and offset the unrealized internal transaction gains and losses that occur with associates and joint ventures in accordance with the proportion of the share attributable to the investment company to confirm the investment income.

3. Changes in long-term equity investment

For additional investment and other reasons that can exercise joint control or significant influence on the investee but do not constitute control, the fair value of the equity investment classified as available-for-sale financial assets plus the additional investment cost shall be regarded as the sum of the original holdings The initial investment cost calculated by the equity method, the difference between its fair value and the book value, and the accumulated fair value changes originally included in other comprehensive income are transferred to the current profit and loss calculated by the equity method. The difference between the initial investment cost calculated above and the fair value share of the investee's identifiable net assets on the additional investment date determined based on the new shareholding ratio after the additional investment. If the former is greater than the latter, no adjustment will be made. The book value of the long-term equity investment; if the former is less than the latter, the difference shall be adjusted to the book value of the long-term equity investment and included in the current non-operating income.

For long-term equity investments that can exercise control over investees that are not under the same control due to additional investment and other reasons, when preparing individual financial statements, the book value of the original equity investment plus the added investment cost shall be used as the reform The initial investment cost calculated by the cost method. The other comprehensive income recognized by equity investment before the purchase date due to the equity method shall be accounted for on the same basis as the investee's direct disposal of related assets or liabilities when disposing of the investment. If the equity investment held before the purchase date is classified as available-for-sale financial assets for accounting treatment, the accumulated fair value changes that were originally included in other comprehensive income shall be transferred to the current profit and loss when accounting for the cost method.

The Group no longer has joint control or significant influence on the investee due to the disposal of part of the equity investment, and the remaining equity after disposal is classified as an available-for-sale financial asset, its fair value on the day when the joint control or significant influence is lost The difference between the book value and the book value is included in the current profit and loss. The other comprehensive income recognized by the original equity investment due to the equity method is used for accounting treatment on the same basis as the direct disposal of related assets or liabilities by the investee when the equity method is terminated;

If the investor loses control of the investee due to the disposal of part of the equity investment, etc., when preparing individual financial statements, if the remaining equity after disposal can exercise joint control or exert significant influence on the investee, the equity method shall be adopted instead. When the remaining equity is deemed to be acquired, the equity method is used to calculate and adjust; the remaining equity after disposal cannot exercise joint control or significant influence on the investee, and is classified as an available-for-sale financial asset, which is losing control the difference between the fair value and the book value on that date is included in the current profit and loss.

4. Disposal of long-term equity investment

When disposing of a long-term equity investment, the difference between its book value and the actual purchase price shall be included in the current investment income. For long-term equity investments accounted for by the equity method, when disposing of the investment, the same basis as the direct disposal of related assets or liabilities by the investee shall be adopted, and the portion originally included in other comprehensive income shall be accounted for in the corresponding proportion.

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

4.14 Investment properties

The Group's investment properties include the leased land use right, the land use right held and ready to be transferred after appreciation, and leased buildings.

The Group chooses cost model for initial measurement of investment property. The cost of outsourcing investment property includes the purchase price, related taxes and other expenditures that can be directly attributable to the asset; the cost of self-built investment real estate consists of the necessary expenditures incurred before the construction of the asset reaches the expected usable state.

After initial recognition, the Group chooses cost model to measure investment property; the depreciation or amortization methods applied to the investment property shall be consistent with fixed assets and intangible assets. On the balance sheet date, if there are signs that the investment property is impaired, the corresponding impairment provision shall be made based on the difference between the book value and the recoverable amount.

4.15 Fixed assets

Fixed assets are tangible items that are held for use in the production or supply or goods or services, for rental to others, or for administrative purposes. They are expected to be used during more than one financial year.

Fixed assets include houses and buildings, machinery and equipment, transportation vehicles, office equipment, and others. The cost at the time of acquisition is used as the value recorded. Among them, the cost of purchased fixed assets includes the purchase price and import duties and other related taxes, and Other expenditures that can be directly attributable to the fixed asset before the fixed asset reaches its intended useable state; the cost of self-built fixed assets consists of the necessary expenditures incurred before the asset reaches its intended useable state; investors; the invested fixed assets are recorded at the value agreed in the investment contract or agreement, but if the value agreed in the contract or agreement is not fair, the fixed assets are recorded at fair value; for fixed assets leased by finance leases, the lower of the fair value of the leased assets on the lease start date and the present value of the minimum lease payment shall be the book value.

Subsequent expenditures related to fixed assets, including repair expenditures, renewal and transformation expenditures, etc., which meet the conditions for the recognition of fixed assets, are included in the cost of fixed assets. In addition, the book value of the replaced part shall be terminated. Those that do not meet the conditions for the recognition of fixed assets shall be included in the current profits and losses when they occur.

Except for fixed assets that have been fully depreciated and are still in use and land that is separately priced and recorded, the Group accrues depreciation for all fixed assets. The average life method (or other methods) is used when accruing depreciation, and it is included in the cost or current expenses of the relevant assets according to the purpose.

The classified depreciation period, estimated net residual value rate, and depreciation rate of the Group's fixed assets are as follows:

No.	Category	Depreciation period (years)	Estimated salvage rate (%)	Annual depreciation rate (%)
1	houses and buildings	8-45	5.00	2.11-11.88
2	Machinery and equipment	3-30	5.00	3.17-31.67
3	Transport vehicle	5-12	5.00	7.92-19.00
4	Electronic equipment	3-12	5.00	7.92-31.67
5	Office equipment	3-10	5.00	9.50-31.67
6	Hotel Industry Furniture	5-20	5.00	4.75-19.00
7	Other	5-20	5.00	4.75-19.00

At the end of each year, the Group reviews the estimated useful life, estimated net residual value and depreciation method of fixed assets, and if there is any change, it is treated as a change in accounting estimates.

When a fixed asset is disposed of, or when it is expected that no economic benefits will be generated through use or disposal, the confirmation of the fixed asset shall be terminated. The amount of disposal income from the sale, transfer, scrapping or damage of fixed assets after deducting its book value and related taxes shall be included in the current profit and loss.

4.16 Construction in progress

The engineering cost according to the value of the installed equipment, the installation cost, and the expenditure incurred in the trial operation of the project. The cost of construction in progress also includes borrowing costs and exchange gains and losses that should be capitalized.

From the date when the construction in progress reaches the expected usable state, the fixed assets shall be carried forward according to the estimated value according to the project budget, cost or actual cost of the project. Depreciation will be accrued from the following month, and the difference in the original value of the fixed assets will be adjusted after the completion of the final accounting procedures.

4.17 Borrowing costs

Borrowing costs include borrowing interest, amortization of discounts or premiums, ancillary expenses, and exchange differences arising from foreign currency borrowings. Borrowing costs that can be directly attributable to the acquisition, construction or production of assets that meet the capitalization conditions, when the asset expenditure has incurred, the borrowing costs have occurred, and the acquisition, construction or production activities necessary for the asset to reach the intended usable or saleable state have been At the beginning, capitalization starts; when the acquisition, construction or production of assets that meet the capitalization conditions reaches the intended use or sale status, capitalization is stopped. The remaining borrowing costs are recognized as expenses in the current period.

The actual interest expenses incurred in the current period of special borrowings shall be capitalized after deducting the interest income obtained by depositing unused borrowing funds in the bank or the investment income obtained from temporary investments; general borrowings shall be capitalized based on the accumulated asset expenditures in excess of the assets of the special borrowings The weighted average of expenditures is multiplied by the weighted average interest rate of the general borrowings used to determine the amount of capitalization.

Assets that meet the conditions for capitalization refer to fixed assets, investment real estate, inventory and other assets that require a long period of time (usually more than one year) of purchase, construction or production activities to reach the intended usable or saleable state.

If an asset that meets the capitalization conditions is abnormally interrupted during the acquisition, construction or production process, and the interruption lasts for more than 3 months, the capitalization of borrowing costs shall be suspended until the acquisition, construction or production activities of the asset restart.

4.18 Intangible assets

The Group's intangible assets include land use rights, patented technology, non-patented technology, etc., which are measured at the actual cost at the time of acquisition. Among them, the actual cost of the purchased intangible assets shall be the actual payment and other related expenses. The actual cost of the intangible assets invested by the investor shall be determined at the value agreed in the investment contract or agreement, but if the value agreed in the contract or agreement is not fair, the actual cost shall be determined at the fair value.

The land use right shall be amortized evenly according to the transfer period from the start date of transfer. Patented technology, non-patented technology and other intangible assets are amortized evenly according to the shortest of the expected useful life, the beneficial life specified in the contract, and the effective life specified in the law.

The estimated useful life and amortization method of intangible assets with limited useful lives are reviewed at the end of each year. If there is any change, it will be treated as a change in accounting estimates. In each accounting period, the estimated useful life of intangible assets with uncertain useful life is reviewed. For intangible assets with a limited useful life, from the time when they are available for use, their original value is subtracted from the estimated net residual value and the accumulated amount of provision for impairment. Concessions with specific output restrictions (such as mining rights) are amortized in accordance with the output method. Other than that, the intangible assets are amortized according to the straight-line method during the useful life of the intangible asset.

Intangible assets with uncertain service life are not amortized, and the Group reviews the service life of the intangible assets in each accounting period. For intangible assets with an indefinite useful life, the basis for determining the indefinite useful life is: (a) It is derived from contractual rights or other legal rights, but there is no clear useful life in contract or legal provisions; (b) Comprehensive industry conditions or Relevant experts still cannot judge the period for which intangible assets will bring economic benefits to the Group.

4.19 Research and development expenditure

The R & D expenditure of the Group is divided into R & D expenditure and development expenditure according to its nature and whether there is great uncertainty in the final formation of intangible assets from R & D activities. The expenditure in the research stage shall be included in the current profits and losses when it occurs; the expenditure in the development stage shall be recognized as intangible assets if it meets the following conditions at the same time. Expenditure on the research phase shall be included in profit or loss when it is incurred. Expenditure on the development phase shall be recognized as intangible asset if the Group can demonstrate all of the following; otherwise, it shall be included in profit or loss:

1. The technical feasibility of completing the intangible asset so that it will be available for use or sale;
2. Its intention to complete the intangible asset and use or sell it;
3. How the intangible asset will generate probable future economic benefits. Among other things, the Group can demonstrate the existence of a market for the output of the intangible asset or the intangible asset itself or, if it is to be used internally, the usefulness of the intangible asset;
4. The availability of adequate technical, financial and other resources to complete the development and to use or sell the intangible asset;
5. Its ability to measure reliably the expenditure attributable to the intangible asset during its development.

If research expenditure cannot be distinguished from development expenditure, all expenditure will be recorded in profit or loss as a whole. The development expenditure that has been included in the profit and loss in the previous period will not be recognized as an asset in the subsequent period. Expenditures in the development phase that have been capitalized are listed as development expenditures on the balance sheet, and are converted to intangible assets for presentation as of the day when the project reaches the expected usable state.

4.20 Long-term prepaid expenses

The long-term prepaid expenses of the Group refer to expenses that have been paid but should be borne by the current period and subsequent periods with a amortization period of more than one year (excluding one year). Such expenses are amortized evenly during the benefit period. If the long-term deferred expenses item cannot benefit the future accounting period, all the amortized value of the item that has not been amortized shall be transferred to the current profit and loss.

4.21 Goodwill

Goodwill is the difference between the cost of equity investment or the cost of a business combination not under the same control over the fair value share of the investee or the identifiable net assets acquired by the business combination on the acquisition date or purchase date.

Goodwill related to subsidiaries is separately listed in the consolidated financial statements, and goodwill related to associates and joint ventures is included in the book value of long-term equity investments.

4.22 Employee benefits

The employee benefits of the Group include short-term employee benefits, post-employment benefits, termination benefits and other long-term employee benefits. The benefits provided by the Group to employee spouses, children, dependants, survivors of deceased employees and other beneficiaries are also employee benefits.

1. Short-term remuneration refers to the employee remuneration that the Group needs to pay in full within twelve months after the end of the annual reporting period in which the employee provides related services, except for compensation for termination of labor relations with the employee. The Group's short-term remuneration includes: Employee wages, bonuses, allowances and subsidies, employee welfare, medical insurance, industrial injury insurance, and maternity insurance, social insurance premiums, housing provident fund, labor union funds and employee education funds, short-term paid absences, short-term profit sharing plan and other non-monetary benefits.

The actual short-term employee benefits for the accounting period when the employee has rendered service to the Group are recognized as liability, and recorded in profit or loss or in the cost of related asset. The non-monetary benefits are measured at fair value.

2. Post-employment benefits refer to the various forms of remuneration and benefits provided by the Group after the employees retire or terminate the labor relationship with the Group in order to obtain the services provided by the employees, except for short-term remuneration and dismissal benefits.

   The defined contribution plan of the Group refers to the payment of basic endowment insurance, unemployment insurance, and enterprise annuity for employees in accordance with relevant regulations of the local government. During the accounting period when employees provide services to the Group, the payable amount is calculated based on the local payment base and proportion, and the paid amount is recognized as a liability and included in the current profit and loss or the cost of related assets.

   The Group assigns the welfare obligations arising from the defined benefit plan to the period during which the employees provide services according to the formula determined by the expected cumulative welfare unit method, and includes it in the current profit and loss or the cost of related assets. The deficit or surplus formed by the present value of the defined benefit plan’s obligations minus the fair value of the defined benefit plan’s assets is recognized as a defined benefit plan’s net liabilities or net assets. If there is a surplus in the defined benefit plan, the Group uses the lower of the surplus of the defined benefit plan and the asset ceiling to measure the net assets of the defined benefit plan.

   The discount rate of all defined benefit plan obligations, including obligations expected to be paid within twelve months after the end of the annual reporting period in which employees provide services, similar to the national debt on the balance sheet date or high-quality companies in active markets Match the bond market yield

   The service cost incurred by the defined benefit plan and the net interest of the net liabilities or net assets of the defined benefit plan are included in the current profit and loss or the related asset cost; the changes in the net liabilities or net assets of the defined benefit plan are included in other comprehensive Income, and will not be transferred back to profit or loss in subsequent accounting periods.

   In the settlement of the defined benefit plan, the difference between the present value of the obligation of the defined benefit plan and the settlement price determined on the settlement date is used to confirm the settlement gain or loss.

3. Dismissal benefits refer to the compensation given to employees by the Group to terminate the labor relationship with employees before the expiration of the employee's labor contract, or to encourage employees to voluntarily accept reductions. For employees who have not terminated their labor contracts with the Group, but will no longer provide services to the Group in the future and cannot bring economic benefits to the Group, the Group promises to provide economic compensation that is essentially dismissal benefits, in the event of "inward retirement" Circumstances, before their official retirement date, shall be treated as dismissal benefits, and after their official retirement date, they shall be treated as post-employment benefits.

   If the Group provides employees with dismissal benefits, choose the earlier date of the following two: (a) the day that the Group inability to unilaterally withdraw the dismissal benefits provided by the termination plan or reduction proposal (b) the day of the confirmation of the Group restructuring related costs or expenses involving the payment of dismissal benefits, to recognize the employee compensation liabilities arising from dismissal benefits and include them in the current profit and loss.

   For the termination benefits that are not expected to be fully paid within twelve months after the end of the annual reporting period, and for termination plans where the substantial termination is completed within one year but the compensation payment exceeds one year, the Group chooses an appropriate discount rate. The amount of dismissal benefits for the current period’s profit and loss is measured by the discounted amount.

4. Other long-term employee benefits refer to all employee compensation except short-term remuneration, post-employment benefits, and dismissal benefits, including long-term paid absences, long-term disability benefits, and long-term profit-sharing plans.

If other long-term employee benefits provided by the Group to employees meet the conditions of the defined contribution plan, accounting treatment shall be carried out in accordance with the relevant provisions of the defined contribution plan. If the other long-term employee benefits provided by the Group to employees meet the conditions of the defined benefit plan, the Group shall, in accordance with the relevant provisions of the defined benefit plan, confirm and measure the net negative components of other long-term employee benefits: service costs; other long-term employee benefits net interest on liabilities or net assets; changes in re-measurement of other long-term employee benefits net liabilities or net assets. The total net amount is included in the current profit and loss or the cost of related assets.

4.23 Bonds payable

The bonds payable by the Group are measured at fair value when they are initially recognized, and related transaction costs are included in the initial recognition amount. Subsequent measurement is based on amortized cost.

The difference between the bond payment price and the total face value of the bond is treated as a bond premium or discount, which is amortized when interest is accrued using the actual interest rate method during the bond's duration, and is treated in accordance with the principle of handling borrowing costs.

4.24 Provisions

When the business related to contingent matters such as external guarantee, commercial acceptance bill discount, pending litigation or arbitration, product quality assurance meets the following conditions at the same time, the Group recognizes it as a liability: the obligation is the current obligation of the Group; The performance of this obligation is likely to cause economic benefits to flow out of the enterprise; the amount of this obligation can be reliably measured.

The estimated liabilities are initially measured in accordance with the best estimate of the expenditure required to perform the relevant current obligations, and comprehensively consider factors such as risks, uncertainties and time value of money related to contingencies. If the time value of money has a significant impact, the best estimate is determined after discounting the relevant future cash outflows. On each balance sheet date, the book value of the estimated liabilities is reviewed, and if there is any change, the book value is adjusted to reflect the current best estimate.

4.25 Preference shares, perpetual debs and other financial instruments

The Group classifies the preferred shares and perpetual debts in line with the equity instruments as financial liabilities except for equity instruments. See note 4.9, 5 "distinction between financial liabilities and equity instruments" for relevant accounting policies.

Preferred stocks and perpetual bonds classified as debt instruments are initially measured at their fair value after deducting transaction costs, and the effective interest method is used for subsequent measurement at amortized cost. The interest expense or dividend distribution shall be recorded in accordance with the borrowing costs, and the gains or losses arising from the repurchase or redemption shall be included in the current profits and losses.

For preference shares and perpetual bonds classified as equity instruments, the consideration received at the time of issuance deducts transaction costs to increase the owner’s equity, and the interest expense or dividend distribution shall be treated as profit distribution, and repurchase or cancellation shall be treated as equity changes.

4.26 Principles of revenue recognition

The relevant accounting policies of the Group for "Companies that have not yet implemented the new revenue standard" are as follows:

The operating income of companies that has not yet implemented the new income standard mainly includes income from the sale of goods, income from the render of labor services, income from the transfer of asset use rights and income from construction contracts. The revenue recognition principles are as follows:

1. The Group has transferred the main risks and rewards of the ownership of the goods to the purchaser, and the Group neither retains the right to continue management that is usually associated with ownership, nor does it effectively control and income from the sold goods. When the amount can be reliably measured, the relevant economic benefits are likely to flow into the enterprise, and the related costs incurred or to be incurred can be reliably measured, the realization of the income from the sale of goods is recognized.

2. When the total labor income and total cost of the Group can be reliably measured, the economic benefits related to labor services are likely to flow into the Group, and the completion progress of labor services can be reliably determined, the realization of labor income is recognized. On the balance sheet date, if the result of the labor service transaction can be reliably estimated, the related labor income is confirmed according to the percentage of completion method, and the percentage of completion is determined according to the proportion of the cost incurred to the estimated total cost. If the result of the labor service transaction cannot be reliably estimated, and the labor cost incurred is expected to be compensated, the labor service revenue shall be recognized according to the amount of the labor service cost that can be compensated, and the labor cost incurred shall be carried forward. If the results of the labor service transaction cannot be reliably estimated, and the labor service costs incurred are not expected to be compensated, the labor service costs incurred are included in the current profit and loss, and the labor service income is not recognized.

3. When the economic benefits related to the transaction are likely to flow into the Group and the amount of income can be reliably measured, the income from the transfer of asset use rights is recognized.

The relevant accounting policies of the Group's "Companies that have implemented the new revenue standards" are as follows:

Companies that have implemented the new revenue standards in the Group have fulfilled their contractual performance obligations and recognize revenue when the customer obtains control of the relevant goods or services. Obtaining control over related goods or services means being able to lead the use of the goods or the provision of the service and obtain almost all of the economic benefits from it.

When the contract contains two or more performance obligations. At the beginning of the contract, the Group allocates the transaction price to each individual performance obligation based on the relative proportion of the stand-alone selling price of the goods or services promised by the individual performance obligation, and measures revenue based on the transaction price allocated to each individual performance obligation.

The transaction price is the amount of consideration that the Group expects to be entitled to receive due to the transfer of goods or services to customers, excluding payments received on behalf of third parties. The transaction price confirmed by the Group does not exceed the amount at which the accumulated confirmed revenue will most likely not undergo a significant reversal when the relevant uncertainty is eliminated. It is expected that the money returned to the customer will not be included in the transaction price as a liability. If there is a significant financing component in the contract, the Group determines the transaction price based on the amount payable in cash when the customer assumes control of the goods or services. The difference between the transaction price and the contract consideration shall be amortized by the effective interest method during the contract period. On the starting date of the contract, the Group expects that the interval between the customer's acquisition of control of the goods or services and the customer's payment of the price will not exceed one year, regardless of the significant financing components in the contract.

1. When one of the following conditions is met, the Group is to perform its performance obligations within a certain period of time; otherwise, it is to perform its performance obligations at a certain point of time:

   (1) the customer simultaneously receives and consumes the benefits provided by the Group’s performance as the Group performs;

   (2) the Group’s performance creates work in progress that the customer controls as it is created

   (3) the Group’s performance does not create an asset with an alternative use to the Group and the Group has an enforceable right to payment for performance completed to date.

   For performance obligations performed within a certain period of time, the Group recognizes revenue according to the performance progress within that period of time, and determines the performance progress in accordance with the input method or output method. When the performance progress cannot be reasonably determined, if the cost incurred by the Group is expected to be compensated, the revenue shall be recognized according to the amount of the cost incurred until the performance progress can be reasonably determined.

   For performance obligations performed at a certain point in time, the Group recognizes revenue at the point when the customer obtains control of the relevant goods or services. When judging whether a customer has obtained control of goods or services, the Group considers the following signs:

   (1) The Group has a present right to payment for the promised goods or services, i.e. the customer is presently obliged to pay for such goods or services;

(2) The Group has transferred the legal title of the promised goods or services to the customer, i.e. the customer has legal tile to such goods or services ;

(3) The Group has transferred physical possession of the promised goods or services, i.e. the customer has physical possession of such goods or services;

(4) The Group has transferred the significant risks and rewards of ownership of the promised goods or services to the customer, i.e. the customer has the significant risks and rewards of ownership of such goods or services

(5) The customer has accepted the promised goods or services, and other indicators of the transfer of control.

2. The Group lists the right to receive consideration obtained through the transfer of goods or services by customers as contract assets. Contract assets are provided for impairment on the basis of expected credit losses. The Group's unconditional right to receive consideration from customers is presented as receivables. The Group’s obligation to transfer goods or services to customers after receiving consideration receivable from customers is presented as contract liabilities.

4.27 Construction contract

When the total contract revenue of the Group can be reliably measured, the economic benefits related to the contract are likely to flow into the Group, the actual contract cost can be clearly distinguished and reliably measured, and the contract completion progress and the cost to complete the contract can be reliably determined, the contract revenue and contract expenses shall be recognized by the percentage of completion method on the balance sheet date. When the percentage of completion method is adopted, the contract completion schedule is determined according to the proportion of the actual contract cost to the estimated total contract cost.

In the case that the result of a construction contract cannot be estimated reliably, if the contract cost can be recovered, the contract revenue is recognized based on the actual contract cost, and the contract cost is recognized as an expense in the period when it incurred. If the contract cost cannot be recovered, it should be recognized as an expense immediately when the contract occurs, not as revenue.

The Group inspects the construction contract at the end of the period. If the estimated total cost of the construction contract exceeds the estimated total revenue of the contract, a loss provision is made and the estimated loss is recognized as the current expense.

4.28 Government grants

Government grants refer to the monetary or non-monetary assets obtained by the Group from the government for free. Government subsidies are recognized when the Group can meet its attached conditions and can be received.

If a government subsidy is a monetary asset, it shall be measured according to the amount actually received. For subsidies paid in accordance with a fixed standard, or when there is conclusive evidence at the end of the period that it can meet the relevant conditions stipulated by the financial support policy and is expected to receive financial support funds, it shall be measured according to the amount receivable. If a government grant is a non-monetary asset, it shall be measured at its fair value. If the fair value cannot be obtained reliably, it shall be measured at its nominal amount.

The Group's government subsidies are divided into government subsidies related to assets and government subsidies related to income. Among them, government subsidies related to assets refer to government subsidies obtained by the Group for purchase and construction or to form long-term assets; government subsidies related to income refer to government subsidies other than those related to assets government subsidy. If the government grants comprise both grants related to assets and grants related to income, the Group shall treat them separately, and if they cannot be distinguished from each other, they shall be accounted for as government grants related to income as a whole.

For government subsidies related to assets, when government subsidies are obtained, the book value of the relevant assets shall be written off according to the amount of the subsidy funds. If the government subsidies related to assets are obtained first, and then the long-term assets purchased and constructed are recognized, the government subsidies obtained should be recognized as deferred income first, and the deferred income shall be offset the book value of assets when the relevant assets reach the intended use state. If the relevant long-term assets are put into use and then the asset-related government subsidies are obtained, under the net method, the book value of the relevant assets should be reduced when the subsidy is obtained, If the relevant long-term asset is put into use and then the asset-related government subsidy is obtained, under the net method, the book value of the relevant asset should be reduced when the subsidy is obtained, and the book value after the reduction and the remaining useful life of the relevant asset should be accrued Depreciation or amortization.

If government subsidies related to income are used to compensate related costs or losses in subsequent periods, they shall be recognized as deferred income, and related costs shall be offset during the period when the related costs or losses are recognized; If it is used to compensate related costs or losses incurred, the related costs shall be directly offset. Government subsidies related to daily activities will be used to offset related costs and expenses in accordance with the nature of economic business. Government subsidies not related to daily activities are included in non-operating income and expenditure.

4.29 Deferred tax assets and deferred tax liabilities

Group deferred income tax assets and deferred income tax liabilities are calculated and confirmed based on the difference between the tax base of assets and liabilities and their book value. For deductible losses and tax deductions that can be deducted from taxable income in subsequent years according to the tax law, the corresponding deferred income tax assets are recognized as temporary differences. On the balance sheet date, deferred income tax assets and deferred income tax liabilities are measured at the applicable tax rate during the period when the asset is expected to be recovered or the liability is settled.

The Group recognizes the deferred income tax assets arising from the deductible temporary differences within the limit of the taxable income that is likely to be obtained to deduct the deductible temporary differences. For confirmed deferred income tax assets, when it is expected that it is unlikely that sufficient taxable income will be available to deduct the deferred income tax assets in the future, the book value of the deferred income tax assets shall be written down. When it is possible to obtain sufficient taxable income, the reduced amount shall be reversed.

4.30 Lease

The relevant accounting policies of the Group for "Companies that have not yet implemented the new lease standard" are as follows:

Companies that have not yet implemented the new lease standards in the Group divide leases into financial leases and operating leases on the lease start date.

Finance lease refers to a lease that has substantially transferred all the risks and rewards related to asset ownership. When the Group acts as a lessee, the lower of the fair value of the leased asset on the lease start date and the present value of the minimum lease payment on the lease start date is used as the book value of the financial leased fixed asset. And the minimum lease payment is taken as the book value of the long-term payable, and the difference between the two is recorded as an unrecognized financing expense.

Operating leases refer to leases other than financial leases. The rent of the Group as the lessee is included in the relevant asset cost or current profit and loss on a straight-line basis during each period of the lease term. The rent of the Group as the lessor is recognized as income in each period of the lease term using the straight-line method.

The relevant accounting policies of the Group's "Companies that have implemented the new lease standard" are as follows:

Lease refers to a contract in which the lessor transfers the right to use the asset to the lessee within a certain period of time to obtain consideration. On the starting date of the contract, it should be assessed whether the contract is a lease or includes a lease. If a party in the contract transfers the right to control the use of one or more identified assets within a certain period in exchange for consideration, the contract is a lease or includes a lease. In order to determine whether the contract transfers the right to control the use of the identified asset within a certain period, it should be assessed whether the customer in the contract has the right to obtain almost all the economic benefits arising from the use of the identified asset during the period of use, and during the period of use Have control over the identified assets.

If the contract contains multiple separate leases at the same time, the Group will split the contract and keep separate accounts. If the contract contains both lease and non-lease parts, the Company that has implemented the new lease standard of the Group will separate the lease and non-lease parts for accounting treatment.

1. The Group has implemented the new lease standards of the Company as the lessee

On the commencement date of the lease term, companies that have implemented the new lease standards of the Group recognize the right-of-use assets and lease liabilities for the lease.

Right-of-use assets are initially measured at cost. The initial cost includes the initial measurement amount of the lease liability, the lease payment paid on or before the start of the lease term (deducting the amount of lease incentives already enjoyed), the initial direct costs incurred, and the dismantling and removal of leased assets, the estimated cost of restoring the site where the leased asset is located or restoring the leased asset to the state agreed upon in the lease terms. The Group uses the straight-line method to depreciate the right-of-use assets. If it can be reasonably determined that the ownership of the leased asset will be obtained at the expiration of the lease term, the Group shall accrue depreciation during the remaining useful life of the leased asset. Otherwise, the leased asset is depreciated during the shorter period of the lease term and the remaining useful life of the leased asset.

Lease liabilities are initially measured based on the present value of the lease payments that have not yet been paid at the beginning of the lease term, and the discount rate is the interest rate implicit in the lease. If the interest rate implicit in the lease cannot be determined, the Group's incremental borrowing interest rate shall be used as the discount rate.

Companies that have implemented the new lease standards in the Group calculate the interest expense of the lease liability during each period of the lease term based on a fixed periodic interest rate, and include it in the current profit and loss or the cost of related assets. Variable lease payments that are not included in the measurement of lease liabilities are included in the current profit and loss or the cost of related assets when they actually occur

After the start of the lease term, if the following circumstances occur, the Group re-determines the lease payment, and remeasures the lease liability based on the present value calculated from the changed lease payment and the revised discount rate: The evaluation result relates to the purchase option , the option to renew the lease or the option to terminate the lease has changed. The actual exercise of the lease renewal option or the lease termination option is inconsistent with the original assessment result, which leads to changes in the lease term; changes in the amount expected to be payable based on the residual value of the guarantee, or changes in the index or ratio used to determine the lease payment.

When the lease liability is remeasured, the Group adjusts the book value of the right-of-use asset accordingly.If the carrying amount of the right-of-use asset is reduced to zero and there is a further reduction in the measurement of the lease liability, the Group recognizes any remaining amount of the remeasurement in profit or loss.

For short-term leases (lease term of 12 month or less) and leases of low-value assets, a simplified method is adopted. Instead of recognizing right-of-use asset and lease liability, the Group recognizes the lease payments associated with those leases as an expense or in carrying amount of relevant assets on either a straight-line basis over the lease term or another systematic basis.

2. The Group has implemented the new lease standards of the Company as the lessor

At the commencement date, the Group classifies each of its leases as either an operating lease or a finance lease, based on the substance of the transaction. A finance lease is a lease that transfers substantially all the risks and rewards incidental to ownership of an underlying asset. An operating lease is a lease other than a finance lease.

When a company that has implemented the new lease standards of the Group acts as a sublease lessor, the sublease is classified based on the right-of-use assets generated by the original lease, rather than the underlying asset of the original lease. If the original lease is a short-term lease and the Group chooses to apply the simplified treatment of the above short-term lease to the original lease, the Group classifies the sub-lease as an operating lease.

Under finance leases, on the commencement date of the lease term, the Group confirms the finance lease receivables for the finance lease and terminates the recognition of the finance lease assets. When the Group initially measures the financial lease receivables, the net lease investment is used as the recorded value of the financial lease receivables. The net lease investment is the sum of the unguaranteed residual value and the present value of the lease payment that has not been received at the beginning of the lease term, discounted at the interest rate implicit in the lease.

Companies that have implemented the new lease standards in the Group calculate and recognize interest income for each period of the lease term based on a fixed periodic interest rate. Variable lease payments that are not included in the measurement of the net lease investment are included in the current profit and loss when they actually occur.

Under operating leases, during each period of the lease term, companies that have implemented the new lease standards of the Group adopt the straight-line method (or other systematically reasonable methods) to recognize the lease receipts from operating leases as rental income. The capitalization of the initial direct costs related to operating leases shall be amortized during the lease term on the same basis as the recognition of rental income, and shall be included in the current profits and losses in installments. Variable lease payments that are not included in the lease receipts are included in the current profit and loss when they actually occur.

4.31 Assets held for sale

1. The Group classifies non-current assets or disposal groups that meet the following conditions as held for sale: (a) According to the practice of selling such assets or disposal groups in similar transactions, they can be sold immediately under current conditions; (b) The sale is very likely to happen, that is, a resolution has been made on a sale plan and a confirmed purchase commitment has been obtained, and the sale is expected to be completed within one year. Relevant regulations require the approval of the relevant authority or regulatory authority before the sale may require relevant approval. Before the Group classifies non-current assets or disposal groups as held for sale for the first time, it measures the book value of non-current assets or assets and liabilities in the disposal group in accordance with relevant accounting standards. In the initial measurement or re-measurement of the non-current assets or disposal groups held for sale on the balance sheet date, if the book value is higher than the net value of the fair value minus the selling expenses, the book value shall be written down to the fair value minus The net amount after selling expenses, the written-down amount is recognized as asset impairment loss, included in the current profit and loss, and at the same time, provision for impairment of assets held for sale is made.

2. The non-current assets or disposal group acquired by the Group exclusively for resale meets the requirements of “expected to be sold within one year” on the acquisition date, and it is likely to meet the holding requirements in the short term (usually 3 months) For other classification conditions of the category for sale, it shall be classified as the category held for sale on the date of acquisition. In the initial measurement, the comparison assumes that it is not divided into the initial measurement amount under the condition of holding for sale and the net amount after fair value minus selling expenses, which is the lower of the two. Except for the non-current assets or disposal groups acquired in a business combination, the net amount of the non-current assets or disposal groups after the fair value minus the selling expenses is used as the initial measurement amount and the difference generated is included in the current profit and loss.

3. If the Group loses control of the subsidiary due to the sale of its investment in the subsidiary, regardless of whether the Group retains part of the equity investment after the sale, the investment in the subsidiary to be sold meets the criteria for the classification of holdings for sale At the time, in the parent company’s individual financial statements, the overall investment in the subsidiary is classified as held for sale, and in the consolidated financial statements, all assets and liabilities of the subsidiary are classified as held for sale.

4. If the net amount of the fair value of the non-current assets held for sale minus the selling expenses on the subsequent balance sheet date increases, the previously written-down amount shall be restored, and the assets shall be recognized after being classified as held for sale. The impairment loss is reversed within the amount, and the reversed amount is included in the current profit and loss. Asset impairment losses recognized before being classified as held for sale cannot be reversed.

5. For the amount of asset impairment loss confirmed by the disposal group held for sale, the book value of the goodwill in the disposal group is first offset, and then the book value of each non-current asset is proportionally offset according to the proportion of the book value of each non-current asset.

If the fair value of the disposal group held for sale on the subsequent balance sheet date has increased after deducting the selling expenses, the previously written down amount shall be restored, and the non-relevant measurement requirements shall be applied after being classified into the held for sale category. The amount of asset impairment losses recognized by current assets is reversed, and the reversed amount is included in the current profit and loss. The book value of the goodwill that has been deducted and the asset impairment losses recognized before the non-current assets are classified as held for sale shall not be reversed.

The subsequent reversal of the asset impairment loss confirmed by the disposal group held for sale is based on the proportion of the book value of each non-current asset in the disposal group, except for goodwill, to increase its book value in proportion.

6. The non-current assets held for sale or non-current assets in the disposal group are not depreciated or amortized, and the interest and other expenses of the liabilities in the disposal group held for sale continue to be

recognized.

7. The non-current assets held for sale or the disposal group are no longer classified into the held for sale category or the non-current assets from the disposal group held for sale because they no longer meet the classification conditions of the held for sale category When removed, it is measured according to the lower of the following two: (1) The book value before being classified as held for sale, and the depreciation, amortization or impairment that should have been recognized under the assumption that it is not classified as held for sale Wait for the adjusted amount; (2) The recoverable amount.

8. When derecognizing non-current assets or disposal groups held for sale, the unrecognized gains or losses shall be included in the current profits and losses.

4.32 Fair value measurement

1 Initial measurement of fair value

For assets and liabilities measured at fair value, the Group takes into account the characteristics of the asset or liability, uses the amount that can be received from the sale of an asset or the transfer of a liability in a transaction that occurs on the measurement date by market participants, to measure the fair value. When the relevant assets or liabilities are measured at fair value, the transaction in which market participants sell assets or transfer liabilities on the measurement date is an orderly transaction under current market conditions. Orderly transactions for the sale of assets or the transfer of liabilities are carried out in the main market for the relevant assets or liabilities. If there is no major market, it is assumed that the transaction is conducted in the most favorable market for the relevant asset or liability; the assumption used by market participants to maximize their economic benefits when pricing the asset or liability is adopted. When measuring non-financial assets at fair value, consider the ability of market participants to use the asset for the best purpose to generate economic benefits, or to sell the asset to other market participants who can be used for the best purpose to generate economic benefits.

2 Valuation method

When determining the fair value used to measure assets or liabilities, the Group uses valuation techniques that are appropriate in the circumstances and for which sufficient data and other supporting information are available to measure fair value. The valuation techniques used are the market approach, the income approach and the cost approach. When determining the fair value used to measure assets or liabilities, the Group uses valuation techniques that are appropriate in the circumstances and for which sufficient data and other supporting information are available to measure fair value. The valuation techniques used are the market approach, the income approach and the cost approach. In the application of valuation technology, priority should be given to the use of relevant observable input values. Only when the relevant observable input values cannot be obtained or it is not feasible to obtain, the non observable input values should be used.

3 Levels of fair value

The Group determines the level of fair value measurement results according to the lowest level of input value which is of great significance to fair value measurement as a whole. Level 1 inputs are quoted unadjusted prices in active markets for the identical assets or liabilities that the Group can access at the measurement date. Active market is a market in which transactions for the asset or liability take place with sufficient frequency and volume to provide pricing information on an ongoing basis. Level 2 inputs are inputs other than quoted prices included within Level 1 that are observable for the asset or liability. Level 3 inputs are unobservable inputs for the asset or liability.

4.33 Branch information

The Group determines operating segments based on internal organizational structure, management requirements, and internal reporting systems, and determines reporting segments based on operating segments and discloses segment information. An operating segment refers to a component within the Group that meets the following conditions at the same time: the component can generate income and expenses in daily activities; the management of the Group can regularly evaluate the operating results of the component, And decide to allocate resources to it and evaluate its performance; the Group is able to obtain relevant accounting information such as the financial status, operating results and cash flow of the component. If two or more operating segments have similar economic characteristics and meet certain conditions, they can be combined into one operating segment.

The inter-segment transfer price is determined with reference to the market price, and the common expenses are distributed among the different segments in proportion to the income except for the parts that cannot be reasonably distributed.

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Note 5 Changes in Accounting Policies and Accounting Estimates and Corrections of Accounting Errors

5.1 Changes in accounting policy

1. Implementation of the new revenue standard

The Ministry of Finance issued the "Accounting Standards for Business Enterprises No. 14-Revenue (Revised in 2017)" (Caikuai [2017] No. 22) (hereinafter referred to as the "New Revenue Standards") on 5 July 2017. Companies that are listed at the same time both at home and abroad and companies that are listed overseas and adopt the International Financial Reporting Standards or Accounting Standards for Business Enterprises to prepare financial reports are required to implement the new financial instrument standards and new revenue standards from 1 January 2018, and allow companies to implement them in advance .Yunnan Copper Co., Ltd., Yunnan Chihong Zinc and Germanium Co., Ltd, Yunnan Aluminum Co., Ltd, and Yunnan Copper Science and Technology Development Co., Ltd., a listed company on the New Third Board of the Company, since 1 January 2020 Implement the "Accounting Standards for Business Enterprises No. 14-Revenue" revised by the Ministry of Finance in 2017, and the revised accounting policies are detailed in Note 4.

In order to implement the new revenue standards, Yunnan Copper Co., Ltd., Yunnan Chihong Zinc and Germanium Co., Ltd. Yunnan Aluminum Co., Ltd., and Yunnan Copper Technology Development Co., Ltd. reassessed the recognition, measurement, accounting and presentation of main contract revenues. According to the new revenue standard, if the recognition and measurement of revenue business before 1 January 2020 is inconsistent with the requirements of the new revenue standard, Yunnan Copper Co., Ltd., Yunnan Chihong Zinc and Germanium Co., Ltd., and Yunnan Aluminum Co., Ltd. Yunnan Copper Technology Development Co., Ltd. Should make adjustments in accordance with the requirements of the new income standards.

The impact of the implementation of the new revenue standards on the relevant items in the balance sheet at the beginning of the current period are listed as follows:

Statement items	Amount on 31 December 2019 (before the change)	Implementation of the new revenue standard adjustment amount	Amount on 1 January 2020 (after the change)
Advances from customers	3,116,163,629.53	-460,897,752.48	2,655,265,877.05
Contract liabilities	3,578,435,459.15	408,173,337.46	3,986,608,796.61
Other current liabilities	37,343,455,111.28	52,724,415.02	37,396,179,526.30

2. Changes in government subsidy policies

In accordance with the requirements of the international marketization environment for the main business of the Group, in order to ensure that the financial statements reflect the Group's economic and business nature more accurately meanwhile in accordance with the "Accounting Standards for Business Enterprises No. 16-Government Subsidies" revised and issued by the Ministry of Finance (Cai Kuai [2017] No. 15, hereinafter referred to as "Government Subsidies Standards"). Since 1 January 2020, the Group has changed the original government subsidy standard from the gross method to the net method.

The Group restated the opening balance of the relevant balance sheet items and the amount incurred in the previous year for the income statement items. The impacts of the relevant items are listed as follows:

Statement items	Amount on 31 December 2019 (before the change)	Implementation of the new revenue standard adjustment amount	Amount on 1 January 2020 (after the change)
Assets			
Including: Inventory	52,657,972,955.57	-4,019,973.83	52,653,952,981.74

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Fixed assets	194,387,328,935.03	-1,703,860,614.99	192,683,468,320.04
Construction in progress	34,405,663,535.47	-20,077,170.24	34,385,586,365.23
Right-of-use asset	4,089,732,676.81	-107,440,983.06	3,982,291,693.75
Intangible assets	58,988,822,583.90	-221,697,461.15	58,767,125,122.75
Long-term prepaid expenses	1,921,265,785.32	-4,294,090.43	1,916,971,694.89
Liabilities			
Including: Deferred income	4,298,174,200.71	-2,061,390,293.70	2,236,783,907.01
Income statement			
Including: Operating costs	320,450,727,114.83	-536,053,209.47	319,914,673,905.36
Taxes and surcharges	3,088,715,057.42	-4,016,980.62	3,084,698,076.80
Selling expense	3,937,252,588.86	-6,482,211.59	3,930,770,377.27
Administrative costs	10,651,563,126.02	-363,049,223.77	10,288,513,902.25
R&D expenses	2,663,083,797.12	-31,180,449.16	2,631,903,347.96
Financial expenses	14,545,988,627.21	-1,649,717.41	14,544,338,909.80
Other income	1,665,668,895.66	-905,138,645.98	760,530,249.68
Asset disposal income	-1,522,633,037.69	2,910,000.00	-1,519,723,037.69
Non-operating income	794,926,351.61	-65,668,536.24	729,257,815.37
Non-operating expenses	1,118,644,574.61	-25,465,390.20	1,093,179,184.41

3. Changes in accounting estimates

Chinalco Financial Leasing Co., Ltd and Chinalco Commercial Factoring Co., Ltd., which are subsidiaries of the Company's subsidiary Chinalco Capital Holdings Co., Ltd., have increased the overall provision ratio from 1% to 1.5%, the previous provision ratio of risk reserve which was based on 1% of business assets has been changed to 0.5% of market-oriented business assets, after fully analyzing the quality of business assets. At the same time, in order to meet the regulatory policy requirements of the China Banking and Insurance Regulatory Commission, a general risk reserve was made at 1% of the balance of risk assets for the current period. Except for the aforementioned matters, the Group has no significant changes in accounting estimates for the current year.

4. Correction of important accounting errors

The Group had no major prior-period error corrections during the year.

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Note 6 Tax

6.1 Major categories of taxes and tax rates

Category of Tax	Tax Basis	Tax Rate
VAT (Value added tax)	The tax payable is calculated by multiplying the taxable sales by the applicable tax rate and deducting the balance of the input tax that is allowed to be deducted in the current period.	3%, 5%, 6%, 9%, 13% or tax-free
Corporate income tax	Taxable income	9%、12%、12.5%、15%、16.5%、17%、20%、24.94%、25%、27%、30%、35% or tax-free
Urban maintenance and construction tax	Turnover tax actually paid	1%, 5% or 7%
Education surcharge	Calculated based on the actual payment of turnover tax	3% or 5%
Local education surcharge	Calculated based on the actual payment of turnover tax	2% or 3%
Property tax	Rental income or residual value of the property	1.2%, 12%
Resource tax	Ad valorem based on sales	According to the tax standard approved by different local tax authorities
Other taxes	As per relevant national regulations	

6.2 Tax incentives and approval documents

1. Corporate Income Tax Preferences for the Western Development Strategy

On 27 July 2011, the Ministry of Finance, the General Administration of Customs, and the State Administration of Taxation issued Caishui (2011) No. 58 "Notice on Taxation Policy Issues Concerning the Further Implementation of the Western Development Strategy", from 1 January 2011 to 31 December 2020, the enterprise income tax was levied at a reduced rate of 15% for encouraged industrial enterprises located in the western region. The above-mentioned encouraged industrial enterprises refer to the enterprises whose main business is the industrial projects specified in the "Catalogue of Encouraged Industries in the Western Region", and whose main business income accounts for more than 70% of the total enterprise income. Among them, the "Catalogue of Encouraged Industries in the Western Region" will be released separately.

On April 2012, according to the Announcement No. 12 of 2012 of the State Administration of Taxation, the "Announcement on Enterprise Income Tax Issues Concerning the Further Implementation of the Western Development Strategy", from 1 January 2011 to 31 December 2020, for the enterprise located in the western region, whose main business is based on the industrial projects specified in the "Catalogue of Encouraged Industries in the Western Region" and whose main business income accounted for more than 70% of the total enterprise income in the current year shall be subject to pay corporate income tax at a reduced tax rate of 15% after being reviewed and confirmed by the competent tax authority upon application by the enterprise. The enterprise shall submit a written application to the competent tax authority and attach relevant materials before the annual settlement and payment. The first year must be reported to the competent tax authority for review and confirmation, and the second year and subsequent years will be subject to filing management. Before the publication of the "Catalogue of Encouraged Industries in the Western Region", the enterprise complied with the "Industrial Structure Adjustment Guidance Catalog (2005 Edition)", "Industrial Structure Adjustment Guidance Catalog (2011 Edition)", and "Foreign Investment Industry Guidance Catalog (2007 Revised)" , and "Catalog of Advantageous Industries in the Central and Western Regions (Revised in 2008)", the corporate income tax can be paid at the rate of 15% after confirmation by the tax authority.

After the publication of the "Catalogue of Encouraged Industries in the Western Region, companies that have already settled at the 15% tax rate but do not meet the conditions specified in article 1 of this announcement, can recalculate tax according to the applicable tax law after performing the relevant procedures.

On 20 August 2014, the aforementioned "Catalogue of Encouraged Industries in the Western Region" was officially released.

(1) In Aluminum Corporation of China Limited, a subsidiary of the company, if some branches and subsidiaries located in the western region meet the above-mentioned industry catalog items, they will enjoy the western development enterprise income tax reduction at reduced rate 15%.

(2) In the following affiliation of the China Copper Co., Ltd., a subsidiary of the company, if the business complies with the above-mentioned industry catalog items, then they can enjoy the preferential policy at reduced rate 15% in corporate income tax for the development of the western region this year: Yunnan Copper Co., Ltd., Liangshan Mining Co., Ltd., Qinghai Hongxin Mining Co., Ltd., Chifeng Yuntong Nonferrous Metal Co., Ltd., Chuxiong Dianzhong Nonferrous Metal Co., Ltd. , Yunnan Diqing Nonferrous Metals Co., Ltd., Yimen Copper Co., Ltd., Yunnan Chuxiong Mining and Metallurgy Co., Ltd., Yunnan Chuxiong Mining and Metallurgy Co., Ltd., Xinbaerhuyouqi Yishengyuan Mining Co., Ltd., Yiliang Chihong Mining Co., Ltd. Company, Yunnan Chihong Resources Comprehensive Utilization Co., Ltd., Yunnan Metallurgical Yunxin Silicon Material Co., Ltd., Yunnan Chihong Zinc and Germanium Co., Ltd., Heqing Yixin Aluminum Co., Ltd., Xizang Chihong Mining Co., Ltd., Lhasa Tianli Mineral Co., Ltd.

(3) In the following affiliation of the Chinalco High End Manufacturing Co., Ltd., a subsidiary of the company, if the business complies with the above-mentioned industry catalog items, then they can enjoy the preferential policy at reduced rate 15% in corporate income tax for the development of the western region this year: Chongqing Southwest Aluminum Precision Processing Co., Ltd., Chongqing Southwest Aluminum Alloy Processing Research Institute Co., Ltd., Chongqing Southwest Aluminum Electromechanical Equipment Engineering Co., Ltd., Chongqing Southwest Aluminum Transportation Co., Ltd., Chinalco Southwest Plate and Strip Co., Ltd., Chinalco Sapa Special Aluminum (Chongqing) Co., Ltd., and Southwest Aluminum (Group) Co., Ltd.

(4) In the following affiliation of the Chinalco Aluminum Environmental Protection and Energy Conservation Group Co., Ltd., a subsidiary of the company, if the business complies with the above-mentioned industry catalog items, then they can enjoy the preferential policy at reduced rate 15% in corporate income tax for the development of the western region this year: Yunnan Keli Environmental Protection Co., Ltd.

2. Income tax incentives for high-tech enterprises

According to Article 28 of the Presidential Decree No. 63 of the People's Republic of China on Enterprise Income Tax Law, high-tech enterprises that need to be supported by the state are subject to a reduced corporate income tax rate of 15%.

(1) The following affiliation of Aluminum Corporation of China Limited., a subsidiary of the company, has passed the identification of high-tech enterprises, and enjoy the preferential policy at reduced rate 15% in income tax for high-tech enterprises this year: Baotou Aluminum Co., Ltd., Chalco Zhengzhou Research Institute of Nonferrous Metal Co.,Ltd., Zhengzhou Haisai High-tech Ceramics Co., Ltd., Chinalco Shandong Co., Ltd., Shandong Huayu Alloy Material Co., Ltd., Shandong Shan Aluminum Electronic Technology Co., Ltd.., Henan Hua Hui Nonferrous Engineering Design Co., Ltd.

(2) The following affiliation of China Copper Co., Ltd, a subsidiary of the company, has passed the identification of high-tech enterprises, and enjoy the preferential policy at reduced rate 15% in income tax for high-tech enterprises this year: Yunnan Yuntong Zinc Industry Co., Ltd., Yunnan Copper Technology Development Co., Ltd., Fumin Xinye Industry and Trade Co., Ltd., Yuxi Mining Co., Ltd., Yunnan Wenshan Aluminum Co., Ltd., Qujingyun Aluminum Luoxin Aluminum Co., Ltd., Yunnan Yun Aluminum Runxin Aluminum Co., Ltd., Yunnan Yunlv Haixin Aluminum Co., Ltd., Yunnan Haoxin Aluminum Foil Co., Ltd., Yunnan Yun Aluminum Yongxin Aluminum Co., Ltd. Yunnan Yongchang Lead-Zinc Co., Ltd., Chihong Technology Engineering Co., Ltd., Hulunbeier Chihong Mining Co., Ltd., Yunnan Wenshan Dounan Manganese Co., Ltd., Kunming Metallurgical Research Institute Co., Ltd., Kunming Nonferrous Metallurgy Design and Research Institute Co., Ltd., Yunnan Metallurgical Renda Information Technology Industry Co., Ltd., Yunnan Metallurgical Resources Co., Ltd., China Copper Huazhong Copper Industry Co., Ltd.

(3) The following affiliation of China Aluminum International Engineering Corporation Limited., a subsidiary of the company, and Chinalco International Engineering Co itself, has all passed the identification of high-tech enterprises, and enjoy the preferential policy at reduced rate 15% in income tax for high-tech enterprises this year: Changsha Nonferrous Metallurgical Design and Research Institute Co., Ltd., Huachu Intelligent Technology (Hunan) Co., Ltd.,

China Nonferrous Metals Processing Technology Co., Ltd., Guiyang Aluminum and Magnesium Design Institute Co., Ltd, Guizhou Shunan Mechanical and Electrical Equipment Co., Ltd., Guiyang Zhenxing Aluminum Magnesium Technology Industry Development Co., Ltd., Guizhou Innovation Light Metal Process Equipment Engineering Technology Research Center Co., Ltd, Shenyang Aluminum and Magnesium Engineering and Research Institute Co., Ltd, Shenyang Boyu Technology Co., Ltd., Shenyang Aluminum Magnesium Technology Co., Ltd., Beijing Huayu Tiankong Technology Co., Ltd., China Nonferrous Metals Changsha Investigation and Design Research Institute Co., Ltd., Shenzhen Changkan Survey and Design Co., Ltd., The Sixth Metallurgical Construction Company of China National Nonferrous Metals Industry, Nine Metallurgical Construction Co., Ltd., Twelfth Metallurgical Construction Company of China National Nonferrous Metals Industry, China Nonferrous Metals Industry Kunming Survey and Design Institute Co., Ltd., Chinalco Shandong Engineering Technology Co., Ltd.

(4) The Chinalco Materials Application Research Institute Co.,Ltd, a subsidiary of the company, has passed the identification of high-tech enterprises, and enjoy the preferential policy at reduced rate 15% in income tax for high-tech enterprises this year.

(5) The following affiliation of Chinalco High-end Manufacturing Co., Ltd., a subsidiary of the company, has passed the identification of high-tech enterprises, and enjoy the preferential policy at reduced rate 15% in income tax for high-tech enterprises this year: Northeast Light Alloy Co., Ltd., Northwest Aluminum Co., Ltd., Chinalco Ruimin Co., Ltd., Harbin Dongqing Special Material Co., Ltd., China Aluminum Southeast Institute of Materials (Fujian) Technology Co., Ltd.

(6) The following affiliation of China Rare Earth & Metals Corporation Limited, a subsidiary of the company, has passed the identification of high-tech enterprises, and enjoy the preferential policy at reduced rate 15% in income tax for high-tech enterprises this year: Chinalco Guangxi Nonferrous Metals Rare Earth Co., Ltd., Jiangsu Guosheng New Material Co., Ltd., Chinalco Guangxi Guosheng Rare Earth Development Co., Ltd., Chinalco Rare Earth (Jiangsu) Co., Ltd., Chinalco Rare Earth (Changshu)Co., Ltd., Chinalco Rare Earth (Changzhou)Co., Ltd.

3. Income tax incentives for small and low-profit enterprises

According to Article 28 of the Presidential Decree No. 63 of the People's Republic of China on Enterprise Income Tax Law of the People's Republic of China, eligible small and low-profit enterprises will be levied corporate income tax at a reduced rate of 20%.

(1) The following affiliation of China Copper Co., Ltd, a subsidiary of the company, has met the standards for small and low-profit enterprises, and enjoy a reduced rate 15% in income tax for small and low-profit enterprises this year: Yunnan Metallurgical Huijing Photovoltaic Technology Co., Ltd.,Huangshi Huazhong Copper Jindi Technology Co., Ltd.

(2) The following affiliation of China Aluminum International Engineering Corporation Limited., a subsidiary of the company, has met the standards for small and low-profit enterprises, and enjoy a reduced rate 15% in income tax for small and low-profit enterprises this year: Shanxi Longye Construction Labor Service Co., Ltd., China Nonferrous Metals Shanxi No. 12 Metallurgical Material Trade Co., Ltd., China Nonferrous Metals No. 12 Metallurgical Chongqing Energy Conservation Technology Co., Ltd., China Nonferrous Metals No. 12 Metallurgical New Material Co., Ltd., Guiyang Xinyu Supervision Co., Ltd., Kunming Prospecting Institute Technology Development Co., Ltd., Luoyang Jincheng Construction Supervision Co., Ltd., Hunan Huachu Project Management Co., Ltd.

(3) The following affiliation of Chinalco Capital Holdings Limited, a subsidiary of the company, has met the standards for small and low-profit enterprises, and enjoy a reduced rate 15% in income tax for small and low-profit enterprises this year: Chinalco Jianxin Investment Fund Management (Beijing) Co., Ltd., Chinalco Innovation and Development Equity Investment Fund Management (Beijing) Co., Ltd.

(4) The following affiliation of Chinalco Environmental Protection and Energy Conservation Group Co., Ltd, a subsidiary of the company, has met the standards for small and low-profit enterprises, and enjoy a reduced rate 15% in income tax for small and low-profit enterprises this year: Inner Mongolia Fengrong Power Distribution Co., Ltd., Ningxia Fenghao Power Distribution Co., Ltd.

(5) The following affiliation of Chinalco High-end Manufacturing Co., Ltd., a subsidiary of the company, has met the standards for small and low-profit enterprises, and enjoy a reduced rate 15% in income tax for small and low-profit enterprises this year: China Nonferrous Metals Import and Export Harbin Co., Ltd., Harbin Dong Light Longxiang Packing Co., Ltd., Harbin Northeast Aluminum Co., Ltd.

(6) The following affiliation of Chinalco Asset Management Company, a subsidiary of the company, has met the

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standards for small and low-profit enterprises, and enjoy a reduced rate 15% in income tax for small and low-profit enterprises this year: Guizhou Lvxing Property Management Co., Ltd., Guizhou Guilv Technical Service Co., Ltd., Guizhou Guilv Modern City Service Co., Ltd.

4. Income tax policy for overseas subsidiaries

The overseas subsidiaries of the company shall pay corporate income tax at the local income tax rate in accordance with the relevant laws and regulations of the place where the company is registered. The details are as follows:

No	Enterprise Name	Registered location	Applicable tax rate
1	Chinalco Hong Kong Co., Ltd	Hong Kong Special Administrative Region of China	16.50%
2	Chinalco Energy Holdings Co., Ltd.	Hong Kong Special Administrative Region of China	16.50%
3	Chalco Guinea Company	Boffa, Republic of Guinea	Exemption
4	Boffa Port Investment Co., Ltd.	Hong Kong Special Administrative Region of China	16.50%
5	Chinalco Guinea Port Co., Ltd.	Boffa, Republic of Guinea	Exemption
6	Chinalco International Trade Hong Kong Co., Ltd.	Hong Kong Special Administrative Region of China	16.50%
7	Chinalco International Trade Singapore Co., Ltd.	Singapore	17.00%
8	Yuntong Hong Kong Co., Ltd.	Hong Kong Special Administrative Region of China	16.50%
9	China Yuntong (Australia) Investment and Development Co., Ltd.	Australia	30.00%
10	Lao Cement Co., Ltd.	Lao People's Republic	35.00%
11	Yungang Metal Co., Ltd.	Hong Kong Special Administrative Region of China	16.50%
12	China Copper Resources Investment Co., Ltd.	The British Virgin Islands	Tax free
13	Chinalco Mining Corporation International	Cayman Islands	Tax free
14	Chinalco Peru Copper Company	Peru	29.5%
15	Yunlv International Co., Ltd.	Hong Kong Special Administrative Region of China	16.50%
16	Chihong Luxembourg Co., Ltd.	Luxembourg	24.94%
17	Chihong Selwin Mining Co., Ltd.	Canada	27.00%
18	Chihong (Hong Kong) International Investment Co., Ltd.	Hong Kong Special Administrative Region of China	16.50%
19	Chihong (Hong Kong) International Mining Co., Ltd.	Hong Kong Special Administrative Region of China	16.50%
20	Bolivia D Copper Mine Co., Ltd.	La Paz, Bolivia	25.00%
21	Bolivia Yangfan Mining Co., Ltd.	La Paz, Bolivia	25.00%
22	Bolivia Amazon Mining Co., Ltd.	La Paz, Bolivia	25.00%
23	Chihong International Mining Co., Ltd.	Australia	30.00%
24	Hong Kong West Aluminum Co., Ltd.	Hong Kong Special Administrative Region of China	16.50%
25	Chinalco International Engineering (India) Private Co., Ltd.	India	30.00%
26	Chinalco International 12MCC Construction Co., Ltd.	Korea	25.00%
27	Chinalco International Hong Kong Company	Hong Kong Special Administrative Region of China	16.50%
28	Chinalco International Malaysia Company	Malaysia	25.00%
29	Africa Congo (Kinshasa) Company of China Nonferrous Metals Research Institute	Hong Kong Special Administrative Region of China	15.00%

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No	Enterprise Name	Registered location	Applicable tax rate
30	Chinalco Overseas Holdings Co., Ltd.	Hong Kong Special Administrative Region of China	16.50%
31	Oriental Prospect Pte, Ltd.	Singapore	17.00%
32	Shining Prospect Pte, Ltd.	Singapore	17.00%
33	Chinalco Iron Mine Holdings Co., Ltd.	Hong Kong Special Administrative Region of China	16.50%
34	Chinalco Asset Holding Company	The British Virgin Islands	Tax free
35	Chinalco Capital Holdings Limited	The British Virgin Islands	Tax free

Note: According to the "Mining Agreement" signed by the company's subsidiary Aluminum Corporation of China Limited and the Guinean government, the Chinalco Guinea Co., Ltd. and Chinalco Guinea Port Co., Ltd. of the Boffa project will pay the corporate income tax at the end of the first calendar year after the project is put into production 6 years. China Aluminum Guinea Co., Ltd. and China Aluminum Guinea Port Co., Ltd. have been converted into production this year and are still in the exemption period this year.

5. Other income tax incentives

(1) Inner Mongolia Alxa Yinxing Wind Power Co., Ltd., a subsidiary of the company's subsidiary of Aluminum Corporation of China, complies with Article 27 of the Enterprise Income Tax Law, Article 87 of the Implementation Regulations of the Enterprise Income Notice on Issues Concerning the Catalogue of Enterprise Income Tax Preferences for Infrastructure Projects (Caishui [2008] No. 46), and the "Notice of the Ministry of Finance, the State Administration of Taxation, and the National Development and Reform Commission on the Publication of the Catalogue of Enterprise Income Tax Preferences for Public Infrastructure Projects (2008 Edition)" (Caishui [2008] No. 116). The second phase of wind power generation enjoys the corporate income tax exemption from the first to the third year from 2014, and the corporate income tax reduction for the fourth to sixth year.

(2) For some subsidiaries or projects of Chinalco Ningxia Energy Group Co., Ltd., affiliated to Aluminum Corporation of China., which is a subsidiary of the Company, are in accordance with the "Regarding Issues Concerning the Implementation of the List of Preferential Enterprise Income Taxes for Public Infrastructure Projects" issued by the Ministry of Finance and the State Administration of Taxation "Notice" (Caishui [2008] No. 46). The investment and operation income of these infrastructure project approved after January 1 2008 are exempt from the corporate income tax from the first year to the third year since the tax year in which the first production and operation income is obtained. The corporate income tax will be exempt from the third year, and will be reduced by half from the fourth to the sixth year. The tax exemption status of each item is as follows:

Project Name	Exemption period	Halving period
Sun Mountain Photovoltaic Power Plant Phase III	June 2014-May 2017	June 2017-June 2020
Zhongwei Sikouzi 20MWP Photovoltaic Grid-connected Power Generation Project	2014-2016	2017-2019
Azuoqi Helan Mountain II project	2014-2016	2017-2019
Shaanxi Dingbian Fengdikeng Wind Farm Phase I	2014-2016	2017-2019
Zhongning Changshantou Project	2015-2017	2018-2020
Wuzhong Taiyangshan Wind Farm Phase V	2015-2017	2018-2020
Lingwu Yinxing Yijing Photovoltaic Project	2016-2018	2019-2021
Wuzhong Taiyangshan Wind Farm Phase VI	2018-2020	2021-2023
Zhuzhuang Project	2018-2020	2021-2023

(3) The desulfurization operation of following affiliation of Chinalco Environmental Protection and Energy Conservation Group Co., Ltd, a subsidiary of the company, complies with the "Coal-fired Power Plant Smoke" in the "Environmental Protection, Energy-saving and Water-saving Project Enterprise Income Tax Preferential Catalogue (Trial)" jointly issued by the Ministry of Finance, the State Administration of Taxation, and the National Development and Reform

Commission and approved by the State Council: Baotou Branch, Lanzhou Branch, Linyi Branch, Ningdong Branch and Guyuan Branch under Beijing Aluminum Energy Qingxin Environmental Technology Co., Ltd. According to the relevant regulations of the “Gas Desulfurization Technical Transformation Project”, corporate income tax of these companies will be exempt from 2016 to 2018, and corporate income tax will be halved from 2019 to 2021.

6. Value-added tax preference

(1) According to the "Notice of the Ministry of Finance and the State Administration of Taxation on Gold Taxation Policy Issues" (Caishuizi [2002] No. 142), the gold sold by Yunnan Copper Co., Ltd., affiliated to China Copper Co., Ltd., which is a subsidiary of the Company, is exempt from value-added tax if no physical delivery occurs through the gold exchange; if the physical delivery occurs, the policy of immediate and refund of value-added tax will be implemented, and the city maintenance and construction tax and educational surcharge will be exempted;

According to the "Notice on the Catalogue of Value-Added Tax Preferences for Products and Services for Comprehensive Utilization of Resources" (Caishui [2015] No. 78) document issued by the Ministry of Finance and the State Administration of Taxation, and verified by the Yunnan Provincial Economic Commission, enterprises use sulfur dioxide flue gas to produce sulfuric acid, Ammonium sulfate products and gold, silver, selenium, platinum, palladium, and tellurium products produced from wet anode mud are products of comprehensive utilization of resources encouraged by the state, and enjoy the preferential tax policy of immediate refund of value-added tax. That is, sulfuric acid and ammonium sulfate products are refunded at 50%, and gold, silver, selenium, platinum, palladium, and tellurium products are refunded at 30%.

According to the regulations of Guoshuifa [2007] No. 67 and Caishui [2007] No. 92, Chifeng Yuntong Nonferrous Metals Co., Ltd., affiliated to China Copper Co., Ltd., which is a subsidiary of the company, enjoys preferential tax policies for promoting the employment of persons with disabilities: The actual number of persons with disabilities placed by the unit is subject to a VAT refund upon collection, but the maximum shall not exceed 35,000 yuan per person per year.

(2) According to the provisions of the State Administration of Taxation Caishui [2002] No. 142 document, gold production and business units selling non-standard gold and gold ore (including half-live gold) are exempted from value-added tax. The gold produced by Yunnan Chihong Zinc and Germanium Co., Ltd., a affiliated to China Copper Co., Ltd., which is a subsidiary of the company, is non-standard gold and is a value-added tax exempt product.

According to the relevant regulations of Caishui [2015] No. 78, the sulfuric acid products produced by Yunnan Chihong Zinc and Germanium Co., Ltd, affiliated to China Copper Co., Ltd., which is a subsidiary of the company, are by-products of flue gas production produced by industrial enterprises, and the concentration is higher than 15 %, enjoy the policy of 50% refund upon collection of value-added tax.

According to the relevant regulations of Caishui [2015] No. 78 Document, Yunnan Chihong Zinc and Germanium Co., Ltd., affiliated to China Copper Co., Ltd., which is a subsidiary of the company, enjoy the tax refund policy: The value-added tax realized by the production and sales of silver and bismuth, and the value-added tax realized by the use of soot produced zinc ingots enjoy the preferential tax policy of 30% upon collection and refund.

(3) According to the "Notice of the Ministry of Finance and the State Administration of Taxation on Incorporating Railway Transport and Postal Services into the Pilot Business Tax Reform to Value-Added Tax" (Caishui [2013] No. 106), the company's subsidiary China Aluminum International Engineering Corporation Limited. and its technology transfer income obtained by the affiliated unit, China Nonferrous Metals Processing Technology Co., Ltd., is exempt from VAT.

(4) According to the "Notice on Value-Added Tax Policies for Software Products" issued by the Ministry of Finance and the State Administration of Taxation (Caishui [2011] No. 100), Guiyang Zhenxing Aluminum Magnesium Technology Industry Development Co., Ltd. and Guizhou Innovative Light Metal Process Equipment Engineering Technology Research Center Co., Ltd., two subsidiaries of the China Aluminum International Engineering Corporation Limited., enjoying the following policy: The part of the actual tax burden of selling self-produced software exceeding 3% enjoys the preferential tax policy of immediate refund of value-added tax.

(5) Twelfth Metallurgical Construction Company of China National Nonferrous Metals Industry, a subsidiary of China Aluminum International Engineering Corporation Limited., which is a subsidiary of the company, obtained the tax exemption filing for cross-border taxable activities of general taxpayers in May 2017. According to the "Notice on Launching the Program of Changing Business Tax to VAT" (Caishui [2016] No. 36), domestic units and individuals providing construction services overseas can be temporarily exempted from VAT.

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

(6) According to the notice of the Ministry of Finance and the State Administration of Taxation on the issuance of the "Resource Comprehensive Utilization Products and Services Value-Added Tax Preferential Catalogue" (Caishui [2015] No. 78), taxpayers sell self-produced resource comprehensive utilization products and provide comprehensive resource utilization labor services, can enjoy the VAT refund policy. China Rare Earth&Metals (Guangxi) Jinyuan Rare Earth New Materials Co., Ltd, affiliated to China Rare Earth&Metals Co., Ltd., which is a subsidiary of the company, applies the policy of immediate refund of value-added tax on products for comprehensive utilization of resources and provision of labor services for comprehensive utilization of resources.

(7) According to the "Notice on Printing and Distributing VAT Preferential Catalogue of Products and Services for Comprehensive Utilization of Resources" (Caishui [2015] No. 79) issued by the Ministry of Finance and the State Administration of Taxation, the company's subsidiary Chinalco Environmental Protection and Energy Conservation Group Co., Ltd. enjoying the following policy:. The production of electrolyte products is a tax preference item, and the value-added tax paid on the sale of self-produced electrolytes enjoys a tax incentive of 30% upon collection and refund.

7. Other tax preferences

(1) Since I July 2017, Local Water Conservancy Construction Funds of China Rare (Guangxi) Jinyuan Rare Earth New Materials Co., Ltd., affiliated to China Rare Earth Holdings Ltd. which is a subsidiary of the Company, are levied by half pursuant to Gui CaiShui [2017] No. 32 "Guangxi Zhuang Autonomous Region Finance Department, Guangxi Zhuang Autonomous Region Water Resources Department, Notice of Water Conservancy Construction Fund". The unpaid local water conservancy construction funds in preview years shall be levied in full, and the policy of halving local water conservancy construction funds will be implemented until 31 December 2020.

(2) The Resource Tax of Yuxi Mining Co., Ltd., affiliated to China Copper Co., Ltd. which is a subsidiary of the Company, meets the conditions on mine in exhaustion period pursuant to "Notice of the Ministry of Finance and the State Administration of Taxation on the Specific Policy Issues of Resource Tax Reform Caishui (2016) No. 54". The resource tax for Lion Rock enjoys a 30% exemption for exhausted mines.

Note 7 Business Combination and Consolidated Financial Statements

7.1 Basic information of major subsidiaries included in the consolidated financial statements this year

No	Enterprise name	Level	Type	Registered address	Principal place of business	Business nature	Paid-in capital (ten thousand)	Proportion of shares (%)	Proportion of voting rights (%)	Investment amount (Ten thousand)	Acquisition method
1	Aluminum Corporation of China	level 2	1	Beijing	Beijing	Aluminum Smelting	1,702,267.30	31.88	31.88	811,850.17	1
2	China Aluminum International Engineering Corporation Limited.	level 2	1	Beijing	Beijing	Engineering survey and design	295,906.67	76.50	76.50	34,696.15	1
3	Chinalco Asset Management Co., Ltd.	level 2	1	Beijing	Beijing	Other unspecified service industries	134,145.75	100.00	100.00	321,881.28	1
4	Baotou Aluminum (Group) Co., Ltd.	level 2	1	Baotou City, Inner Mongolia	Baotou City, Inner Mongolia	Aluminum Smelting	42,688.41	80.00	80.00	92,406.98	1

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

No	Enterprise name	Level	Type	Registered address	Principal place of business	Business nature	Paid-in capital (ten thousand)	Proportion of shares (%)	Proportion of voting rights (%)	Investment amount (Ten thousand)	Acquisition method
5	Aluminum Corporation of China Overseas Holdings Limited	level 2	3	Hong Kong Special Administrative Region	Hong Kong Special Administrative Region	Other commonly used nonferrous metal mining	182,418.30	100.00	100.00	182,431.27	1
6	Chinalco Rare Earth Corporation Limited	level 2	1	Beijing	Beijing	Wholesale of metals and metal mines	152,675.09	71.12	71.12	21,648.01	1
7	Chinalco Henan Aluminum Co., Ltd.	level 2	1	Luoyang City, Henan Province	Luoyang City, Henan Province	Aluminum rolling	113,246.00	86.84	86.84	1,393.78	1
8	Chinalco Metals Trading Company Limited	level 2	1	Beijing	Beijing	Other unspecified wholesale businesses	10,000.00	100.00	100.00	10,000.00	1
9	China Copper Co., Ltd.	level 2	1	Kunming, Yunnan Province	Kunming, Yunnan Province	Copper rolling	4,282,715.52	69.32	69.32	3,001,130.40	1
10	Chinalco Capital Holdings Limited	level 2	2	Beijing	Beijing	Financial leasing, insurance brokerage and agency services	412,536.32	89.98	89.98	365,056.91	1
11	Chinalco Finance Company Limited	level 2	2	Beijing	Beijing	Finance Company	400,000.00	100.00	100.00	340,955.00	1
12	Chinalco Shenyang Nonferrous Metal Processing Co., Ltd.	level 2	1	Shenyang City, Liaoning Province	Shenyang City, Liaoning Province	Rare rare earth metal rolling processing	81,235.00	80.30	80.30	73,479.77	1
13	Chinalco Guangzhou Nonferrous Metal Application	level 2	1	Guangzhou City	Guangzhou City	R&D Service	1,185.30	100.00	100.00	1,185.30	1

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

No	Enterprise name	Level	Type	Registered address	Principal place of business	Business nature	Paid-in capital (ten thousand)	Proportion of shares (%)	Proportion of voting rights (%)	Investment amount (Ten thousand)	Acquisition method
	Research Institute Co., Ltd										
14	Chinalco Materials Application Research Institute Co., Ltd	level 2	1	Beijing	Beijing	Research and experimental development	21,329.41	100.00	100.00	21,329.41	1
15	Chinalco Environmental Protection and Energy Conservation Group Co., Ltd	level 2	1	Beijing	Beijing	Research and experimental development	518.73	100.00	100.00	5,740.71	3
16	Chinalco Tendering Co., Ltd	level 2	1	Beijing	Beijing	Professional technical service industry	2,000.00	55.00	55.00	1,100.00	1
17	Beijing Silver Aluminum Rongfa Fund Partnership (Limited Partnership)	level 2	1	Beijing	Beijing	Fund investment	983,000.00	20.00	20.00	196,600.00	1
18	Chinalco Environmental Protection and Energy Conservation Group Co., Ltd	level 2	1	Baoding, Hebei	Baoding, Hebei	Solid waste treatment	66,515.00	100.00	100.00	66,515.00	1
19	Chinalco Innovation Development Investment Co., Ltd	level 2	1	Shenzhen	Shenzhen	Investment and asset management	85,091.11	71.91	71.91	50,000.00	1
20	Chinalco Overseas Development Co., Ltd	level 2	1	Guangzhou City	Guangzhou City	Other commonly used nonferrous metal	15,000.00	54.52	54.52	5,000.00	1

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

No	Enterprise name	Level	Type	Registered address	Principal place of business	Business nature	Paid-in capital (ten thousand)	Proportion of shares (%)	Proportion of voting rights (%)	Investment amount (Ten thousand)	Acquisition method
						mining					
21	Chinalco Science and Technology Research Institute Co., Ltd	level 2	1	Beijing	Beijing	Engineering and technology research and experimental development	83,355.26	100.00	100.00	211,737.22	3
22	Chinalco Intelligent Technology Development Corporation Limited	level 2	1	Hangzhou City	Hangzhou City	Information Intelligent Service	50,000.00	100.00	100.00	50,000.00	1
23	Pingguo Aluminum Co., Ltd.	level 2	1	Pingguo City, Guangxi	Pingguo City, Guangxi	Electricity, heat, gas and water production and supply	35,000.00	100.00	100.00	49,783.07	1
24	Chinalco High-end Manufacturing Co., Ltd.	level 2	1	Chongqing	Chongqing	Chemical raw materials and chemical products manufacturing	1,500,000.00	65.00	65.00	975,000.00	4

Note 1: Types of enterprises: 1. Domestic non-financial subsidiary, 2. Domestic financial subsidiary, 3. Overseas subsidiary, 4. Public institution, 5. Infrastructure unit

Note 2: Acquisition method: 1. Investment establishment, 2. Business combination under the same control 3. Business combination not under the same control 4. Others

7.2 Reasons that the parent has control of the investee when it owns less than half of the voting rights over the investee

No.	Enterprise name	Proportion of shares (%)	Proportion of voting rights (%)	Registered capital (ten thousand)	Investment (ten thousand)	Level	Reason for consolidation
1	Aluminum Corporation of China Limited	31.88	31.88	1,702,267.30	811,839.57	Level 2	Note 1

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

No.	Enterprise name	Proportion of shares (%)	Proportion of voting rights (%)	Registered capital (ten thousand)	Investment (ten thousand)	Level	Reason for consolidation
2	Beijing Silver Aluminum Rongfa Fund Partnership (Limited Partnership)	20.00	20.00	983,000.00	196,600.00	Level 2	Note 2
3	Yunnan Copper Co., Ltd.	37.51	37.51	169,967.86	63,754.94	Level 3	Note 1
4	Yunnan Chihong Zinc and Germanium Company Limited	38.19	38.19	509,129.16	194,414.28	level 4	Note 1
5	Ningxia Yinxing Energy Co., Ltd	40.23	40.23	70,611.90	128,613.20	level 4	Note 1
6	Guizhou Huaren New Material Co., Ltd.	40.00	40.00	120,000.00	46,165.27	Level 3	Note 3
7	Shanxi Chalco China Resources Co., Ltd.	40.00	40.00	164,175.00	65,670.00	Level 3	Note 4
8	Lao Cement Public Company	35.49	35.49	1,695.15	601.59	Level 5	Note 5

Note 1: The Company's subsidiaries, Aluminum Corporation of China Limited, Yunnan Copper Co., Ltd., Yunnan Chihong Zinc and Germanium Co., Ltd., and Ningxia Yinxing Energy Co., Ltd. are all listed companies. The Group's comprehensive shareholding is the largest shareholder, and the shareholding held by other shareholders is relatively dispersed, which is not sufficient to affect the Group's controlling shareholder status. Based on the above factors, the Group has control over its operations and financial decisions.

Note 2: According to the partnership agreement, the investment decision-making committee is the highest investment decision-making body of Beijing Yin Aluminum Rongfa Fund Partnership (Limited Partnership) (hereinafter referred to as "Yin Aluminum Rongfa"). The investment decision-making committee is composed of 5 members, the Company has the right to nominate 3 members which accounts for 60% of total committee members. According to the rules of procedure of the investment decision-making committee, the partnership' s proposal of debt investments and other legal forms of investments, as well as other related investments shall be approved by more than half of the members. In addition, with the unanimous consent of all partners, the funds of the partnership are mainly used to issue entrusted loans or other forms of investments to the Company and its affiliated companies. Based on the above factors, the Company is able to control related activities through the investment decision-making committee, so as to enjoy variable returns and impose a significant impact on the amount of returns, thereby achieve control over Yin Aluminum Rongfa.

Note 3: Aluminum Corporation of China Limited, a subsidiary of the company, holds 40% equity of Guizhou Huaren New Materials Co., Ltd. According to the "Concerted Action Agreement" signed between Aluminum Corporation of China Limited and Hangzhou Jinjiang Group Co., Ltd. When the board of directors and shareholders of Guizhou Huaren New Materials Co., Ltd. are voting, Hangzhou Jinjiang Group Co., Ltd. and China Aluminum Co., Ltd. will act in concert. Therefore, the board of directors of Aluminum Corporation of China Limited believes that Aluminum

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Corporation of China Limited is able to exercise control over Guizhou Huaren New Materials Co., Ltd.

Note 4: Aluminum Corporation of China Limited, a subsidiary of the Group, holds 40% of the shares of Shanxi Chalco China Resources Co., Ltd. According to the "Concerted Action Agreement" signed between Aluminum Corporation of China Limited and China Resources Coal Group Co., Ltd. When the board of directors and shareholders of Aluminum Corporation of China Limited are voting, China Resources Coal and Aluminum Corporation of China Limited will act in concert. Therefore, the board of directors of Aluminum Corporation of China Limited believes that Aluminum Corporation of China Limited is able to exercise control over Shanxi Chalco China Resources Co., Ltd..

Note 5: The Group's comprehensive shareholding is its largest shareholder. The shareholdings held by other shareholders are dispersive, which is not sufficient to affect the status of shareholders of the Group. In addition, the key management personnel designated by the Group have substantive impact on its operational and financial decisions based on the above factors, the Group has control over its operational and financial decisions.

7.3 Reasons that the parent has no control of the investee when it directly owns or indirectly owns through other subsidiaries more than half of the voting rights over the investee

No.	Enterprise name	Proportion of shares (%)	Proportion of voting rights (%)	Registered capital	Investment	Level	Reason for not being consolidated
1	Yunnan Copper (Group) Co., Ltd.	60.00	60.00	6,800.00	4,080.00	Level 4	Note 1
2	China （Yuntong) Thailand Investment and Development Co., Ltd.	90.00	90.00	2,652.45	2,387.20	Level 4	Note 2

Note 1: Chinalco Guangxi Nonferrous Rare Earth Development Co., Ltd., a subsidiary of the Group, has 60% voting rights in the shareholders meeting of Guangxi Guoxing Rare Earth Mining Co., Ltd., and 3/5 seats in the board of directors. The Company's articles of association stipulate: shareholders meeting Shareholders exercise their voting rights in proportion to their capital contributions. Resolutions made at the meeting must be passed by more than three-quarters of the voting rights held by shareholders present at the meeting; resolutions made by the board of directors are subject to the one-person, one-vote system, and resolutions of the board of directors must be passed by more than two-thirds of all directors (including 2/3) voted through. Neither the voting rights of the shareholders meeting nor the seats on the board of directors can reach the proportion of controlling the Company.

Note 2: The Company is an overseas subsidiary established by Yunnan Copper (Group) Co., Ltd., a subsidiary of the Group, which has limited control and no substantial control over it.

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

7.4 Significant partially-owned subsidiaries

1. Minority shareholders

No.	Enterprise name	Proportion of minority interests (%)	Profit or loss attributable to minority interests	Dividends paid to minority interests	Cumulative non-controlling interests at year end
1	Aluminum Corporation of China Limited	68.12	504,773,092.41	358,813,285.32	37,010,966,181.33
2	China Copper Co., Ltd.	30.68	371,464,251.65	866,821,578.51	9,289,074,548.41
3	China Aluminum International Engineering Corporation Limited.	23.50	25,725,220.09	180,217,104.60	2,052,272,447.87
4	Chinalco Rare Earth Corporation Limited	28.88	119,774,992.41	25,137,727.14	828,768,098.59
5	Chinalco High-end Manufacturing Co., Ltd.	35.00	-14,852,498.45		3,808,941,649.18

2. Major financial information

Items	Current Year				
	Aluminum Corporation of China Limited	China Copper Co., Ltd.	China Aluminum International Engineering Co., Ltd.	China Rare Earth Co., Ltd	Chinalco High-end Manufacturing Co., Ltd.
Current assets	46,203,691,470.58	41,337,500,680.02	38,571,222,971.56	2,855,772,290.85	13,058,923,653.78
Non-current assets	148,697,994,296.19	160,067,884,521.58	15,942,801,374.99	2,106,398,069.00	18,306,765,614.07

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Current Year				
	Aluminum Corporation of China Limited	China Copper Co., Ltd.	China Aluminum International Engineering Co., Ltd.	China Rare Earth Co., Ltd	Chinalco High-end Manufacturing Co., Ltd.
Total assets	194,901,685,766.77	201,405,385,201.60	54,514,024,346.55	4,962,170,359.85	31,365,689,267.85
Current liability	62,627,225,980.28	90,433,019,900.54	29,929,473,277.53	1,252,422,950.76	11,651,516,094.13
Non-current liability	61,102,742,259.82	51,702,119,276.13	8,947,638,385.76	151,562,691.06	6,443,907,206.35
Total liability	123,729,968,240.10	142,135,139,176.67	38,877,111,663.29	1,403,985,641.82	18,095,423,300.48
Operating revenue	185,994,253,022.97	152,824,576,456.42	23,025,950,957.87	4,110,915,700.29	21,815,966,221.70
Net profit	1,573,030,319.52	1,385,348,733.33	-1,856,397,497.80	102,031,901.26	41,977,447.99
Total comprehensive income	1,692,662,179.41	-676,712,175.33	-1,929,752,668.81	101,025,326.26	17,877,805.66
Cash flows from operating activities	14,928,904,823.02	15,884,205,423.35	610,735,587.45	120,561,906.00	1,129,764,829.01

(Continued)

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Prior Year				
	Aluminum Corporation of China Limited	China Copper Co., Ltd.	China Aluminum International Engineering Co., Ltd.	China rare earth Co., Ltd	Chinalco High-end Manufacturing Co., Ltd.
Current assets	48,701,466,532.02	47,259,577,311.83	44,789,901,249.74	2,867,109,157.66	8,381,691,437.61
Non-current assets	154,436,023,565.14	161,654,634,291.98	11,209,561,870.88	1,996,910,370.92	17,866,674,436.30
Total assets	203,137,490,097.16	208,914,211,603.81	55,999,463,120.62	4,864,019,528.58	26,248,365,873.91
Current liability	69,203,103,805.46	104,748,990,512.25	35,191,262,318.54	1,218,107,116.48	12,909,554,295.54
Non-current liability	63,176,920,442.08	43,505,583,323.41	5,412,820,851.25	113,464,190.39	5,526,597,509.03
Total liability	132,380,024,247.54	148,254,573,835.66	40,604,083,169.79	1,331,571,306.87	18,436,151,804.57
Operating revenue	190,215,398,112.68	133,169,789,190.05	31,059,791,611.63	4,121,688,999.27	20,147,390.49
Net profit	1,490,583,662.48	-291,198,399.07	222,524,751.60	80,749,160.95	9,286.37

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Prior Year				
	Aluminum Corporation of China Limited	China Copper Co., Ltd.	China Aluminum International Engineering Co., Ltd.	China rare earth Co., Ltd	Chinalco High-end Manufacturing Co., Ltd.
Total comprehensive income	1,501,433,342.56	-18,750,317.26	235,182,545.97	165,799,160.95	9,286.37
Cash flows from operating activities	12,595,045,886.93	10,094,931,046.27	1,095,972,855.39	150,557,711.26	3,511.91

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

7.5 Subjects newly included in the scope of consolidation and subjects no longer included in the scope of consolidation in this year

1. Entities that are Newly Consolidated in Current Year

Enterprise name	Registered place	Registered capital (ten thousand)	Nature of business	Net assets at the end of the year	Net profit at the end of the year
Chinalco Singapore Co., Ltd	Singapore	4,913.03	Wholesale of metals and metal mines	49,071,304.07	134,912.90
Zhongwei Zhenfasikou Photovoltaic Power Co., Ltd	Ningxia Hui Autonomous Region	3,800.00	Electricity and heat production and supply industry	36,706,631.61	1,696,420.59
African Congo (DRC) Company of China Nonferrous Metals Kunming Exploration Institute	Africa Congo (Kinshasa)	5.45	Engineering survey activities	440,246.17	385,765.37
Shanghai Shanlu Industry and Trade Co., Ltd	Shanghai	680.00	Wholesale industry	703,942.82	140,315.97
Yunnan Defu Environmental Protection Co., Ltd	Hani Nationality in Honghe, Yunnan Province	5,000.00	Wholesale industry	59,269,700.90	4,680,585.98
Ningbo Zhejiang Aluminum Enterprise Management Consulting Co., Ltd	Ningbo City, Zhejiang Province	2,000.00	Business service industry	10,388,318.78	388,318.78
Ningbo Aluminum New Energy Co., Ltd	Ningbo City, Zhejiang Province	2,500.00	Wholesale industry	16,055,898.30	-6,137,494.27
Chinalco High-end Manufacturing Co., Ltd	Chongqing	1,500,000.00	Chemical raw materials and chemical products manufacturing	13,270,265,967.37	41,977,447.99
Chinalco Ruimin (Fujian) New Material Co., Ltd	Fuqing City, Fujian Province	67,000.00	Wholesale industry	61,233,842.43	1,133,842.43

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

2. Former entities that are not consolidated in current year

(1) Former subsidiaries that are not consolidated in current year

Enterprise name	Registered address	Registered capital (ten thousand)	Business nature	Proportion of shares (%)	Proportion of voting rights (%)	Reason for not being a subsidiary in current year
Shandong Shan Aluminum Electronic Technology Co., Ltd.	Zibo City, Shandong Province	2,000.00	Integrated circuit manufacturing	100.00	100.00	Diposed to external party
Chinalco (Yunnan) Huajiang Aluminum o., Ltd	Wenshan Zhuang and Miao Autonomous Prefecture, Yunnan Province	1,502.00	Aluminum Smelting	100.00	100.00	Cancellation
Baoding Yuntong Nonferrous Metals Co., Ltd	Baoding, Hebei	3,000.00	Wholesale of metals and metal mines	100.00	100.00	Diposed to external party
Huili County Ma'anping Mine Waste Rock Comprehensive Utilization Co., Ltd.	Sichuan Province	7,000.00	Copper mining	54.29	54.29	Cancellation
Kunming Xinggong Hotel Co., Ltd	Kunming, Yunnan Province	50.00	Tourist Hotel	100.00	100.00	Cancellation
Yunnan Copper (Group) Titanium Industry Co., Ltd	Kunming, Yunnan Province	13,333.46	Other commonly used nonferrous metal mining	100.00	100.00	Diposed to external party
Karaqin Qiyun copper domestic service Co., Ltd	Chifeng City, Inner Mongolia	50.00	Other cleaning services	100.00	100.00	Cancellation
Shanghai Huxin aluminum foil Co., Ltd	Shanghai	29,715.25	Other trade brokers and agents	100.00	100.00	Cancellation
Yunnan Yun Aluminum Huichuang Green Energy Battery Co., Ltd	Kunming, Yunnan Province	1,000.00	Other battery manufacturing	100.00	100.00	Cancellation
Yunnan Metallurgical Group chuangneng metal fuel cell Co., Ltd	Kunming, Yunnan Province	1,593.00	Other battery manufacturing	100.00	100.00	Cancellation
Yunnan Metallurgical Technology (USA) Co., Ltd	Illinois, U.S.	681.43	Other unspecified professional technical service industries	67.14	67.14	Cancellation

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Ningnan Sanxin Mining Development Co., Ltd	Ningnan County	24,000.00	Lead-zinc ore mining	99.34	99.34	Diposed to external party
Qiaojia Chihong Mining Co., Ltd	Zhaotong City, Yunnan Province	15,000.00	Lead-zinc ore mining	100.00	100.00	Cancellation
Zhenkang Xinyuan Industry And Trade Mining Co., Ltd.	Lincang City, Yunnan Province	500.00	Lead-zinc ore mining	100.00	100.00	Cancellation
Tulina Company Limited	La Paz, Bolivia	472.89	Lead-zinc ore mining	100.00	100.00	Diposed to external party
Yunnan Yongchang Silicon Industry Co., Ltd	Yunnan Province	39,080.05	Silicon Smelting	85.16	85.16	Diposed to external party
Xingang Trading Co., Ltd	Hong Kong	399.85	Wholesale of metals and metal mines	100.00	100.00	Cancellation
Kunming jin'ou engineering cost consulting and evaluation Co., Ltd	Kunming, Yunnan Province	166.67	Other unspecified professional technical service industries	40.00	40.00	Diposed to external party
Yunnan Metallurgical Group Finance Co., Ltd	Kunming, Yunnan Province	112,500.00	Financial company services	100.00	100.00	Cancellation
Yunnan Zhengye Investment Co., Ltd	Kunming, Yunnan Province	2,000.00	Investment and asset management	100.00	100.00	Cancellation
Nanjian County Qingfu Mining Development Co., Ltd.	Yunnan Province	1,700.00	Other mining industries	70.00	70.00	Diposed to external party
Yunnan Qianxin Industry Co., Ltd	Kunming, Yunnan Province	1,362.16	Gold mining	100.00	100.00	Cancellation
Shanxi Jinlu Xingye Metallurgical Materials Co., Ltd	Jiexiu City, Shanxi Province	10,000.00	Graphite and carbon products manufacturing	76.00	76.00	Diposed to external party
China Nonferrous Metals Industry Sixth Metallurgical Mechanization Engineering Company	Henan Province	740.00	Other civil engineering construction	100.00	100.00	Diposed to external party
Chinalco Financial Holding Company	The British Virgin Islands	0.68	Other commonly used nonferrous metal mining	100.00	100.00	Diposed to external party
Chinalco Southwest Aluminum Cold Rolling Strip Co., Ltd	Chongqing	62,419.00	Metal packaging container and material manufacturing	100.00	100.00	Absorb and merge

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Guangzhou Smelter Co., Ltd	Guangzhou, Guangdong	1,728.60	Rolling processing of other nonferrous metals	100.00	100.00	Diposed to external party
Henan Zhongzhou Logistics Co., Ltd.	Xinxiang, Henan	500.00	Road freight transportation	100.00	100.00	Absorb and merge

(2) Financial position of the former subsidiaries at the date of disposal and the reporting date of prior year

Subsidiary name	Date of disposal	Date of disposal		
		Total assets	Total liabilities	Total owners' equity
Shandong Shan Aluminum Electronic Technology Co., Ltd..	August 2020	41,263,257.83	10,341,844.07	30,921,413.76
Chinalco (Yunnan) Huajiang Aluminum Co., Ltd.	January 2020	15,042,721.46		15,042,721.46
Baoding Yuntong Nonferrous Metals Co., Ltd.	November 2020	1,505,016.71	2,536,841.42	-1,031,824.71
Huili County Maanping Mine Waste Rock Comprehensive Utilization Co., Ltd.	November 2020	222,816,866.39	1,824,271.58	220,992,594.81
Kunming Star Palace Hotel Co., Ltd.	November 2020	3,588,981.72	120,209.91	3,468,771.81
Yunnan Copper (Group) Titanium Industry Co., Ltd.	November 2020	12,523,605.64	527,615,484.80	-515,091,879.16
Harqin Qiyun Copper Housekeeping Service Co., Ltd.	October 2020	1,552,432.45	927,246.18	625,186.27
Shanghai Huxin Aluminum Foil Co., Ltd.	November 2020	88,118,431.38		88,118,431.38
Yunnan Yun Aluminum Huichuang Green Energy Battery Co., Ltd.	October 2020			
Yunnan Metallurgical Group Chuangneng Metal Fuel Cell Co., Ltd.	October 2020	7,403,785.26	1,372,500.00	6,031,285.26
Yunnan Metallurgical Technology (USA) Co., Ltd.	November 2020	9,902,871.01	689,692.10	9,213,178.91
Ningnan Sanxin Mining Development Co., Ltd.	April 2020	31,637,961.01	50,549,485.16	-18,911,524.15
Qiaojia Chihong Mining Co., Ltd.	November 2020	2,848,612.74	45,004,290.97	-42,155,678.23
Zhenkang Xinyuan Industry And Trade Mining Co., Ltd.	July 2020	3,003,406.28	9,096,289.74	-6,092,883.46
Pentulina Co., Ltd.	November 2020	11,604,107.61	6,209,162.21	5,394,945.40
Yunnan Yongchang Silicon Industry Co., Ltd.	July 2020	562,640,403.75	613,711,565.86	-51,071,162.11
Xin Gang Trading Co., Ltd.	November 2020	18,172,110.87		18,172,110.87
Kunming Jinou Engineering Cost Consultation and Evaluation Co., Ltd.	July 2020	4,496,577.86	598,582.22	3,897,995.64
Yunnan Metallurgical Group Finance Co., Ltd.	November 2020	1,489,572,578.29	1,801,941.73	1,487,770,636.56
Yunnan Zhengye Investment Co., Ltd.	November 2020			
Nanjian County Qingfu Mining Development Co., Ltd.	November 2020	1,095,844.28	803,064.82	292,779.46
Yunnan Qianxin Industry Co., Ltd.	November 2020	16,319,727.66		16,319,727.66
Shanxi Jinlu Xingye Metallurgical Materials Co., Ltd.	June 2020	55,440,755.83	193,775,304.50	-138,334,548.67
China Nonferrous Metal Industry Sixth Metallurgical Mechanization Engineering Company	November 2020	4,458,009.36	57,301,447.67	-52,843,438.31
Chinalco Financial Holdings	October 2020			

Subsidiary name	Date of disposal	Date of disposal		
		Total assets	Total liabilities	Total owners' equity
Chinalco Southwest Aluminum Cold Rolling Strip Co., Ltd.	November 2020	2,034,141,786.67	2,656,911,248.27	-622,769,461.60
Guangzhou Smelter Co., Ltd.	March 2020	104,454,114.59	114,726,386.10	-10,272,271.51
Henan Zhongzhou Logistics Co., Ltd.	September 2020	72,332,726.06	49,498,111.15	22,834,614.91

(Continued)

Subsidiary name	Date of disposal	31 December 2019		
		Total assets	Total liabilities	Total owners' equity
Shandong Shan Aluminum Electronic Technology Co., Ltd.	August 2020	55,036,144.20	21,426,666.43	33,609,477.77
Chinalco (Yunnan) Huajiang Aluminum Co., Ltd.	January 2020	15,042,721.46		15,042,721.46
Baoding Yuntong Nonferrous Metals Co., Ltd.	November 2020	1,492,941.30	2,533,822.56	-1,040,881.26
Huili County Maanping Mine Waste Rock Comprehensive Utilization Co., Ltd.	November 2020	268,469,888.58	26,186,663.47	242,283,225.11
Kunming Star Palace Hotel Co., Ltd.	November 2020	3,480,512.91	1,062,763.62	2,417,749.29
Yunnan Copper (Group) Titanium Industry Co., Ltd.	November 2020	14,838,772.54	527,024,666.89	-512,185,894.35
Harqin Qiyun Copper Housekeeping Service Co., Ltd.	October 2020	645,618.75	68,230.83	577,387.92
Shanghai Huxin Aluminum Foil Co., Ltd.	November 2020	162,551,584.37	76,512,749.23	86,038,835.14
Yunnan Yun Aluminum Huichuang Green Energy Battery Co., Ltd.	October 2020	204,071.78	558,596.86	-354,525.08
Yunnan Metallurgical Group Chuangneng Metal Fuel Cell Co., Ltd.	October 2020	9,090,018.58	2,082,716.70	7,007,301.88
Yunnan Metallurgical Technology (USA) Co., Ltd.	November 2020	9,902,871.01	689,692.10	9,213,178.91
Ningnan Sanxin Mining Development Co., Ltd.	April 2020	27,569,296.86	50,552,282.38	-22,982,985.52
Qiaojia Chihong Mining Co., Ltd.	November 2020	23,421,128.30	50,911,265.53	-27,490,137.23
Zhenkang Xinyuan Industry And Trade Mining Co., Ltd.	July 2020	6,517,463.02	12,610,960.73	-6,093,497.71
Pentulina Co., Ltd.	November 2020	5,994,183.77	306,995.43	5,687,188.34
Yunnan Yongchang Silicon Industry Co., Ltd.	July 2020	558,491,279.77	558,789,207.39	-297,927.62
Xin Gang Trading Co., Ltd.	November 2020	19,117,790.97	-	19,117,790.97
Kunming Jinou Engineering Cost Consultation and Evaluation Co., Ltd.	July 2020	6,993,238.37	2,857,567.42	4,135,670.95
Yunnan Metallurgical Group Finance Co., Ltd.	November 2020	3,529,425,502.68	2,132,459,497.03	1,396,966,005.65
Yunnan Zhengye Investment Co., Ltd.	November 2020	49,168,174.38	39,598,049.76	9,570,124.62
Nanjian County Qingfu Mining Development Co., Ltd.	November 2020	1,074,310.48	803,064.82	271,245.66
Yunnan Qianxin Industry Co., Ltd.	November 2020	12,132,412.07	6,557,045.98	5,575,366.09
Shanxi Jinlu Xingye Metallurgical Materials Co., Ltd.	June 2020	58,162,685.09	194,340,649.96	-136,177,964.87
China Nonferrous Metal Industry Sixth Metallurgical Mechanization Engineering Company	November 2020	4,012,237.36	56,855,675.67	-52,843,438.31

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Subsidiary name	Date of disposal	31 December 2019		
		Total assets	Total liabilities	Total owners' equity
Chinalco Financial Holdings	October 2020	389,576.26	382,600.06	6,976.20
Chinalco Southwest Aluminum Cold Rolling Strip Co., Ltd.	November 2020	1,878,038,486.45	2,434,158,907.71	-556,120,421.26
Guangzhou Smelter Co., Ltd.	March 2020	104,454,114.59	114,726,386.10	-10,272,271.51
Henan Zhongzhou Logistics Co., Ltd.	September 2020	94,746,047.51	70,185,366.51	24,560,681.00

(3) Financial performance of the former subsidiaries from beginning of current year to date of disposal

Subsidiary name	Date of disposal	From beginning of current year to date of disposal		
		Total Operating Revenue	Total Operating Costs	Net profit
Shandong Shan Aluminum Electronic Technology Co., Ltd.	August 2020	28,906,643.12	23,905,654.01	2,752,972.61
Chinalco (Yunnan) Huajiang Aluminum Co., Ltd.	January 2020	231,024.20	205,953.55	22,721.46
Baoding Yuntong Nonferrous Metals Co., Ltd.	November 2020		-12,075.41	9,056.55
Huili County Maanping Mine Waste Rock Comprehensive Utilization Co., Ltd.	November 2020	28,933,330.58	71,699,731.19	-142,397,598.61
Kunming Star Palace Hotel Co., Ltd.	November 2020	1,827,585.13	997,425.28	1,051,022.52
Yunnan Copper (Group) Titanium Industry Co., Ltd.	November 2020	1,307,214.27	6,003,171.42	-2,839,412.03
Harqin Qiyun Copper Housekeeping Service Co., Ltd.	October 2020		-33,967.08	47,798.35
Shanghai Huxin Aluminum Foil Co., Ltd.	November 2020	102,746.88	2,387,426.26	2,079,596.24
Yunnan Yun Aluminum Huichuang Green Energy Battery Co., Ltd.	October 2020		-355,453.43	370,778.78
Yunnan Metallurgical Group Chuangneng Metal Fuel Cell Co., Ltd.	October 2020		-207,947.18	36,105.94
Yunnan Metallurgical Technology (USA) Co., Ltd.	November 2020			
Ningnan Sanxin Mining Development Co., Ltd.	April 2020		591,572.24	4,071,461.37
Qiaojia Chihong Mining Co., Ltd.	November 2020		-1,614,820.19	-14,665,541.00
Zhenkang Xinyuan Industry And Trade Mining Co., Ltd.	July 2020	3,447,924.52	3,447,310.27	614.25
Pentulina Co., Ltd.	November 2020	5,187,345.17	5,066,058.78	2,570.85
Yunnan Yongchang Silicon Industry Co., Ltd.	July 2020	419,993,292.71	462,653,742.37	-51,803,309.57
Xin Gang Trading Co., Ltd.	November 2020		-178,266.79	178,266.79
Kunming Jinou Engineering Cost Consultation and Evaluation Co., Ltd.	July 2020	3,379,332.03	3,645,639.54	-237,675.31
Yunnan Metallurgical Group Finance Co., Ltd.	November 2020	67,468,422.95	26,947,128.14	90,804,630.91
Yunnan Zhengye Investment Co., Ltd.	November 2020	112,419.50	196,785.13	167,565,795.95
Nanjian County Qingfu Mining Development Co., Ltd.	November 2020	47,582.44	26,003.49	21,533.80
Yunnan Qianxin Industry Co., Ltd.	November 2020	179,296.45	890,614.80	10,744,361.57
Shanxi Jinlu Xingye Metallurgical Materials Co., Ltd.	June 2020	442,844.41	2,526,520.50	-2,156,583.80

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Subsidiary name	Date of disposal	From beginning of current year to date of disposal		
		Total Operating Revenue	Total Operating Costs	Net profit
China Nonferrous Metal Industry Sixth Metallurgical Mechanization Engineering Company	November 2020			
Chinalco Financial Holdings	October 2020	183,892.08	183,892.08	
Chinalco Southwest Aluminum Cold Rolling Strip Co., Ltd.	November 2020	5,003,521,520.84	5,071,443,010.35	-66,661,874.09
Guangzhou Smelter Co., Ltd.	March 2020	1,035,432.43	1,272,785.66	-237,353.23
Henan Zhongzhou Logistics Co., Ltd.	September 2020	3,218,247.33	2,879,743.26	1,015,033.91

Note 8 Significant Items in Consolidated Financial Statements

As for following items, unless otherwise stated, "opening balance" means balance on 1 January 2020,, "closing balance" means 31 December 2020, “current year” means the year from 1 January to 31 December 2020, “prior year” means the year from 1 January to 31 December 2019. Unless otherwise specified, all amount take Renminbi yuan as the functional currency.

8.1 Monetary funds

1) Monetary fund balance

Items	Closing balance	Opening balance
Cash on hand	2,600,540.32	6,917,243.60
Cash at bank	44,948,740,556.65	46,664,124,106.11
Other cash equivalents	3,836,463,397.66	5,116,433,235.00
Total	**48,787,804,494.63**	**51,787,474,584.71**
Including: Total amount deposited overseas	2,744,871,741.67	3,129,125,254.40

2) The restricted monetary fund details are as follows:

Items	Closing balance	Opening balance
Bank acceptance draft deposits	1,646,659,289.42	2,465,471,565.03
Letter of credit guarantee deposits	400,593,180.33	694,138,120.85
Performance bond	24,065,676.42	48,292,256.12
Term deposit or notice deposit for guarantee	19,552,755.63	50,827,632.92
Deposits in central bank	1,694,670,374.35	1,681,064,673.93
Mine deposit	293,087,352.19	315,773,110.81

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Closing balance	Opening balance
Land reclamation deposit	250,676,441.64	177,075,387.88
Environmental governance recovery deposit	189,864,616.51	62,875,616.78
Guarantee deposit	89,351,050.58	173,151,630.95
Land bank special fund	50,000,000.00	50,000,000.00
Others	544,017,213.49	725,778,569.04
Total	**5,202,537,950.56**	**6,444,448,564.31**

8.2 Loans to banks and other financial institutions

Items	Closing balance	Opening balance
Lending to other banks		
Lending to Non-bank financial institution		100,000,000.00
Less: loss provision		
Book value of the lending funds		100,000,000.00

8.3 Financial assets held for trading

Items	Fair value at year end	Fair value at year beginning
Financial assets classified as at fair value through profit or loss	177,069,820.52	3,645,125,826.06
Including: Debt instrument investments		
Equity instrument investments	158,649,747.73	141,534,733.78
Others[Note]	18,420,072.79	3,503,591,092.28
Financial assets designated as at fair value through profit or loss		3,109,600.00
Including: Debt instrument investments		
Others		3,109,600.00
Total	**177,069,820.52**	**3,645,125,826.06**

Note: The beginning balance of the year was mainly made up of a structured financial product purchased by the company's subsidiary Aluminum Corporation of China Limited.

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

8.4 Financial assets at fair value through profit and loss

Items	Fair value at year end	Fair value at year beginning
Financial assets held for trading	89,061,782.39	455,829,045.95
Including: Debt instrument investments		203,387,800.00
Equity instrument investments	89,061,782.39	1,896,111.50
Others		250,545,134.45
Financial assets designated as at fair value through profit or loss	330,932,315.23	65,471,296.47
Including: Debt instrument investments		13,750.00
Compound instrument investments	94,981,000.00	
Others	235,951,315.23	65,457,546.47
Total	**419,994,097.62**	**521,300,342.42**

8.5 Derivative financial assets

Items	Closing balance	Opening balance
Commodity Futures Contract	20,997,596.76	9,396,579.34
Total	**20,997,596.76**	**9,396,579.34**

8.6 Notes receivable

1. Classification of notes receivable

Category	Closing balance			Opening balance		
	Gross carrying amount	Bad debt provision	Carrying amount	Gross carrying amount	Bad debt provision	Carrying amount
Bank acceptance draft	1,801,948,751.24		1,801,948,751.24	2,252,286,019.68		2,252,286,019.68
Commercial acceptance draft	37,266,484.00		37,266,484.00			
Total	**1,839,215,235.24**		**1,839,215,235.24**	**2,252,286,019.68**		**2,252,286,019.68**

2. Notes receivable pledged at year end

Classification	Pledged amount at year end
Bank acceptance draft	91,870,715.10

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Classification	Pledged amount at year end
Commercial acceptance draft	
Total	**91,870,715.10**

8.7 Accounts receivable

Category	Closing balance			
	Gross carrying amount		Bad debt provision	
	Amount	Proportion (%)	Amount	Proportion (%)
Trade receivables that are individually significant and individually assessed for impairment	1,296,890,425.69	5.35	1,011,109,955.79	77.96
Trade receivables that are collectively assessed for impairment as in a group of receivables of shared credit risk characteristics	17,406,980,415.62	71.85	2,223,759,425.14	12.78
Trade receivables that are individually not significant but are individually assessed for impairment	219,362,653.36	0.91	110,832,084.63	50.52
Individual accounts receivable with provision for bad debts (applicable to the new standard)	5,303,275,840.38	21.89	1,272,598,649.40	24.00
Total	**24,226,509,335.05**	**100.00**	**4,618,300,114.96**	**19.06**

(Continued)

Category	Opening balance			
	Gross carrying amount		Bad debt provision	
	Amount	Proportion (%)	Amount	Proportion(%)
Trade receivables that are individually significant and individually assessed for impairment	2,866,310,744.88	12.27	1,798,113,923.12	62.73
Trade receivables that are collectively assessed for impairment as in a group of receivables of shared credit risk characteristics	15,916,028,301.41	68.15	1,730,134,694.76	10.87

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Category	Opening balance			
	Gross carrying amount		Bad debt provision	
	Amount	Proportion (%)	Amount	Proportion(%)
Trade receivables that are individually not significant but are individually assessed for impairment	186,676,070.50	0.80	74,970,788.13	40.16
Individual accounts receivable with provision for bad debts (applicable to the new standard)	4,385,625,748.45	18.78	649,545,551.51	14.81
Total	**23,354,640,865.24**	**100.00**	**4,252,764,957.52**	**18.21**

1. Trade receivables that are individually significant and individually assessed for impairment at year end

Debtor name	Gross carrying amount	Bad debt provision	Aging	Proportion (%)	Reason for recognition
Kunming Wanbao Jiyuan Biotechnology Co., Ltd	237,455,000.00	237,455,000.00	More than 5 years	100.00	Expected to be uncollectible
Yunnan Huijia Import and Export Co., Ltd	171,790,807.78	171,790,807.78	More than 5 years	100.00	Expected to be uncollectib100.00le
Hengbaochang Nonferrous Metals Supply Chain Management Co., Ltd	113,558,726.23	113,558,726.23	More than 5 years	100.00	Expected to be uncollectible
Shanghai Guoling Industrial Co., Ltd	111,422,466.39	111,422,466.39	More than 5 years	100.00	Expected to be uncollectible
Yunnan Taiyao Industrial Group Co., Ltd	72,718,015.33	72,718,015.33	More than 5 years	100.00	Expected to be uncollectible
Jiangmen Jiangci Electrical Enterprise Co., Ltd	46,311,375.02	46,311,375.02	More than 5 years	100.00	Expected to be uncollectible
Jianchuan Yiyun Nonferrous Metals Co., Ltd	33,505,086.92	33,505,086.92	1-4 years	100.00	Expected to be uncollectible
Panzhihua Deming Nonferrous Metallurgy Co., Ltd	31,795,422.56	31,728,710.87	More than 5 years	99.79	Repossession is at risk

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Debtor name	Gross carrying amount	Bad debt provision	Aging	Proportion (%)	Reason for recognition
Dayao Liuju Electrolytic Copper Co., Ltd	28,551,974.88	28,551,974.88	1-5 years More than 5 years	100.00	Expected to be uncollectible
Shengxing Pacific (Wuhan) packaging Co., Ltd	27,117,542.09		Within 1 year		Expected to be recovered
Yunnan Mingchen import and Export Co., Ltd	22,685,419.88	22,685,419.88	More than 5 years	100.00	Expected to be uncollectible
Shandong Zhihui Agricultural Technology Co., Ltd	22,377,616.00	22,377,616.00	More than 5 years	100.00	Expected to be uncollectible
Shanghai Baosteel Packaging Co., Ltd	19,993,709.45		Within 1 year		Expected to be recovered
CROWNFAMOSA,S.A. DEC.V.	19,017,539.89		Within 1 year		Expected to be recovered
Pangang Group Panzhihua Steel Vanadium Co., Ltd	18,997,830.14		Within 1 year		Expected to be recovered
Pacific Canning (Shenyang) Co., Ltd	17,620,630.03		Within 1 year		Expected to be recovered
Zhengzhou xinlilai aluminum foil Co., Ltd	17,287,405.58	17,287,405.58	2-3 years	100.00	Expected to be uncollectible
Pacific Canning (Beijing) Co., Ltd	17,262,406.56		Within 1 year		Expected to be recovered
Crown Beverage Cans Myanmar Limited	17,187,538.19		Within 1 year		Expected to be recovered
Shanghai Enyuan Industrial Co., Ltd	16,846,837.68	16,846,837.68	3-4 years	100.00	Expected to be uncollectible
CROWN ASIA PACIFIC HOLDINGS PTE.LTD .	16,461,409.74		Within 1 year		Expected to be recovered
Deqin Xinke Metallurgy Co., Ltd	16,198,719.82	16,198,719.82	More than 5 years	100.00	Expected to be uncollectible
Shanghai Chuanggao Industrial Co., Ltd	16,043,617.69		Within 1 year		Expected to be recovered
Shengxing Group Co., Ltd	15,544,847.29		Within 1 year		Expected to be recovered

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Debtor name	Gross carrying amount	Bad debt provision	Aging	Proportion (%)	Reason for recognition
Other merchants	169,138,480.55	68,671,793.41	1-5 years More than 5 years	40.60	Repossession is at risk
Total	**1,296,890,425.69**	**1,011,109,955.79**			

2. Trade receivables that are collectively assessed for impairment as in a group of receivables of ahared credit risk characteristics

(1) Using aging analysis method

Aging	Closing balance			Opening balance		
	Gross carrying amount		Bad debt provision	Gross carrying amount		Bad debt provision
	Amount	Proportion (%)		Amount	Proportion (%)	
Within 1 year (including 1 year)	10,244,967,249.74	63.07	48,431,677.48	10,853,832,375.82	68.19	77,944,691.47
1-2 years	2,631,795,692.60	16.20	319,421,028.00	2,402,139,718.95	15.09	240,776,837.61
2-3 years	1,336,646,632.55	8.23	284,945,259.55	717,997,920.20	4.52	144,039,314.30
Over 3 years	2,030,389,250.37	12.50	1,385,133,557.96	1,942,058,286.44	12.20	1,267,373,851.38
Total	**16,243,798,825.26**	**100.00**	**2,037,931,522.99**	**15,916,028,301.41**	**100.00**	**1,730,134,694.76**

(2) Using percentage of receivables method or other portfolio methods

Portfolio name	Closing balance		
	Amount	Proportion (%)	Bad debt provision
Aluminum products	770,905,422.81	16.20	124,849,000.82
Energy	339,517,075.74	15.38	52,213,408.94
Headquarters and others	39,851,154.48	22.00	8,765,492.39
Risk-free portfolio	12,907,937.33		
Total	**1,163,181,590.36**	**53.58**	**185,827,902.15**

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

3. Trade receivables that are individually not significant but are individually assessed for impairment at year end

Debtor name	Gross carrying amount	Bad debt provision	Aging	Proportion (%)	Reason for recognition
Guangxi Hualei New Material Co., Ltd	4,921,888.45		Within 1 year		Expected to be recovered
Zouping Qixing Industrial Aluminum Co., Ltd	4,839,180.87	4,839,180.87	More than 5 years	100.00	Expected to be uncollectible
Shanxi sendi environmental protection building materials Co., Ltd	4,727,192.20	4,727,192.20	over 3 years	100.00	Expected to be uncollectible
Yunnan Malipo tianyinfeng mining investment and Development Co., Ltd	4,417,817.00	4,417,817.00	More than 5 years	100.00	Expected to be uncollectible
CMCC Zoomlion Engineering Co., Ltd	4,258,960.93		Within 1 year		Expected to be recovered
Chongqing Xilv metal structure processing plant	4,173,186.15	4,173,186.15	over 3 years	100.00	Expected to be uncollectible
Mohan Guangming Mining Co., Ltd	3,963,845.36	3,963,845.36	More than 5 years	100.00	Expected to be uncollectible
Guangzhou Haolong Aluminum Co., Ltd	3,801,012.50	3,801,012.50	3-4 years	100.00	Expected to be uncollectible
Chongqing Qingxi Industrial Co., Ltd	3,486,568.41	3,486,568.41	over 3 years	100.00	Expected to be uncollectible
Kunshan Jiake Metal Technology Co., Ltd	3,454,032.88		Within 1 year		Expected to be recovered
Sichuan Kuanjie Railway Equipment Co., Ltd	3,448,007.83	3,448,007.83	More than 5 years	100.00	Expected to be uncollectible
Xiwuzhumuqin yinman Mining Co., Ltd	3,355,000.00	681,500.00	2-4 years	20.31	Repossession is at risk
Changzhou Yihe Alloy Casting Co., Ltd	3,255,000.00	3,255,000.00	2-3 years	100.00	Expected to be uncollectible
Chongqing Beichen Liangjiang Real Estate Co., Ltd	3,200,689.44		Within 1 year		Expected to be recovered
Liulin County Senze Coal and Aluminum Co., Ltd.	3,094,240.76		Within 1 year		Expected to be recovered
State Power Investment Group Shanxi Aluminum Co., Ltd	2,854,376.26		Within 1 year		Expected to be recovered

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Debtor name	Gross carrying amount	Bad debt provision	Aging	Proportion (%)	Reason for recognition
Yunnan Simao Shanshui Copper Co., Ltd.	2,640,642.74		Within 1 year		Expected to be recovered
Chongqing United can making Co., Ltd	2,619,033.60		Within 1 year		Expected to be recovered
China Fourth Metallurgical Construction Co., Ltd	2,600,035.21	130,003.52	1-2 years	5.00	Repossession is at risk
Doors and Windows Branch of Chalco Guizhou Industrial Service Co., Ltd	2,587,618.08		Within 1 year		Expected to be recovered
Shanxi Zhuotai Coal Transportation and Marketing Co., Ltd	2,544,950.00		Within 1 year		Expected to be recovered
Yunnan Guankang Technology Co., Ltd	2,385,996.00	2,385,996.00	More than 5 years	100.00	Expected to be uncollectible
Guizhou Junteng City Cultural Tourism Real Estate Development Co., Ltd	2,350,000.00		Within 1 year		Expected to be recovered
CROWNTCPBEVERAGECANSCOMPANYLIMITED	2,312,594.92		Within 1 year		Expected to be recovered
China Metallurgical Import and Export Yunnan Company	2,300,000.00	2,300,000.00	More than 5 years	100.00	Expected to be uncollectible
China Railway Construction Group Co., Ltd	2,281,694.81		Within 1 year		Expected to be recovered
Inner Mongolia Changsheng Photovoltaic Material Technology Co., Ltd	2,265,000.00	2,265,000.00	More than 5 years	100.00	Expected to be uncollectible
Shanxi Jinlu Huali Construction Technology Development Co., Ltd	2,081,406.89	2,081,406.89	over 3 years	100.00	Expected to be uncollectible
Shanxi Zhaofeng Aluminum Co., Ltd	2,064,347.64	2,064,347.64	More than 5 years	100.00	Expected to be uncollectible
Fushi International (Dalian) Bimetal Cable Co., Ltd	2,033,391.78	2,033,391.78	2-3 years	100.00	Expected to be uncollectible
Guizhou Shuanglong Baohui Real Estate Co., Ltd	2,020,806.28		Within 1 year		Expected to be recovered

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Debtor name	Gross carrying amount	Bad debt provision	Aging	Proportion (%)	Reason for recognition
Other merchants	126,825,148.87	64,579,640.98	1-5 years	50.92	Repossession is at risk
Total	**219,362,653.36**	**110,832,084.63**			

4. Companies that have implemented the new financial instrument standards disclose accounts receivable based on aging (applicable to the new standard)

Aging	Closing balance	Opening balance
Within 1 year (including 1 year)	12,912,739,255.53	10,110,354,759.55
1-2 years	3,793,170,130.76	3,643,253,232.65
2-3 years	1,592,370,708.70	1,105,780,450.85
3-4 years	847,435,641.39	968,559,111.98
4-5 years	958,326,176.39	981,506,135.59
More than 5 years	922,931,092.28	1,451,243,623.96
Total	**21,026,973,005.05**	**18,260,697,314.58**
Less: provision for bad debts	3,272,017,942.07	2,501,492,696.67
total	**17,754,955,062.98**	**15,759,204,617.91**

5. Disclosure of accounts receivable according to the method of bad debt provision (applicable to the new standard)

Items	Closing balance				
	Gross carrying amount		Bad debt provision		Book value
	Amount	Proportion (%)	Amount	Expected credit loss rate (%)	
Accounts receivable with single item provision for bad debts	5,303,275,840.38	25.22	1,272,598,649.40	24.00	4,030,677,190.98
Accounts receivable with provision for bad debts by combination	15,723,697,164.67	74.78	1,999,419,292.67	12.72	13,724,277,872.00
Energy	339,517,075.74	2.16	52,213,408.94	15.38	287,303,666.80
Aluminum products	770,905,422.81	4.90	124,849,000.82	16.20	646,056,421.99
Headquarters and others	39,851,154.48	0.25	8,765,492.39	22.00	31,085,662.09
Aging analysis portfolio	14,573,423,511.64	92.69	1,813,591,390.52	12.44	12,759,832,121.12

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Total	**21,026,973,005.05**	**100.00**	**3,272,017,942.07**	**15.56**	**17,754,955,062.98**

(Continued)

Items	Opening balance				
	Gross carrying amount		Bad debt provision		Book value
	Amount	Proportion (%)	Amount	Expected credit loss rate (%)	
Accounts receivable with single item provision for bad debts	4,385,625,748.45	24.02	649,545,551.51	14.81	3,736,080,196.94
Accounts receivable with provision for bad debts by combination	13,875,071,566.13	75.98	1,851,947,145.16	13.35	12,023,124,420.97
energy	376,462,614.32	2.71	21,564,850.92	5.73	354,897,763.40
Aluminum products	379,109,741.25	2.73	225,949,207.48	59.60	153,160,533.77
Headquarters and others	97,687,307.53	0.70	27,833,935.33	28.49	69,853,372.20
Aging analysis portfolio	13,021,811,903.03	93.85	1,576,599,151.43	12.11	11,445,212,751.60
Total	**18,260,697,314.58**	**100.00**	**2,501,492,696.67**	**13.70**	**15,759,204,617.91**

6. Accounts receivable written off in current year

Debtor name	Nature of trade receivables	Write-off amount	Reason for write-off	Write-off procedure	Arising from related party transaction?
Guangzhou jinchuangli Trade Co., Ltd	Payment for goods	188,865,608.72	Determined to be uncollectible	Management approval	No
Tianjin jinliande metal material Co., Ltd	Payment for goods	145,527,663.32	Determined to be uncollectible	Management approval	No
Tianjin Tianheng Nonferrous Metals Co., Ltd	Payment for goods	108,446,985.24	Determined to be uncollectible	Management approval	No
Shenzhen Kaixiang Industrial Development Co., Ltd	Payment for goods	104,469,823.38	Determined to be uncollectible	Management approval	No
Foshan Dashang Century Trade Co., Ltd	Payment for goods	28,440,854.40	Determined to be uncollectible	Management approval	No
Lancang Xishengda Nonferrous Metal Comprehensive Recycling Co., Ltd.	Payment for goods	22,479,928.54	Determined to be uncollectible	Management approval	No
Henan Yongfeng Molybdenum Industry Co.,	Intercourse	17,755,000.00	Determined to be	Management	No

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Ltd	funds		uncollectible	approval	
Eryuan Hongyu titanium Mining Co., Ltd	Trade funds	13,778,936.00	Determined to be uncollectible	Management approval	No
Ningbo Zhongchuan Electromechanical Equipment Co., Ltd	Payment for goods	13,526,361.54	Determined to be uncollectible	Management approval	No
Henan Liansheng Aluminum Co., Ltd	Trading	11,236,256.75	Determined to be uncollectible	Management approval	No
Fortune Highway Limited	Coal	11,164,829.83	Determined to be uncollectible	Management approval	No
Guangdong Nanhai Baiyin Yinhai industry and Trade Co., Ltd	Payment for goods	9,769,979.29	Determined to be uncollectible	Management approval	No
Hong Sheng Real Estate Limited	Engineering payment	9,495,360.71	Determined to be uncollectible	Management approval	No
Shenyang Daji Industrial Co., Ltd	Payment for goods	8,448,455.90	Determined to be uncollectible	Management approval	No
Shaanxi Shanjin Mining Co., Ltd	Intercourse funds	7,835,000.00	Determined to be uncollectible	Management approval	No
Zibo YingYuan industrial waste comprehensive utilization Co., Ltd	Rental fees	6,743,037.15	Determined to be uncollectible	Management approval	No
Shenyang grinding wheel factory	Payment for goods	5,712,320.45	Determined to be uncollectible	Management approval	No
Jiangsu Sanxin Electronics Co., Ltd	Payment for goods	4,893,745.25	Determined to be uncollectible	Management approval	No
Dongying Chongya industry and Trade Co., Ltd	Payment for goods	4,830,000.00	Determined to be uncollectible	Management approval	No
Harbin Shengyuan Aluminum Co., Ltd	Payment for goods	4,579,421.23	Determined to be uncollectible	Management approval	No
Future (Jiaozuo) Aluminum Co., Ltd	Engineering payment	4,010,470.70	Determined to be uncollectible	Management approval	No
Other small units	Other	135,489,751.03	Determined to be uncollectible	Management approval	No
Total		**867,499,789.43**			

7. Top five debtors according to closing balances

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Debtor name	Gross carrying amount	Proportion of total trade receivables (%)	Bad debt provision
State Grid Ningxia Electric Power Company	2,077,714,582.49	8.58	5,703,913.98
Chinalco Zibo International Trade Co., Ltd	727,682,021.08	3.00	352.54
Guizhou Hongcai Investment Group Co., Ltd	505,844,677.32	2.09	31,723,407.30
Xianyang Xinxing Investment and Construction Group Co., Ltd	489,542,376.48	2.02	22,948,806.93
Vietnam Coal Mining Group	452,015,246.61	1.87	126,841,000.04
Total	**4,252,798,903.98**	**17.56**	**187,217,480.79**

8.8 Receivables financing

Category	Closing balance	Opening balance
Notes receivable	5,401,381,367.75	2,671,341,115.53
Trade receivables		
Total	**5,401,381,367.75**	**2,671,341,115.53**

8.9 Advances to suppliers

1. Aging analysis

Aging	Closing balance			Opening balance		
	Gross carrying amount		Bad debt provision	Gross carrying amount		Bad debt provision
	Amount	Proportion (%)		Amount	Proportion (%)	
Within 1 year (including 1 year)	4,016,365,440.81	92.18		4,370,475,401.63	84.35	25,169,633.68
1-2 years (including 2 years)	202,658,785.65	4.65	25,865,848.59	556,316,155.44	10.74	4,719,046.67
2-3 years (including 3 years)	53,474,489.81	1.23	2,173,402.08	81,809,647.54	1.58	1,396,229.32
Over 3 years	84,820,680.13	1.94	42,505,642.76	172,917,476.10	3.33	44,678,187.94
Total	**4,357,319,396.40**	**100.00**	**70,544,893.43**	**5,181,518,680.71**	**100.00**	**75,963,097.61**

2. Significant advances to suppliers aged over one year

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Creditor	Debtor	Closing balance	Aging	Reason for outstanding
Aluminum Corporation of China Limited	Shandong Sante Energy Co., Ltd	30,258,860.51	1-2 years	Not yet settled
China Copper Co., Ltd	Jiangsu Maojin Supply Chain Management Co., Ltd	25,098,818.93	1-2 years	Not yet settled
China Aluminum International Engineering Corporation Limited.	Huang Chunqing	22,411,300.00	2-3 years	The goods have not been delivered
Aluminum Corporation of China Limited	Shanxi Jiexiu xinyugou Coal Industry Co., Ltd	19,988,174.44	over 3 years	Not yet settled
Aluminum Corporation of China Limited	Linyi Jiuding Trading Co., Ltd	12,984,555.39	1-2 years	Not yet settled
China Aluminum International Engineering Corporation Limited.	Shaanxi Haili Electric Engineering Co., Ltd	7,947,879.20	1-2 years	Not yet settled
China Copper Co., Ltd	DOLPHIN TELECOM DELPERU S.A.C.	5,896,985.97	1-2 years	Not yet settled
Total		**124,586,574.44**		

3. Top five advances to suppliers classified by debtors at year end

Debtor name	Gross carrying amount	Proportion of total advances to suppliers (%)	Bad debt provision
MINERA ESCONDIDA LIMITADA	444,468,360.64	10.20	
Gerald Metals Sarl	245,578,715.66	5.64	
IXM S.A.	204,022,771.50	4.68	
Trafigura Pte Ltd	182,897,701.37	4.20	
Vale International SA	165,116,193.63	3.79	
Total	***1,242,083,742.80***	***28.51***	

8.10 Other receivables

Items	Closing balance	Opening balance
Interests receivable	384,239,975.46	173,207,425.84
Dividends receivable	602,188,142.35	344,361,420.69
Other receivables	8,440,215,149.83	12,345,666,628.15

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Closing balance	Opening balance
Total	**9,426,643,267.64**	**12,863,235,474.68**

1. Interests receivable

Items	Closing balance	Opening balance
Time deposits	124,068,588.98	36,063,607.21
Entrusted loans	167,222,572.25	88,942,869.76
Bond investments	25,999,103.49	26,961,207.35
Others	66,949,710.74	21,239,741.52
Total	**384,239,975.46**	**173,207,425.84**

2. Dividends receivable

Items	Closing balance	Opening balance	Reason for being uncollectible	Any impairment loss incurred and its basis
Dividends receivable aged within one year	388,482,437.67	30,229,865.25		
Including: Huadian Ningxia Lingwu Power Generation Co., Ltd	366,879,840.60		Announced but not issued	No
Huozhou Coal Power Group Hejin xuehugou Coal Industry Co., Ltd	20,172,535.13		Announced but not issued	No
Bank of Communications Co., Ltd Zibo Branch	991,488.96		Announced but not issued	No
Shandong Shan Aluminum Electronic Technology Co., Ltd.	364,466.75		Announced but not issued	No
Dongxing Securities	74,106.23	74,062.89	Announced but not issued	No
Yunnan Industrial Investment Holding Group Co., Ltd		5,831,873.90		
Zhuzhou Overpass Crane Co., Ltd		1,616,007.99		
Ningxia Jingneng Ningdong Power Generation Co., Ltd		22,080,590.47		
Zhengzhou Great Wall Aluminum Carbon Co., Ltd		627,330.00		
Dividends receivable aged over one year	213,705,704.68	314,131,555.44		

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Closing balance	Opening balance	Reason for being uncollectible	Any impairment loss incurred and its basis
Including: Yunnan Energy Investment Group Co., Ltd	111,300,000.00	111,300,000.00	Funds are tight	No
Yunnan Simaoshan Copper Co., Ltd	65,837,387.58	160,574,229.69	Funds are tight	No
Baotou Sendu Carbon Co., Ltd	17,089,123.63	17,089,123.63	Funds are tight	No
Guizhou Guilu Logistics Co., Ltd	8,997,319.57	8,997,319.57	Funds are tight	No
Yunnan Industrial Investment Holding Group Co., Ltd	5,831,873.90		Funds are tight	No
Taiyuan Zhongse No.12 metallurgy Real Estate Development Co., Ltd	4,650,000.00	4,650,000.00	Funds are tight	No
Shaanxi AVIC construction and installation Co., Ltd		199,941.87		
Ningxia Tianjing Shenzhou Wind Power Co., Ltd		8,398,256.95		
Beijing Geeya Semiconductor Materials Co., Ltd		2,922,683.73		
Total	**602,188,142.35**	**344,361,420.69**		

3. Other receivables

Category	Closing balance			
	Gross carrying amount		Bad debt provision	
	Amount	Proportion (%)	Amount	Proportion (%)
Other receivables that are individually significant and individually assessed for impairment	7,070,122,122.32	44.24	3,951,758,097.41	55.89
Other receivables that are collectively assessed for impairment as in a group of receivables of shared credit risk characteristics	4,478,734,122.85	28.02	743,314,858.99	16.60
Other receivables that are individually not significant but are individually assessed for impairment	238,106,396.77	1.49	103,265,431.83	43.37
Other accounts receivable with single provision for bad debts (applicable to the new standard)	4,195,719,999.36	26.25	2,744,129,103.24	65.40
Total	**15,982,682,641.30**	**100.00**	**7,542,467,491.47**	**47.19**

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

(Continued)

Category	Opening balance			
	Gross carrying amount		Bad debt provision	
	Amount	Proportion (%)	Amount	Proportion (%)
Other receivables that are individually significant and individually assessed for impairment	7,306,213,146.01	38.61	3,627,839,827.78	49.65
Other receivables that are collectively assessed for impairment as in a group of receivables of shared credit risk characteristics	2,970,778,522.80	15.70	689,727,884.38	23.22
Other receivables that are individually not significant but are individually assessed for impairment	427,552,312.72	2.26	183,388,024.93	42.89
Other accounts receivable with single provision for bad debts (applicable to the new standard)	8,220,431,695.82	43.44	2,078,353,312.11	25.28
Total	**18,924,975,677.35**	**100.00**	**6,579,309,049.20**	**34.77**

(1) Other receivables that are individually significant and individually assessed for impairment at year end

Debtor name	Gross carrying amount	Bad debt provision	Aging	Proportion (%)	Reason for recognition
Shanghai Futures Exchange	772,600,986.05		Within 1 year		Expected to be recovered
Shangri-La County Hongxin Mining Co., Ltd.	699,892,226.21	699,892,226.21	3-4 years	100.00	Expected to be uncollectible
Land development center of Fuzhou Economic Development Zone	684,000,000.00		2-3 years over 3 years		Expected to be recovered
Guiyang Baiyun Urban Construction Investment Group Co., Ltd	531,051,547.00		Within 1 year		Expected to be recovered
Midu County Jiudingshan Mining Co., Ltd.	432,694,793.19	432,694,793.19	3-4 years	100.00	Expected to be uncollectible
Shanxi Jiexiu Xinyugou Coal Industry Co., Ltd	403,112,122.87	403,112,122.87	over 3 years	100.00	Expected to be uncollectible

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Debtor name	Gross carrying amount	Bad debt provision	Aging	Proportion (%)	Reason for recognition
Yunnan Chuxiong Siyuan Investment Co., Ltd	319,248,356.41	319,248,356.41	2-4 years	100.00	Expected to be uncollectible
Yunnan Mingchen Import and Export Co., Ltd	303,035,945.76	303,035,945.76	1-2 years More than 5 years	100.00	Expected to be uncollectible
Yunnan Yuntong Rare Precious New Material Co., Ltd	159,714,750.35	159,714,750.35	More than 5 years	100.00	Expected to be uncollectible
Shanxi carbon plant	204,514,539.08	143,550,511.05	More than 5 years	70.19	Repossession is at risk
Ministry of Finance of the People's Republic of China	113,938,312.41		Within 1 year		Expected to be recovered
Shanxi Jinlu Xingye Metallurgical Materials Co., Ltd	112,691,624.74	112,691,624.74	1-2 years	100.00	Expected to be uncollectible
Yunnan Longbao Investment Co., Ltd	89,744,770.00	89,744,770.00	More than 5 years	100.00	Expected to be uncollectible
Chongqing shangjiangchen Real Estate Co., Ltd	81,815,408.39		2-3 years		Expected to be recovered
Yunnan LanJin Trading Co., Ltd	70,729,599.80	12,525,908.94	More than 5 years	17.71	Repossession is at risk
China Foreign Trade Financial Leasing Co., Ltd	69,000,000.00		1-2 years		Expected to be recovered
Jinlu Industrial Corporation	67,026,118.54	67,026,118.54	3-4 years	100.00	Expected to be uncollectible
China Financial Futures Exchange	63,368,440.83		Within 1 year		Expected to be recovered
Dalian Commodity Exchange	61,460,074.13		Within 1 year		Expected to be recovered
Shanghai United Property Exchange Co., Ltd	57,210,000.00		2-3 years		Expected to be recovered
Zhengzhou Aluminum City	52,509,268.10	52,131,259.30	Within 1 year	99.28	Repossession is at risk

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Debtor name	Gross carrying amount	Bad debt provision	Aging	Proportion (%)	Reason for recognition
Industrial Development Corporation			1-5 years		
Yunnan Yunye Zhongxin plastic wood New Material Co., Ltd	50,230,426.67	50,230,426.67	1-2 years	100.00	Expected to be uncollectible
Yunnan Jinggu Mining and Metallurgy Co., Ltd.	48,790,368.05	48,790,368.05	2-5 years Over 5 years	100.00	Expected to be uncollectible
Urumqi Honghe Kaiyuan Energy Investment Co., Ltd.	48,685,768.61	48,685,768.61	4-5 years	100.00	Expected to be uncollectible
Shanghai International Energy Exchange Co., Ltd.	46,224,474.52		Within 1 year		Expected to be recovered
Yunnan Yunmai New Energy Development Co., Ltd.	41,958,452.26	41,866,072.85	Within 1 year	99.78	Repossession is at risk
China Yuntong (Thailand) Investment and Development Co., Ltd.	37,075,500.00	37,075,500.00	3-4 years	100.00	Expected to be uncollectible
Lufeng County People's Government	35,610,800.00		Within 1 year		Expected to be recovered
Zhanyi County Jebsen Logistics Co., Ltd.	34,000,000.00	18,629,365.64	1-2 years	54.79	Repossession is at risk
Zhengzhou Commodity Exchange	33,853,644.45		Within 1 year		Expected to be recovered
Huili County Pengchen Waste Residue Utilization Co., Ltd.	30,597,603.54	29,898,189.31	1-5 years Over 5 years	97.71	Repossession is at risk
Science City (Guangzhou) Investment Group Co., Ltd.	30,000,000.00		Within 1 year		Expected to be recovered

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Debtor name	Gross carrying amount	Bad debt provision	Aging	Proportion (%)	Reason for recognition
Manager of Dayao Guihua Copper Processing and Smelting Co., Ltd.	28,847,900.00	28,847,900.00	1-2 years	100.00	Expected to be uncollectible
Kunming Power Exchange Center Co., Ltd.	20,932,926.55		Over 3 years		Expected to be recovered
Mohan Guangming Selection Co., Ltd.	20,381,833.83	20,381,833.83	1-4 years	100.00	Expected to be uncollectible
Other merchants	1,213,573,539.98	831,984,285.09	1-5 years Over 5 years	68.56	Repossession is at risk
Total	**7,070,122,122.32**	**3,951,758,097.41**			

(2) Other Receivables that are Collectively Assessed for Impairment as in a Group of Receivables of Shared Credit Risk Characteristics

A. Using aging analysis method

Aging	Closing balance			Opening balance		
	Gross carrying amount		Bad debt provision	Gross carrying amount		Bad debt provision
	Amount	Proportion (%)		Amount	Proportion (%)	
Within 1 year (including 1 year)	939,453,591.70	42.83	15,679,512.76	1,477,373,848.42	49.73	12,332,028.77
1-2 years	386,124,518.26	17.60	37,974,018.57	307,650,439.53	10.36	30,831,101.57
2-3 years	253,051,936.82	11.54	50,753,404.53	281,750,284.12	9.48	56,336,676.16
Over 3 years	614,905,711.85	28.03	475,587,165.27	904,003,950.73	30.43	590,228,077.88
Total	**2,193,535,758.63**	**100.00**	**579,994,101.13**	**2,970,778,522.80**	**100.00**	**689,727,884.38**

B. Adopting percentage of receivables method or other portfolio methods

Portfolio name	Closing balance			Opening balance		
	Amount	Proportion (%)	Bad debt provision	Amount	Proportion (%)	Bad debt provision
Risk-free portfolio	2,285,198,364.22	7.15	163,320,757.86			
Total	**2,285,198,364.22**		**163,320,757.86**			

(3) Other receivables that are individually not significant but are individually assessed for impairment at year end

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Debtor name	Gross carrying amount	Bad debt provision	Aging	Proportion (%)	Reason for recognition
State Power Investment Group Shanxi Aluminum Co., Ltd	4,449,556.23		1-5 years More than 5 years		Expected to be recovered
Yunnan Metallurgical senior technical school	4,366,909.66	4,366,909.66	3-4 years	100.00	Expected to be uncollectible
Yunnan Huateng new energy Co., Ltd	4,323,449.36	4,323,449.36	More than 5 years	100.00	Expected to be uncollectible
Ganzi Baohui Mining Co., Ltd	4,081,965.42	408,196.54	More than 5 years	10.00	Repossession is at risk
Qinyuan County Coal and Coke Transportation and Sales Order Leading Office	3,872,915.66	3,602,915.66	More than 5 years	93.03	Repossession is at risk
Chongqing Southwest Aluminum Industry Corporation	3,783,199.06	3,770,554.06	over 3 years	99.67	Repossession is at risk
Longxi Northwest Aluminum Jiuding powder Co., Ltd	3,512,256.30	605,549.85	Within 1 year More than 5 years	17.24	Repossession is at risk
Dayao Guihua copper processing and Metallurgy Co., Ltd	3,382,700.00	3,382,700.00	1-2 years over 3 years	100.00	Expected to be uncollectible
Beijing boweisitong Technology Co., Ltd	3,281,775.00		4-5 years		Expected to be recovered
Funing County Yunlong Gold Mining Co., Ltd.	3,254,000.00	3,254,000.00	Within 1 year	100.00	Expected to be uncollectible
Henan Great Wall Logistics Co., Ltd	3,090,995.04		Within 1 year		Expected to be recovered
Jiaokou County Xiaoyi Aluminum Mine Hot Spring Township Joint Mine	3,021,037.95	3,021,037.95	Within 1 year		Expected to be recovered
Beijing geeya semiconductor materials Co., Ltd	2,922,683.73	2,922,683.73	More than 5 years	100.00	Expected to be uncollectible
Chongqing Xilang metal structure processing plant	2,919,085.25	2,919,085.25	1-2 years	100.00	Expected to be uncollectible
Shanxi Fusheng Aluminum Co., Ltd	2,852,029.74		More than 5 years		Expected to be recovered
Unicom system integration Co., Ltd	2,704,000.00		More than 5 years		Expected to be recovered

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Debtor name	Gross carrying amount	Bad debt provision	Aging	Proportion (%)	Reason for recognition
Fuzhou housing provident fund management center	2,664,504.92		1-2 years		Expected to be recovered
Zhuhai Xinguang Group Co., Ltd	2,590,000.00	2,590,000.00	Within 1 year	100.00	Expected to be uncollectible
Yongdeng Management Department of Lanzhou housing fund management center	2,572,373.80		More than 5 years		Expected to be recovered
Dalian Fuxing Aluminum Co., Ltd	2,496,344.36		Within 1 year		Expected to be recovered
Lanzhou Lianlu General Hospital	2,439,342.66		3-4 years		Expected to be recovered
Sanmenxia Yixiang Aluminum Co., Ltd	2,428,426.37		1-3 years 4-5 years		Expected to be recovered
CSR Tangshan Rolling Stock Co., Ltd	2,374,020.87		More than 5 years		Expected to be recovered
Hongyuan geology and Mining Co., Ltd. of new balhuyou banner	2,332,472.22	699,741.67	More than 5 years	30.00	Repossession is at risk
Chengdu Changke Xinzhu Rail Transit Equipment Co., Ltd	2,160,673.87		1-2 years		Expected to be recovered
Yongji Huasheng Employment Service Co., Ltd	2,120,810.17		1-3 years		Expected to be recovered
Zhengzhou Yihai Electrical Equipment Co., Ltd	2,036,830.00	2,036,830.00	4-5 years	100.00	Expected to be uncollectible
RioTintoPlc/SimferJerseyLimited	2,036,458.03		More than 5 years		Expected to be recovered
Dingxin Yijin Investment Management Co., Ltd	2,000,000.00	2,000,000.00	4-5 years More than 5 years	100.00	Expected to be uncollectible
Ping An International Finance Leasing (Tianjin) Co., Ltd	2,000,000.00		1-2 years		Expected to be recovered
Other merchants	150,035,581.10	63,361,778.10	1-5 years More than 5 years	42.23	Repossession is at risk
Total	**238,106,396.77**	**103,265,431.83**			

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

(4) Other accounts receivable with single provision for bad debts (applicable to the new standard)

Debtor name	Gross carrying amount	Bad debt provision	Aging	Proportion (%)	Reason for recognition
Shanxi Jiexiu xinyugou Coal Industry Co., Ltd	1,060,759,054.55	389,894,824.37	Over 3 years	36.76	Repossession is at risk
Huainan Zhongsheng Real Estate Co., Ltd	672,965,905.19	302,815,050.00	2-5 years	45.00	Repossession is at risk
Ningxia Ningdian Photovoltaic materials Co., Ltd	643,156,827.41	591,157,649.82	Over 3 years	91.92	Repossession is at risk
Ningxia Yinxing Polysilicon Co., Ltd	394,744,562.63	355,594,013.80	Over 3 years	90.08	Repossession is at risk
Ningxia Ningdian Silicon Material Co., Ltd	374,538,524.62	341,177,518.20	Over 3 years	91.09	Repossession is at risk
SHARYINTERNATIONALLIMITED	208,512,149.53	166,809,719.62	Within 1 year	80.00	Repossession is at risk
Xinjiang Jiarun Resources Holding Co., Ltd	184,873,251.81	92,436,625.91	More than 4 years	50.00	Repossession is at risk
Guizhou Chinalco Hengtaihe Mining Co., Ltd	168,954,178.93	85,085,068.96	Over 3 years	50.36	Repossession is at risk
Shandong Jiate Plastic Packaging Co., Ltd	29,783,850.23	11,913,540.09	Within 1 year	40.00	Repossession is at risk
Inner Mongolia Chengtong Energy Investment Co., Ltd	18,646,871.20	18,646,871.20	Within 1 year	100.00	Expected to be uncollectible
Henan Zhongfu Industrial Co., Ltd	14,000,000.00	14,000,000.00	1-2 years	100.00	Expected to be uncollectible
Zibo Kunyu Industry and Trade Co., Ltd	11,394,682.23	11,394,682.23	Within 1 year	100.00	Expected to be uncollectible
Shanxi Wutaishan Construction Engineering Company	5,464,204.04	5,464,204.04	More than 5 years	100.00	Expected to be uncollectible
Shanxi Yuhelong Trading Co., Ltd	5,379,298.22	5,379,298.22	1-2 years	100.00	Expected to be uncollectible
Zibo Linzi Luwei Chemical Co., Ltd	5,098,894.13	5,098,894.13	Within 1 year	100.00	Expected to be uncollectible
Shenyang Northeast Jincheng Real Estate Development Co., Ltd	4,110,220.94	4,110,220.94	1-2 years	100.00	Expected to be uncollectible

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Debtor name	Gross carrying amount	Bad debt provision	Aging	Proportion (%)	Reason for recognition
Zhoushan Senyue Petrochemical Co., Ltd	3,360,457.99	3,360,457.99	Within 1 year	100.00	Expected to be uncollectible
Guizhou Shenzhou Technology Development Co., Ltd	3,328,926.55	3,328,926.55	Within 1 year	100.00	Expected to be uncollectible
Gansu Lanke Petrochemical Hi-tech equipment Co., Ltd	3,268,265.50	3,268,265.50	More than 5 years	100.00	Expected to be uncollectible
Guiyang Zhongding Environmental Protection Technology Co., Ltd	3,060,720.00	3,060,720.00	More than 5 years	100.00	Expected to be uncollectible
North Heavy Industry Group Co., Ltd	2,837,000.00	2,837,000.00	More than 5 years	100.00	Expected to be uncollectible
Gao Decang	2,395,359.56	2,395,359.56	1-2 years	100.00	Expected to be uncollectible
Qinghai Huanghe hydropower Recycling Aluminum Co., Ltd	1,916,820.56	1,916,820.56	More than 5 years	100.00	Expected to be uncollectible
Tian Xiaoguang	1,769,460.55	1,769,460.55	1-2 years	100.00	Expected to be uncollectible
Chongqing Futai construction (Group) Co., Ltd	1,658,809.18	1,658,809.18	1-2 years	100.00	Expected to be uncollectible
Chengdu Zongtai Construction Service Co., Ltd	1,652,522.92	1,652,522.92	1-2 years	100.00	Expected to be uncollectible
Wang Haitao	1,600,000.00	1,600,000.00	1-2 years	100.00	Expected to be uncollectible
Anhui Yatai Cable Electric Appliance Co., Ltd	1,103,355.43	1,103,355.43	More than 5 years	100.00	Expected to be uncollectible
Other single items	365,385,825.46	315,199,223.47	1-5 years More than 5 years	86.26	Expected to be uncollectible
Total	**4,195,719,999.36**	**2,744,129,103.24**			

(5) Companies that have implemented the new financial instrument standards disclose other receivables based on their aging (the new standards apply)

Aging	Closing balance	Opening balance
Within 1 year (including 1 year)	2,634,771,270.16	1,929,144,747.35

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Aging	Closing balance	Opening balance
1-2 years	566,437,406.98	1,150,749,968.44
2-3 years	459,410,962.47	315,601,953.25
3-4 years	258,357,207.70	1,041,594,738.33
4-5 years	776,679,813.33	2,401,401,483.26
More than 5 years	3,500,673,297.71	2,855,871,419.20
Subtotal	**8,196,329,958.35**	**9,694,364,309.83**
Less: bad debt provision	3,217,933,446.71	2,475,988,461.99
Total	**4,978,396,511.64**	**7,218,375,847.84**

(6) Bad debt provision (applicable to the new standard)

Bad debt provision	Stage 1	Stage 2	Stage 3	Total
	Expected credit loss in the next 12 months	Expected credit loss for the entire duration (no credit impairment occurred)	Expected credit loss for the entire duration (credit impairment has occurred)	
Opening balance	1,704,667,309.91	77,805,794.05	693,515,358.03	2,475,988,461.99
The balance at the beginning of this year	1,702,907,280.43	56,116,923.46	716,964,258.10	2,475,988,461.99
-Transfer to the second stage	-1,760,029.48	1,760,029.48		
-Transfer to the third stage		-23,448,900.07	23,448,900.07	
- Return to the second stage				
-Return to the first stage				
Accrual in current period	658,461,376.70	26,079,306.12	319,233,205.46	1,003,773,888.28
Reversal in current period	17,011,487.98		54,711.10	17,066,199.08
Write off in Current period				
Recognition in current period	113,180,240.12		13,944,061.45	127,124,301.57

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Bad debt provision	Stage 1	Stage 2	Stage 3	Total
	Expected credit loss in the next 12 months	Expected credit loss for the entire duration (no credit impairment occurred)	Expected credit loss for the entire duration (credit impairment has occurred)	
Other changes			-117,638,402.91	-117,638,402.91
Closing balance	**2,231,176,929.03**	**82,196,229.58**	**904,560,288.10**	**3,217,933,446.71**

(7) Write-offs in current year

Debtor name	Nature of other receivables	Write-off amount	Reason for write-off	Write-off procedure	Arising from related party transaction?
Beijing Shanlu Ludong material Trade Co., Ltd	Payment for goods	19,337,204.91	Determined to be uncollectible	Management approval	No
China Power Investment Shanxi Aluminum Co., Ltd	Intercourse funds	18,994,042.58	Determined to be uncollectible	Management approval	No
Shenzhen Mingdu Industrial Co., Ltd	Loan	14,000,000.00	Determined to be uncollectible	Management approval	No
Nanhai Shuncheng hardware and mineral Co., Ltd	Litigation fees	13,567,126.30	Determined to be uncollectible	Management approval	No
Guizhou Tianyue Mining Co., Ltd	Other	9,784,338.38	Determined to be uncollectible	Management approval	No
Kunming Dashan native animal products Co., Ltd	Litigation fees	9,571,463.57	Determined to be uncollectible	Management approval	No
Baoding Dali Copper Co., Ltd	Payment for goods	8,487,811.03	Determined to be uncollectible	Management approval	No
Cement paper bag factory of Shandong Aluminum Company	Payment for goods	8,045,631.84	Determined to be uncollectible	Management approval	No
Yangquan Shanlu Refractories Co., Ltd	Other payments	7,844,783.21	Determined to be uncollectible	Management approval	No
Gansu Wulian industry and Trade Co., Ltd	Guarantee interest	7,029,108.04	Determined to be uncollectible	Management approval	No
Office of Yunnan World Heritage Management Committee	Special funds	7,000,000.00	Determined to be uncollectible	Management approval	No
Xi'an Art College	Bid bond	6,550,000.00	Determined to be uncollectible	Management approval	No

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Debtor name	Nature of other receivables	Write-off amount	Reason for write-off	Write-off procedure	Arising from related party transaction?
Labor service company of cement plant of Shandong Aluminum Company	Payment for goods	5,282,731.01	Determined to be uncollectible	Management approval	No
Kunming Yuntong platinum Co., Ltd	Intercourse funds	5,275,750.79	Determined to be uncollectible	Management approval	No
Zhengzhou material Trade Co., Ltd	Loan	4,800,000.00	Determined to be uncollectible	Management approval	No
Kunming Keyao Investment Co., Ltd	Loan	4,621,287.57	Determined to be uncollectible	Management approval	No
Hong Kong noble Resources Limited	Other	4,530,276.61	Determined to be uncollectible	Management approval	No
Yantai Shanlu economic and Trade Co., Ltd	Payment for goods	4,438,038.97	Determined to be uncollectible	Management approval	No
Wheel hub factory	Loan	4,329,489.52	Determined to be uncollectible	Management approval	No
Qingdao Shanlu new building materials Co., Ltd	Other	4,116,600.00	Determined to be uncollectible	Management approval	No
Other merchants	Intercourse funds	86,244,575.22	Determined to be uncollectible	Management approval	No
Total		**253,850,259.60**	—		—

(8) Top five debtors according to closing balances

Debtor name	Nature of receivables	Gross carrying amount	Aging	Proportion of total other receivables (%)	Allowance for doubtful accounts
Shanxi Jiexiu xinyugou Coal Industry Co., Ltd	Lend money	1,463,871,177.42	over 3 years	9.16	803,112,122.87
Shanghai Futures Exchange	Futures margin	772,600,986.05	Within 1 year	4.83	
Land development center of Fuzhou Economic Development Zone	Land collection and reserve	684,000,000.00	More than 2 years	4.28	
Shangri-La County Hongxin Mining Co., Ltd.	Intercourse funds	699,892,226.21	Within 5 years	4.38	699,892,226.21

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Debtor name	Nature of receivables	Gross carrying amount	Aging	Proportion of total other receivables (%)	Allowance for doubtful accounts
Huainan Zhongsheng Real Estate Co., Ltd	Lend money	672,979,605.19	Within 5 years	4.21	302,816,420.00
Total		**4,293,343,994.87**		**26.86**	**1,805,820,769.08**

8.11 Inventories

Items	Closing balance		
	Gross carrying amount	Write-down	Carrying amount
Raw materials	16,849,630,002.11	602,655,844.32	16,246,974,157.79
Semi-finished products and work-in-process	22,808,705,289.90	289,975,214.76	22,518,730,075.14
Merchandise (Finished goods)	11,910,883,889.67	549,315,802.18	11,361,568,087.49
Reusable materials (Packaging materials, Low-valued consumables etc.)	136,367,934.14	4,662,839.88	131,705,094.26
Consumable biological assets			
Others	1,667,986,798.93	21,950,299.64	1,646,036,499.29
Total	**53,373,573,914.75**	**1,468,560,000.78**	**51,905,013,913.97**

(Continued)

Items	Opening balance		
	Gross carrying amount	Write-down	Carrying amount
Raw materials	16,347,481,716.85	759,058,113.31	15,588,423,603.54
Semi-finished products and work-in-process	24,498,317,453.63	854,745,977.48	23,643,571,476.15
Merchandise (Finished goods)	11,955,400,757.16	484,632,478.08	11,470,768,279.08
Reusable materials (Packaging materials, Low-valued consumables etc.)	309,460,535.20	5,062,839.88	304,397,695.32
Consumable biological assets	338,972.73	246,693.52	92,279.21
Others	1,683,597,481.16	36,897,832.72	1,646,699,648.44
Total	**54,794,596,916.73**	**2,140,643,934.99**	**52,653,952,981.74**

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

8.12 Contract assets

1. Contract assets

Items	Closing balance			Opening balance		
	Gross carrying amount	Impairment loss	Carrying amount	Gross carrying amount	Impairment loss	Carrying amount
Contract assets with single item appraisal and provision for impairment	1,245,996,105.72	587,483,154.80	658,512,950.92	855,618,081.11	110,629,983.11	744,988,098.00
Contract assets with provision for impairment based on Combination	6,721,574,514.51	99,751,357.93	6,621,823,156.58	12,382,481,642.98	136,466,973.92	12,246,014,669.06
Combination 1: Undelivered contract assets used by customers	6,439,539,904.44	32,187,508.16	6,407,352,396.28	12,104,260,296.21	60,608,129.51	12,043,652,166.70
Combination 2: delivered contract assets used by customers	282,034,610.07	67,563,849.77	214,470,760.30	278,221,346.77	75,858,844.41	202,362,502.36
Total	**7,967,570,620.23**	**687,234,512.73**	**7,280,336,107.50**	**13,238,099,724.09**	**247,096,957.03**	**12,991,002,767.06**

2. Impairment loss for contract assets

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance
Contract assets with single item appraisal and provision for impairment	110,629,983.11	505,846,498.06	28,993,326.37	587,483,154.80
Contract assets with provision for impairment based on Combination	136,466,973.92	-36,715,615.99		99,751,357.93
Combination 1: Undelivered contract assets used by customers	60,608,129.51	-28,420,621.35		32,187,508.16
Combination 2: delivered contract assets used by customers	75,858,844.41	-8,294,994.64		67,563,849.77
Total	**247,096,957.03**	**469,130,882.07**	**28,993,326.37**	**687,234,512.73**

8.13 Non-current assets due within one year

Items	Closing balance	Opening balance
Long-term receivables due within one	3,431,473,721.45	63,613,182.97

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Closing balance	Opening balance
year		
Others	97,473,228.46	
Total	**3,528,946,949.91**	**63,613,182.97**

8.14 Other current assets

Items	Closing balance	Opening balance
Input tax to be deducted	3,831,530,132.04	5,694,626,328.00
Prepaid tax	351,637,402.87	384,299,320.50
Entrusted Loan	2,600,000,000.00	42,511,458.92
Repurchase business factoring	180,000,000.00	261,163,343.30
Derivative financial instruments	736,903,904.19	286,883,703.90
Financial product		658,000,000.00
Others		662,328.90
Total	**7,700,071,439.10**	**7,328,146,483.52**

8.15 Financial assets available for sale

Items	Closing balance		
	Gross carrying amount	Provision of impairment loss	Carrying amount
Available-for-sale debt instruments	3,180,998,539.77	48,417,459.77	3,132,581,080.00
Available-for-sale equity instruments	111,383,403,938.15	1,805,614,184.21	109,577,789,753.94
Measured at fair value	1,823,146,601.07	187,375,559.72	1,635,771,041.35
Measured at cost	109,560,257,337.08	1,618,238,624.49	107,942,018,712.59
Others	2,074,823,050.00	47,064,834.32	2,027,758,215.68
Total	**116,639,225,527.92**	**1,901,096,478.30**	**114,738,129,049.62**

(Continued)

Items	Opening balance		
	Gross carrying amount	Provision of impairment loss	Carrying amount
Available-for-sale debt instruments	1,222,688,763.06		1,222,688,763.06

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Opening balance		
	Gross carrying amount	Provision of impairment loss	Carrying amount
Available-for-sale equity instruments	118,503,330,963.80	1,745,996,258.08	116,757,334,705.72
Measured at fair value	2,382,273,622.05	291,094,722.16	2,091,178,899.89
Measured at cost	116,121,057,341.75	1,454,901,535.92	114,666,155,805.83
Other	2,889,798,316.25	47,064,834.32	2,842,733,481.93
Total	**122,615,818,043.11**	**1,793,061,092.40**	**120,822,756,950.71**

8.16 Held to maturity investments

Items	Closing balance			Opening balance		
	Gross carrying amount	Impairment loss	Carrying amount	Gross carrying amount	Impairment loss	Carrying amount
Negotiable certificate of deposit				266,182,375.29	2,600,000.00	263,582,375.29
Enterprise bonds				873,879,098.36	8,726,850.00	865,152,248.36
The purchase of Chinalco leasing asset No.1 to support the special ABS secondary program				70,000,000.00		70,000,000.00
The purchase of Chinalco factoring ABS subordinated asset backed securities				5,021,000.00		5,021,000.00
Total				**1,215,082,473.65**	**11,326,850.00**	**1,203,755,623.65**

8.17 Long-term receivables

Items	Closing balance			Opening balance		
	Gross carrying amount	Bad debt provision	Carrying amount	Gross carrying amount	Bad debt provision	Carrying amount
Finance lease payments	2,151,900,180.70	46,151,709.90	2,105,748,470.80	1,662,412,807.51	41,725,963.07	1,620,686,844.44
Including: Unearned finance income	535,111,562.67		535,111,562.67	435,897,730.35		435,897,730.35
Installment sale				232,314,238.07	46,640,458.07	185,673,780.00

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Closing balance			Opening balance		
	Gross carrying amount	Bad debt provision	Carrying amount	Gross carrying amount	Bad debt provision	Carrying amount
of merchandise						
Installment sale of services	727,421,368.17	47,975,409.16	679,445,959.01	1,086,741,644.10	70,343,048.02	1,016,398,596.08
Others	3,629,614,717.71	230,238,252.58	3,399,376,465.13	1,180,875,691.20		1,180,875,691.20
Total	**6,508,936,266.58**	**324,365,371.64**	**6,184,570,894.94**	**4,162,344,380.88**	**158,709,469.16**	**4,003,634,911.72**

8.18 Long-term equity investments

1. Classification of long-term equity investments

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance
Investments in subsidiaries				
Investments in joint ventures	4,157,516,422.10	339,627,525.87	205,297,501.56	4,291,846,446.41
Investments in associates	24,826,988,983.78	570,959,807.50	2,117,301,324.22	23,280,647,467.06
Subtotal	28,984,505,405.88	910,587,333.37	2,322,598,825.78	27,572,493,913.47
Less: Impairment loss for long-term equity investments	582,805,688.48	66,725,953.09	217,488,473.67	432,043,167.90
Total	**28,401,699,717.40**	**843,861,380.28**	**2,105,110,352.11**	**27,140,450,745.57**

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

2. Details of long-term equity investments

Investee	Cost of investments	Opening balance	Increase/ decrease in current year								Closing balance	Closing balance of Impairment loss
			Addtional investments	Decrease in investments	Investment gain or loss recognized under equity method	Adjustment in other comprehensive income	Other changes in equity	Cash dividends declared and profits to be distributed	Impairment loss	Others		
Total	**26,806,125,585.67**	**28,984,505,405.88**	**458,358,499.73**	**226,008,263.06**	**380,141,819.19**	**644,732.39**	**5,751,077.47**	**888,050,022.93**	**78,649,441.01**	**-1,142,849,335.20**	**27,572,493,913.47**	**432,043,167.90**
I. Joint ventures	4,068,659,969.19	4,157,516,422.10	18,777,200.00		251,778,901.08	644,732.39	2,735,487.81	205,297,501.56		65,691,204.59	4,291,846,446.41	225,556,679.91
Guangxi Huayin Aluminum Industry Co., Ltd.	805,855,670.22	1,515,043,786.87			59,382,030.69		1,736,400.71	99,000,000.00			1,477,162,218.27	
Guangxi Hualei New Material Co., Ltd.	992,176,000.00	1,071,006,429.51			75,405,376.00			75,405,400.00			1,071,006,405.51	
Yunnan Simao Shanshui Copper Co., Ltd.	393,817,788.00	482,973,745.03			59,457,729.23			21,052,631.58		52,478,963.31	573,857,805.99	
Guizhou Chinalco Hengtaihe Mining Co., Ltd.	401,800,000.00	216,952,867.61									216,952,867.61	216,952,867.60
Datong Coal Mine Group Huasheng Wanjie Coal Industry Co., Ltd.	142,488,247.20	150,234,839.13			63,617,419.31		-180,402.20				213,671,856.24	
China Merchants Properties Co., Ltd.	97,414,649.00	121,836,191.67			26,484,500.00						148,320,691.67	
Sinopharm (Chongqing) Healthcare Management Co., Ltd.	58,010,000.00	58,107,931.91			14,628.79						58,122,560.70	

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Investee	Cost of investments	Opening balance	Increase/ decrease in current year								Closing balance	Closing balance of Impairment loss
			Addtional investments	Decrease in investments	Investment gain or loss recognized under equity method	Adjustment in other comprehensive income	Other changes in equity	Cash dividends declared and profits to be distributed	Impairment loss	Others		
China Aluminum South Aluminum (Fujian) Aluminum Structure Technology Development Co., Ltd.	50,000,000.00	57,623,284.13			1,960,006.32		1,638,050.36	5,796,630.00			55,424,710.81	
Shaanxi Provincial Electric Power Dingbian Energy Co., Ltd.	44,100,000.00	53,642,267.36			2,982.32						53,645,249.68	
Guangxi Guoxing Rare Earth Mining Co., Ltd.	58,403,293.91	58,418,369.60			-5,699,136.47						52,719,233.13	
Zhongji Shanhe Technology Co., Ltd.	26,905,600.00	36,193,840.92	12,294,400.00		2,523,840.11		251,833.72				51,263,914.75	
Shaanxi Chengcheng Dongdong Coal Industry Co., Ltd.	200,209,800.00	45,519,113.77			-3,812,382.03						41,706,731.74	
Loudi Zhongyu New Material Co., Ltd.	40,000,000.00	38,908,768.18	2,000,000.00		514,763.63						41,423,531.81	
Jiangsu Guoyuan Rare Earth New Material Co., Ltd.	39,599,900.00	25,742,084.72			666,502.03					13,857,815.28	40,266,402.03	
Zhongheng Cooperation Investment Co., Ltd.	31,685,556.00	31,903,916.53			155,835.69						32,059,752.22	
Ningxia TianJingshenzhou Wind Power Co., Ltd.	22,779,556.80	25,075,535.65			19,167.94	644,732.39					25,739,435.98	

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Investee	Cost of investments	Opening balance	Increase/ decrease in current year								Closing balance	Closing balance of Impairment loss
			Addtional investments	Decrease in investments	Investment gain or loss recognized under equity method	Adjustment in other comprehensive income	Other changes in equity	Cash dividends declared and profits to be distributed	Impairment loss	Others		
Chinalco Zibo International Trade Co., Ltd.	18,473,979.00	20,102,411.66			3,981,112.49						24,083,524.15	
Zhongxi Toyo Permanent Magnet Motor Co., Ltd.	21,000,000.00	21,000,000.00			-827,405.89						20,172,594.11	
CNPC Chinalco (Beijing) Petrochemical Co., Ltd.	15,000,000.00	20,188,112.23			1,029,393.67			2,042,839.98			19,174,665.92	
Zhengzhou Qingyan Alloy Technology Co., Ltd.	2,499,567.00	8,411,082.56	2,332,800.00		5,271,918.35			2,000,000.00			14,015,800.91	
Shanxi Jiexiu Xinyugou Coal Industry Co., Ltd.	346,068,453.57	24,583,291.14			-12,537,527.34		-710,394.78				11,335,369.02	
Transportadora Callao S.A.	25,294,324.97	10,853,514.95			-1,056,813.07					-645,574.00	9,151,127.88	
Shanghai Fengtong Investment Management Enterprise (Limited Partnership)	40,000,000.00	8,939,897.38			-43,649.16						8,896,248.22	
Guangdong Maoming Xinxiang Property Co., Ltd.	9,797,583.52	8,573,812.31									8,573,812.31	8,573,812.31
Henan Chalco Lichuang Mining Co., Ltd.	4,900,000.00	5,078,425.74									5,078,425.74	

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Investee	Cost of investments	Opening balance	Increase/ decrease in current year								Closing balance	Closing balance of Impairment loss
			Addtional investments	Decrease in investments	Investment gain or loss recognized under equity method	Adjustment in other comprehensive income	Other changes in equity	Cash dividends declared and profits to be distributed	Impairment loss	Others		
Shandong Shanlu Ensa Environmental Technology Co., Ltd.	4,900,000.00	4,900,000.00			-404,006.52						4,495,993.48	
Xining Huayue Industrial Service Co., Ltd.	5,000,000.00	4,361,336.34			33,411.17						4,394,747.51	
China Aluminum Workwear Technology Co., Ltd.	5,000,000.00	4,133,138.56			-252,815.75						3,880,322.81	
Chongqing Shangjiangchen Real Estate Co., Ltd.	19,500,000.00	1,659,096.11			414,235.49						2,073,331.60	
National Innovation Materials (Beijing) Rare Earth New Material Technology Innovation Center Co., Ltd.	1,350,000.00		1,350,000.00								1,350,000.00	
Jiangxi Kaitou New Oxygen Home Furnishing Co., Ltd.	1,000,000.00	1,000,000.00			-659.09						999,340.91	
Fujian Kaitou Meichao Home Furnishing Co., Ltd.	800,000.00		800,000.00		-2,226.30						797,773.70	
Shenyang Lewanjia Housekeeping Service Co., Ltd.	30,000.00	30,000.00									30,000.00	30,000.00
Ningxia Datang International Dam Power Generation Co., Ltd.	142,800,000.00	24,519,330.53			-24,519,330.53							

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Investee	Cost of investments	Opening balance	Increase/ decrease in current year								Closing balance	Closing balance of Impairment loss
			Addtional investments	Decrease in investments	Investment gain or loss recognized under equity method	Adjustment in other comprehensive income	Other changes in equity	Cash dividends declared and profits to be distributed	Impairment loss	Others		
II.Associates	22,737,465,616.48	24,826,988,983.78	439,581,299.73	226,008,263.06	128,362,918.11		3,015,589.66	682,752,521.37	78,649,441.01	-1,208,540,539.79	23,280,647,467.06	206,486,487.99
Simfer Jersey Limited	13,517,883,489.44	13,489,227,507.29			-13,112,592.47					-871,934,513.44	12,604,180,401.38	
Simfer Jersey Finance 2 LTD	1,950,462,149.04	1,950,462,149.04	42,370,763.69							-126,178,086.62	1,866,654,826.11	
Chambishi Copper Smelting Co., Ltd.	275,046,905.98	1,811,118,651.64			198,690,947.07			220,409,600.00			1,789,399,998.71	
Huadian Ningxia Lingwu Power Generation Co., Ltd.	717,583,603.07	1,257,170,238.26			56,776,968.58			390,857,233.04			923,089,973.80	
Qinghai Energy Development (Group) Co., Ltd.	755,000,000.00	722,162,490.18			-110,414,943.93		2,286,490.54				614,034,036.79	
ABC-CA Fund Management Co., Ltd.	515,650,605.00	432,289,966.39			53,518,709.79						485,808,676.18	
Ningxia Jingneng Ningdong Power Generation Co., Ltd.	315,000,000.00	348,702,768.22			45,081,683.55						393,784,451.77	
Lualaba Copper Smelting Co., Ltd.	329,376,952.00	346,554,278.29			38,621,819.91					-17,177,326.29	367,998,771.91	
Guizhou Zhongtian Guilv Real Estate Development Co., Ltd.	300,000,000.00	299,123,333.06			-6,619,302.24						292,504,030.82	
Maguanyun Copper and Zinc Industry Co., Ltd.	134,450,250.00	271,838,286.53			-3,488,474.80						268,349,811.73	18,943,671.98

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Investee	Cost of investments	Opening balance	Increase/ decrease in current year								Closing balance	Closing balance of Impairment loss
			Addtional investments	Decrease in investments	Investment gain or loss recognized under equity method	Adjustment in other comprehensive income	Other changes in equity	Cash dividends declared and profits to be distributed	Impairment loss	Others		
Weihai Wanfeng Aowei Steam Turbine Co., Ltd.	42,331,472.75	276,220,507.92			4,671,030.30			17,500,000.00			263,391,538.22	
Baotou Sendu Carbon Co., Ltd.	245,000,000.00	233,885,538.24			17,904,383.35						251,789,921.59	
Huozhou Coal and Electricity Group Xingshengyuan Coal Industry Co., Ltd.	289,669,560.00	270,972,758.21			-41,735,533.21						229,237,225.00	
China Construction Aluminum New Materials Co., Ltd.	200,000,000.00	218,844,465.76			-6,274,275.10		157,701.94				212,727,892.60	
Huozhou Coal and Electricity Group Hejin Xuehugou Coal Industry Co., Ltd.	68,600,000.00	290,353,161.90			-49,778,034.04		-2,794,468.32	45,172,535.13			192,608,124.41	
Yunnan Southeast Asia Economic and Technological Investment Industrial Co., Ltd.	35,335,670.30	177,753,672.31			11,208,904.20						188,962,576.51	
Zhuzhou Tianqiao Crane Co., Ltd.	173,530,660.50	173,530,660.50			2,090,000.00			1,616,007.99			174,004,652.51	
Yunnan Suotongyun Aluminum Carbon Material Co., Ltd.	167,960,000.00		167,960,000.00		-260,748.05						167,699,251.95	
Research Rare Earth New Materials Co., Ltd	24,354,687.82	148,857,529.25			1,274,722.63			4,187,895.21			145,944,356.67	

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Investee	Cost of investments	Opening balance	Increase/ decrease in current year								Closing balance	Closing balance of Impairment loss
			Addtional investments	Decrease in investments	Investment gain or loss recognized under equity method	Adjustment in other comprehensive income	Other changes in equity	Cash dividends declared and profits to be distributed	Impairment loss	Others		
Cambodia Hydropower Development Co., Ltd.	60,000,000.00	114,973,776.14			15,534,161.40						130,507,937.54	
Taikang Howen Construction Co., Ltd.	108,640,000.00	108,690,561.99			-50,561.99						108,640,000.00	
Yunnan Tianye Chemical Co., Ltd.	107,425,600.00	111,188,046.06			-7,301,609.36						103,886,436.70	
Loudi Haochuang Development and Construction Co., Ltd.	100,000,000.00	100,000,000.00									100,000,000.00	
Guangdong Qiaolv Chuangxiang Equity Investment Partnership (Limited Partnership)	99,000,000.00		99,000,000.00		-615,894.09						98,384,105.91	
Taiyuan China National No. 12 Metallurgical Industry Development Co., Ltd.	74,532,365.65	96,258,077.84			-1,527,360.81						94,730,717.03	
Guizhou Chinalco Aluminum Co., Ltd.	228,754,453.38	129,357,152.69	91,457,480.00	129,357,152.69	170,991.78						91,628,471.78	
Peking University Medical Zibo Hospital Co., Ltd.	94,474,515.20	91,017,156.25			248,474.92						91,265,631.17	
Qujing Zhanyi District Jebsen Logistics Co., Ltd.	39,445,000.00	45,777,956.18			5,182,583.00						50,960,539.18	
Baise Xinlu Electric Power Co., Ltd.	48,000,000.00	45,154,334.73			5,381,802.73						50,536,137.46	

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Investee	Cost of investments	Opening balance	Increase/ decrease in current year								Closing balance	Closing balance of Impairment loss
			Addtional investments	Decrease in investments	Investment gain or loss recognized under equity method	Adjustment in other comprehensive income	Other changes in equity	Cash dividends declared and profits to be distributed	Impairment loss	Others		
Guizhou Yuneng Mining Co., Ltd.	473,080,400.00	113,413,850.81			-70,000,000.00						43,413,850.81	
Hong Kong Xinsheng Trading Co., Ltd.	3,600.00	12,803,600.00			30,343,229.11						43,146,829.11	
Guangxi Huazhong Building Material Co., Ltd.	42,875,000.00	38,270,801.10			-451,432.15						37,819,368.95	
Yunnan Gold Co., Ltd.	36,000,000.00	27,383,272.57			10,155,677.52		98,655.32				37,637,605.41	
Jiexiu Yuye Coal Preparation Co., Ltd.	37,430,000.00	35,971,526.65									35,971,526.65	35,971,526.65
Beijing Zhongan Kechuang Technology Development Co., Ltd.	30,000,000.00	34,158,960.64			534,860.51						34,693,821.15	
Guangxi Huazheng Aluminum Industry Co., Ltd.	35,000,000.00	34,243,165.14									34,243,165.14	
Yunnan Ningyong Expressway Co., Ltd.	30,000,000.00	30,000,000.00									30,000,000.00	
Yunnan Linyun Expressway Co., Ltd.	30,000,000.00	30,000,000.00									30,000,000.00	
Yunnan Linshuang Expressway Co., Ltd.	30,000,000.00	30,000,000.00									30,000,000.00	

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Investee	Cost of investments	Opening balance	Increase/ decrease in current year								Closing balance	Closing balance of Impairment loss
			Addtional investments	Decrease in investments	Investment gain or loss recognized under equity method	Adjustment in other comprehensive income	Other changes in equity	Cash dividends declared and profits to be distributed	Impairment loss	Others		
Sichuan Chuannan Rail Transit Operation Co., Ltd.	28,000,000.00	27,998,193.97			1,294,150.71						29,292,344.68	
China Rare (Sichuan) Rare Earth Co., Ltd.	26,800,000.00	28,340,632.04			291,275.60						28,631,907.64	
Yunnan Yunye CITIC Plastic Wood New Material Co., Ltd.	28,998,402.27	41,600,685.66		13,012,480.00							28,588,205.66	28,588,205.66
Luoyang Huazhong Aluminum Industry Co., Ltd.	28,200,000.00	27,844,436.04							27,844,436.04		27,844,436.04	27,844,436.04
Shangqiu Xinglin Electronic Industry Co., Ltd.	21,255,500.00	20,949,763.94			3,819,851.95						24,769,615.89	
Huili County Mineral Products Development Co., Ltd.	4,000,000.00	23,843,980.39			908,491.50			1,121,250.00			23,631,221.89	
Zhejiang Lvcheng Intelligent Equipment Co., Ltd.	22,500,000.00		22,500,000.00		10,211.16						22,510,211.16	
Kunming Jinsharen Chemical Co., Ltd.	5,952,000.00	20,549,534.76			1,189,087.45		110,189.20				21,848,811.41	
Ao Jin Mining Co., Ltd.	11,592,147.89	20,832,645.38									20,832,645.38	20,832,645.38

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Investee	Cost of investments	Opening balance	Increase/ decrease in current year								Closing balance	Closing balance of Impairment loss
			Addtional investments	Decrease in investments	Investment gain or loss recognized under equity method	Adjustment in other comprehensive income	Other changes in equity	Cash dividends declared and profits to be distributed	Impairment loss	Others		
Guizhou Tongye Construction Development Co., Ltd.	13,500,000.00	21,833,455.78			-1,291,058.55						20,542,397.23	
China Aluminum (Beijing) Fund Management Co., Ltd.	14,000,000.00	18,469,908.34			812,996.95						19,282,905.29	
Luoyang Longji Copper Technology Co., Ltd.	17,860,000.00	17,860,000.00							17,860,000.00		17,860,000.00	17,860,000.00
China Aluminum Shituo Intelligent Technology Co., Ltd.	51,000,000.00	22,872,580.45			504,272.60						23,376,853.05	
Sinopharm Zhongzhou (Xinxiang) Hospital Management Co., Ltd.	15,612,251.35	15,903,551.73			354,410.13						16,257,961.86	
Tongchuan Zhaojin Cadre College Construction and Operation Management Co., Ltd.	13,800,000.00	13,800,917.11			16,060.47						13,816,977.58	
China National Color International Alumina Development Co., Ltd.	10,000,000.00	13,272,437.28			110,082.92						13,382,520.20	
Jiangsu Zhongse Ruibili Industrial Co., Ltd.	25,015,000.00	13,697,022.67			-1,695,207.56				12,001,815.11		12,001,815.11	12,001,815.11
Chinalco Guizhou Industrial Service Co., Ltd.	91,210,903.75	32,982,229.18			-21,006,711.55						11,975,517.63	

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Investee	Cost of investments	Opening balance	Increase/ decrease in current year								Closing balance	Closing balance of Impairment loss
			Addtional investments	Decrease in investments	Investment gain or loss recognized under equity method	Adjustment in other comprehensive income	Other changes in equity	Cash dividends declared and profits to be distributed	Impairment loss	Others		
Shaanxi Zhonghang Construction and Installation Co., Ltd.	7,137,337.06	11,560,027.15			7,777.31		-20,984.39				11,546,820.07	
China Construction Aluminum New Materials Henan Co., Ltd.	9,500,000.00	11,153,822.02			203,559.35						11,357,381.37	
Shandong Shan Aluminum Electronic Technology Co., Ltd.	7,473,056.04		7,473,056.04		21,504.10		2,964,493.95				10,459,054.09	
Shanxi Ganlin Jinlu Medical Investment Co., Ltd.	10,885,000.00	9,230,093.70			-393,335.37				8,836,758.33		8,836,758.33	8,836,758.33
Huili County Hongshan Mining Co., Ltd.	7,000,000.00	8,443,082.20									8,443,082.20	-
Xi'an City Planning Urban and Rural Construction Investment Development Co., Ltd.	9,000,000.00	8,372,324.38									8,372,324.38	8,372,324.38
Henan Huashun Tiancheng Technology Co., Ltd.	1,559,000.00	5,716,426.49			2,126,824.80						7,843,251.29	
Qingdao Shanlv Cement Co., Ltd.	7,604,797.44								7,604,797.44	7,604,797.44	7,604,797.44	7,604,797.44
Jiangsu Bion Electronic Materials Co., Ltd.	7,000,000.00	7,015,201.31			-188,075.34						6,827,125.97	

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Investee	Cost of investments	Opening balance	Increase/ decrease in current year								Closing balance	Closing balance of Impairment loss
			Addtional investments	Decrease in investments	Investment gain or loss recognized under equity method	Adjustment in other comprehensive income	Other changes in equity	Cash dividends declared and profits to be distributed	Impairment loss	Others		
Zhengzhou Great Wall Aluminum Carbon Co., Ltd.	3,136,650.00	10,805,862.85			-4,472,799.01		108,031.48				6,441,095.32	
Tianjin Junxin Lightweight Technology Co., Ltd.	6,007,687.49	6,007,687.49			400,000.00						6,407,687.49	
Kunming Hualian Indium Industry Co., Ltd.	1,313,500.00	7,912,914.50			-1,749,222.33		105,479.94				6,269,172.11	
Fluoride (Fushun) Technology Development Co., Ltd.	36,750,000.00	37,035,694.99		14,850,000.00	-16,075,573.16						6,110,121.83	
Qinghai Aluminum Metal Solvent Co., Ltd.	5,196,284.46	5,196,284.46									5,196,284.46	
Yunnan Yunchuang Tendering Co., Ltd.	4,674,336.00	6,805,952.24			37,215.36			1,840,000.00			5,003,167.60	
Hebei Xiong'an Rare Earth Functional Materials Innovation Center Co., Ltd.	5,000,000.00		5,000,000.00								5,000,000.00	
Yunnan Chenxing Mining and Metallurgical Technology Development Co., Ltd.	4,729,298.92	4,729,298.92			269,014.11						4,998,313.03	
Wenshan Tianlong Zinc Industry Co., Ltd.	9,141,400.00	4,954,298.51									4,954,298.51	4,954,298.51

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Investee	Cost of investments	Opening balance	Increase/ decrease in current year								Closing balance	Closing balance of Impairment loss
			Addtional investments	Decrease in investments	Investment gain or loss recognized under equity method	Adjustment in other comprehensive income	Other changes in equity	Cash dividends declared and profits to be distributed	Impairment loss	Others		
Shanxi Qinlu Taiyue New Material Co., Ltd.	4,959,967.60	4,815,454.03			-13,645.40						4,801,808.63	
Suzhou Zhongse Zhongyan Power Technology Co., Ltd.	5,020,000.00	4,607,574.42									4,607,574.42	4,607,574.42
Shenzhen Kaitou Aluminum Cheng Lightweight Intelligent Technology Co., Ltd.	4,600,000.00	4,600,000.00			-7,367.83						4,592,632.17	
Yunnan Jinshui Zhonghe Health Industry Investment Operation Co., Ltd.	4,500,000.00									4,500,000.00	4,500,000.00	4,500,000.00
Zibo Shan Aluminum Cement Co., Ltd.	4,318,690.48								4,318,690.48	4,318,690.48	4,318,690.48	4,318,690.48
Shanxi Huatuo Aluminum Co., Ltd.	6,234,300.00	7,223,705.05			-3,270,484.18						3,953,220.87	
Qinghai China Aluminum Industrial Services Co., Ltd.	3,700,000.00	4,180,489.02	1,140,000.00		185,199.80			48,000.00			5,457,688.82	
Tengchong Zhonghui Mining Co., Ltd.	3,500,000.00	3,290,395.17			-25,146.21						3,265,248.96	
Henan Great Wall Logistics Co., Ltd.	800,000.00	2,650,000.00									2,650,000.00	

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Investee	Cost of investments	Opening balance	Increase/ decrease in current year								Closing balance	Closing balance of Impairment loss
			Addtional investments	Decrease in investments	Investment gain or loss recognized under equity method	Adjustment in other comprehensive income	Other changes in equity	Cash dividends declared and profits to be distributed	Impairment loss	Others		
Rare Earth Catalysis Innovation Research Institute (Dongying) Co., Ltd.	1,580,000.00		1,580,000.00		892,592.78						2,472,592.78	
Hangzhou Huanuan Technology Co., Ltd.	4,900,000.00	3,610,091.04			-1,253,117.54						2,356,973.50	
Hunan Tianqiao Jiacheng Intelligent Technology Co., Ltd.	3,300,000.00	2,624,150.61			-455,187.89						2,168,962.72	
Chinalco Luoyang Copper Equipment Technology Co., Ltd.	3,600,000.00	2,769,374.84			-828,378.91						1,940,995.93	
Mian County Urban and Rural Infrastructure Construction Co., Ltd.	1,500,000.00	1,489,402.17			-1,625.66						1,487,776.51	
Longxi Northwest Aluminum-Gold Bridge Welding Materials Co., Ltd.	4,000,000.00	1,948,548.86			-496,310.14						1,452,238.72	
Shandong Shanlv Zhongke Environmental Protection Technology Co., Ltd.	1,750,000.00	1,584,011.92			-179,544.53						1,404,467.39	
Beijing International Mining Rights Exchange Co., Ltd.	10,000,000.00	2,341,087.55			-957,507.70						1,383,579.85	

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Investee	Cost of investments	Opening balance	Increase/ decrease in current year								Closing balance	Closing balance of Impairment loss
			Addtional investments	Decrease in investments	Investment gain or loss recognized under equity method	Adjustment in other comprehensive income	Other changes in equity	Cash dividends declared and profits to be distributed	Impairment loss	Others		
Henan Jinrui Aijie Building Material Co., Ltd.	800,000.00	752,739.17	700,000.00		-200,671.10						1,252,068.07	
Qinghai Haiyuan Aluminum Industry Co., Ltd.	1,200,000.00	1,248,000.00									1,248,000.00	
Huize Jingdong Motor Vehicle Inspection Co., Ltd.	810,000.00	1,051,952.01			120,562.32						1,172,514.33	
Guangxi Guorui Rare Scandium New Material Technology Co., Ltd.	1,050,000.00	1,262,083.35			-123,763.88						1,138,319.47	
Yunnan Anye Safety Production Technology Co., Ltd.	1,750,000.00	1,109,177.76									1,109,177.76	
Chongqing Xingchen Real Estate Property Development Co., Ltd.	5,791,800.00	1,066,800.00									1,066,800.00	1,066,800.00
Fuzhou Trading Ruimin Trading Co., Ltd.	600,000.00	600,000.00			455,004.84						1,055,004.84	
Baotou Tiancheng Aluminum Industry Co., Ltd.	20,930,000.00	9,079,677.66			-8,246,981.39						832,696.27	
Xing Aluminum New Energy Technology (Xuzhou) Co., Ltd.	400,000.00		400,000.00								400,000.00	

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Investee	Cost of investments	Opening balance	Increase/ decrease in current year								Closing balance	Closing balance of Impairment loss
			Addtional investments	Decrease in investments	Investment gain or loss recognized under equity method	Adjustment in other comprehensive income	Other changes in equity	Cash dividends declared and profits to be distributed	Impairment loss	Others		
Inner Mongolia Geliugou Energy Co., Ltd.	300,000.00	300,000.00									300,000.00	
Shanxi Gallium Huatianhe Electronic Materials Co., Ltd.	3,852,955.00	627,671.14			-444,727.53				182,943.61		182,943.61	182,943.61
Yunnan Kunye Construction Development Co., Ltd.	3,690,000.00	165,968.31									165,968.31	
Henan Qianhai Times Energy Saving and Environmental Protection Technology Co., Ltd.	1,800,000.00	218,818.67			-63,041.86						155,776.81	
Ningbo Aluminum New Energy Co., Ltd.	10,000,000.00	8,822,771.04		8,532,961.08	-289,809.96							
Longxi Northwest Aluminum Jiuding Powder Co., Ltd.	3,060,000.00	2,450,353.03		2,450,353.03								
Henan Zhongfu Special Aluminum Co., Ltd.	200,000,000.00	201,917,044.85								-201,917,044.85		
Guangxi Fusui Haozheng Engineering Management Co., Ltd.	400,000.00	398,039.88		398,000.00						-39.88		
Wenshan Yun Copper Mining and Metallurgy Co., Ltd.	21,000,000.00	9,008,211.69		7,817,056.73	-1,191,154.96							

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Investee	Cost of investments	Opening balance	Increase/ decrease in current year								Closing balance	Closing balance of Impairment loss
			Addtional investments	Decrease in investments	Investment gain or loss recognized under equity method	Adjustment in other comprehensive income	Other changes in equity	Cash dividends declared and profits to be distributed	Impairment loss	Others		
Yunnan Yunye Rosin Co., Ltd.	6,256,410.60	7,756,837.96								-7,756,837.96		
Hezhou Jinli New Material Co., Ltd.	2,000,000.00	2,898,362.36		2,661,100.00	-237,262.36							
Zibo Lianhe Cement Enterprise Management Co., Ltd.	7,500,000.00	7,500,000.00		7,500,000.00								
Zhengzhou Changlu Huasuo Electromechanical Co., Ltd.	1,020,000.00	4,045,253.01		4,045,253.01								
Guizhou Guilv Logistics Co., Ltd.	4,900,000.00	6,269,704.31			-6,269,704.31							
Xinchengtong Investment (Tianjin) Co., Ltd.	20,000,000.00	18,354,674.42		18,354,495.75						-178.67		
Guiyang Yiwei Technology Co., Ltd.	1,000,000.00	292,931.79		292,931.79								
Yunnan Defu Environmental Protection Co., Ltd.	14,790,000.00	16,736,478.98		16,736,478.98								

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

3. Main financial information of important joint ventures

Items	Current year		Prior year	
	Guangxi Huayin Aluminum Industry Co., Ltd.	Guangxi Hualei New Material Co., Ltd.	Guangxi Huayin Aluminum Industry Co., Ltd.	Guangxi Hualei New Material Co., Ltd.
Current assets	1,217,776,378.72	962,667,058.59	1,483,736,979.43	927,810,884.68
Non-current assets	5,361,591,558.80	4,929,514,946.89	5,249,100,826.86	5,123,580,654.49
Total assets	6,579,367,937.52	5,892,182,005.48	6,732,837,806.29	6,051,391,539.17
Current liabilities	1,522,699,524.08	1,422,515,381.83	2,066,670,325.98	1,098,289,810.11
Non-current liabilities	580,419,267.17	1,897,979,311.02	414,298,551.75	2,427,248,377.39
Total liabilities	2,103,118,791.25	3,320,494,692.85	2,480,968,877.73	3,525,538,187.50
Net assets	4,476,249,146.27	2,571,687,312.63	4,251,868,928.56	2,525,853,351.67
Net assets share of joint ventures according to shareholding rate	1,477,162,218.27	1,071,006,405.51	1,515,043,786.87	1,071,006,429.51
Adjustment events				
The book value of equity investments to joint ventures	1,477,162,218.27	1,071,006,405.51	1,515,043,786.87	1,071,006,429.51
The fair value of equity investment public price				
Operating income	4,631,737,359.69	5,413,399,328.52	5,226,893,407.94	5,249,223,190.78
Financial expenses	44,500,338.32	172,738,937.03	53,665,075.24	180,383,119.79
Income tax expenses	21,152,394.55	30,073,374.69	282,951,651.96	4,400,536.81
Net profit	174,037,075.97	155,274,259.73	531,048,148.96	126,222,102.59
Other comprehensive income				
Total comprehensive income	174,037,075.97	155,274,259.73	531,048,148.96	126,222,102.59
Dividends received from joint ventures in current year	99,000,000.00	75,405,400.00	198,000,000.00	

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

4. Main financial information of important associates

Items	Current year			Prior year		
	Huadian Ningxia Lingwu Power Generation Co., Ltd.	**Qinghai Energy Development (Group) Co., Ltd.**	**Chambixi Copper Smelting Co., Ltd.**	**Huadian Ningxia Lingwu Power Generation Co., Ltd.**	**Qinghai Energy Development (Group) Co., Ltd.**	**Chambixi Copper Smelting Co., Ltd.**
Current assets	851,905,958.08	3,622,241,563.24	4,574,364,019.71	1,007,595,384.73	2,894,093,199.02	5,125,140,326.24
Non-current assets	7,273,554,471.22	365,067,137.84	1,212,836,118.77	7,412,130,662.21	714,688,577.17	1,274,139,725.15
Total assets	8,125,460,429.30	3,987,308,701.08	5,787,200,138.48	8,419,726,046.94	3,608,781,776.19	6,399,280,051.39
Current liabilities	3,508,332,734.30	482,335,545.36	1,099,274,305.14	2,834,563,249.45	485,336,995.30	958,139,478.87
Non-current liabilities	946,763,017.98		635,622,792.77	2,008,511,195.17		915,109,275.56
Total liabilities	4,455,095,752.28	482,335,545.36	1,734,897,097.91	4,843,074,444.62	485,336,995.30	1,873,248,754.43
Net assets	3,670,364,677.02	3,504,973,155.72	4,052,303,040.57	3,576,651,602.32	3,123,444,780.89	4,526,031,296.96
Net assets share of joint ventures according to shareholding rate	923,089,974.18	485,808,676.18	1,789,399,998.71	1,257,170,238.64	432,289,966.39	1,811,118,651.64
Adjustment events						
The book value of equity investments to joint ventures	923,089,974.18	485,808,676.18	1,789,399,998.71	1,257,170,238.64	432,289,966.39	1,811,118,651.64
The fair value of equity investment public price						
Operating income	4,114,682,376.88	1,020,527,392.02	7,895,693,001.29	3,982,947,259.06	817,795,001.69	9,469,322,993.31
Net profit	162,219,910.23	356,791,139.86	496,727,367.68	76,118,706.14	268,000,000.00	747,497,537.54
Total comprehensive income	162,219,910.23	356,791,139.86	496,727,367.68	76,118,706.14	268,000,000.00	930,526,467.85
Dividends received from associated enterprises in current year	390,857,233.04		220,409,600.00			

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

8.19 Other equity instruments

Items	Closing balance	Opening balance
Beijing Chinalco Bank of Communications Four Industrial Investment Fund Management Partnership[Note1]	980,498,476.21	1,653,250,528.53
Xing County Shengxing Highway Investment Management Co., Ltd.[Note2]	135,078,989.63	126,237,000.00
Sanmenxia Dachang Mining Co., Ltd.	20,921,339.24	20,905,090.00
CCB Trust Gui'an New District Infrastructure Construction Accumulative Fund Trust Plan	18,180,000.00	18,180,000.00
Yinchuan Economic and Technological Development Zone Investment Holdings Co., Ltd.	17,234,215.98	20,000,000.00
Inner Mongolia Ganqimaodu Port Development Co., Ltd.	16,666,667.00	30,409,792.95
Guizhou Aerospace Wujiang Electromechanical Equipment Co., Ltd.	15,489,065.86	14,781,358.91
Zhongheng Cooperation Investment Co., Ltd.	10,819,320.88	10,000,000.00
Chuangneng Feiyuan Metal Fuel Cell Co., Ltd.	10,380,352.68	11,999,924.84
Dongxing Securities Co., Ltd.	8,811,904.88	8,852,326.46
China National Color International Alumina Development Co., Ltd.	6,635,803.95	6,614,343.19
Kunming Power Exchange Center Co., Ltd.	5,882,924.90	4,000,000.00
Luoyang Jianyuan Mining Co., Ltd.	4,975,476.12	4,959,842.05
Ningxia Power Exchange Center Co., Ltd.	4,305,237.40	
Shenzhen International Financial Factoring Co., Ltd.	3,407,588.14	3,282,812.26
Yunnan Evergreen Chemical Co., Ltd.	2,910,000.00	2,910,000.00
Fudian Bank Co., Ltd.	1,947,010.83	883,576.59
Ningxia Ningdian Logistics Transportation Co., Ltd.	1,641,275.40	1,641,275.40
Runan Haoyu Tianzhong Cultural Industry Development Co., Ltd.	1,000,000.00	1,000,000.00
Fangchenggang Chisha Terminal Co., Ltd.	700,000.00	700,000.00
Others		8,178,792.69
Total	**1,267,485,649.10**	**1,948,786,663.87**

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Note 1: In 2020, Aluminum Corporation of China Limited, a subsidiary of the company, recovered RMB 699,600,000.00 of investment in Beijing Chinalco Bank of Communications Four Industrial Investment Fund Management Partnership. The remaining investment had been recovered in February 2021.

Note 2: On 20 September 2019, the Company's subsidiaries Aluminum Corporation of China and the Highway Management Section of Xing County, Shanxi Province, Shanxi Xishan Jinxing Energy Co., Ltd., Shanxi Jinxing Energy Co., Ltd., Xing County Transportation Infrastructure Construction Investment Development Co., Ltd. jointly signed an agreement to increase capital and shares of Xing County Shengxing Highway Investment Management Co., Ltd. According to the content of the agreement, the investors will invest in cash. Aluminum Corporation of China Limited invested RMB 130,000,000.00, which represented a capital contribution of 10%.

8.20 Other non-current financial assets

Items	Fair value at year end	Fair value at year beginning
Subordinated interests receivble of 2019 China Securities- Chinalco International Asset Support Special Plan	18,900,000.00	18,900,000.00
Sichuan Liwu Copper Industry Co., Ltd.	18,171,500.00	18,171,500.00
Kunming Tangdan Metallurgical Co., Ltd.	4,500,000.00	4,500,000.00
Kunming Yinmin Metallurgical Co., Ltd.	4,500,000.00	4,500,000.00
Kunming Lanniping Metallurgical Co., Ltd.	4,500,000.00	4,500,000.00
Guiyan Catalytic Equity Investment	2,400,000.00	2,400,000.00
China Guangfa Bank Co., Ltd	1,287,459.00	
Shanghai Gold Exchange (Membership fees)	500,000.00	500,000.00
Shanghai Futures Exchange (Membership fees)	100,000.00	100,000.00
Total	**54,858,959.00**	**53,571,500.00**

8.21 Investment properties

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance
Total original carrying amount	**5,385,888,305.85**	**568,108,072.71**	**696,698,713.92**	**5,257,297,664.64**
1. Buildings	3,779,362,554.09	483,887,396.26	284,094,977.82	3,979,154,972.53
2. Land use rights	1,606,525,751.76	84,220,676.45	412,603,736.10	1,278,142,692.11
Total accumulated depreciation (amortization)	**1,288,800,604.62**	**362,769,443.85**	**401,538,611.51**	**1,250,031,436.96**
1. Buildings	1,142,963,676.83	243,415,120.54	166,559,398.41	1,219,819,398.96

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance
2. Land use rights	145,836,927.79	119,354,323.31	234,979,213.10	30,212,038.00
Total carrying amount before impairment	**4,097,087,701.23**			**4,007,266,227.68**
1. Buildings	2,636,398,877.26			2,759,335,573.57
2. Land use rights	1,460,688,823.97			1,247,930,654.11
Total amount of provision for impairment loss	**98,870,745.77**	**19,855,778.01**	**19,624,788.32**	**99,101,735.46**
1. Buildings	98,784,122.55	19,855,778.01	19,624,788.32	99,015,112.24
2. Land use rights	86,623.22			86,623.22
Total carrying amount	**3,998,216,955.46**			**3,908,164,492.22**
1. Buildings	2,537,614,754.71			2,660,320,461.33
2. Land use rights	1,460,602,200.75			1,247,844,030.89

8.22 Fixed Assets

Items	Carrying amount at year end	Carrying amount at year beginning
Fixed assets	201,614,661,771.18	192,361,681,674.94
Disposal of fixed assets	4,080,261,636.08	321,786,645.10
Total	**205,694,923,407.26**	**192,683,468,320.04**

1. Fixed assets situation

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance
1. Total original carrying amount	**330,600,829,481.36**	**38,986,626,648.85**	**19,264,934,749.27**	**350,322,521,380.94**
Including: Land	55,373,286.55		48,733,053.65	6,640,232.90
Buildings	130,717,996,007.19	9,576,858,539.17	5,201,709,740.36	135,093,144,806.00
Machinery and Equipment	188,697,597,131.58	27,053,453,122.05	12,329,807,877.29	203,421,242,376.34
Transportation vehicles	4,097,420,842.92	1,010,148,359.11	462,708,915.58	4,644,860,286.45

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance
Electronic equipment	1,244,565,714.83	147,622,466.55	368,531,881.28	1,023,656,300.10
Office equipment	2,111,461,606.84	261,245,773.35	26,149,173.24	2,346,558,206.95
Hotel furniture	6,384,603.85	797,621.00	125,596.90	7,056,627.95
Others	3,670,030,287.60	936,500,767.62	827,168,510.97	3,779,362,544.25
2. Total accumulated depreciation	**122,358,320,156.60**	**19,578,857,743.03**	**10,038,043,461.53**	**131,899,134,438.10**
Including: Land				
Buildings	35,128,690,883.47	4,020,030,916.95	1,845,766,600.53	37,302,955,199.89
Machinery and Equipment	80,353,544,143.98	14,368,308,547.06	7,346,457,784.09	87,375,394,906.95
Transportation vehicles	3,221,786,461.18	195,889,758.46	427,559,522.67	2,990,116,696.97
Electronic equipment	909,452,409.82	77,634,789.32	108,980,035.04	878,107,164.10
Office equipment	1,258,912,953.53	69,765,595.82	25,683,458.92	1,302,995,090.43
Hotel furniture	3,649,718.81	415,058.70	120,193.67	3,944,583.84
Others	1,482,283,585.81	846,813,076.72	283,475,866.61	2,045,620,795.92
3. Total net book value of fixed assets	**208,242,509,324.76**			**218,423,386,942.84**
Including: Land	55,373,286.55			6,640,232.90
Buildings	95,589,305,123.72			97,790,189,606.11
Machinery and Equipment	108,344,052,987.60			116,045,847,469.39
Transportation vehicles	875,634,381.74			1,654,743,589.48
Electronic equipment	335,113,305.01			145,549,136.00
Office equipment	852,548,653.31			1,043,563,116.52
Hotel furniture	2,734,885.04			3,112,044.11
Others	2,187,746,701.79			1,733,741,748.33

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance
4. Total provision for impairment losses	**15,880,827,649.82**	**1,272,100,879.60**	**344,203,357.76**	**16,808,725,171.66**
Including: Land				
Buildings	5,665,733,793.17	762,368,414.32	138,528,163.33	6,289,574,044.16
Machinery and Equipment	10,114,502,332.67	489,372,599.29	198,702,549.48	10,405,172,382.48
Transportation vehicles	15,091,736.40	8,523,532.44	1,204,127.87	22,411,140.97
Electronic equipment	47,227,661.05	6,485,318.21	4,430,706.07	49,282,273.19
Office equipment	16,267,626.49	2,808,337.50	452,586.02	18,623,377.97
Hotel furniture				
Others	22,004,500.04	2,542,677.84	885,224.99	23,661,952.89
5. Total carrying amount of fixed assets	**192,361,681,674.94**			**201,614,661,771.18**
Including: Land	55,373,286.55			6,640,232.90
Buildings	89,923,571,330.55			91,500,615,561.95
Machinery and Equipment	98,229,550,654.93			105,640,675,086.91
Transportation vehicles	860,542,645.34			1,632,332,448.51
Electronic equipment	287,885,643.96			96,266,862.81
Office equipment	836,281,026.82			1,024,939,738.55
Hotel furniture	2,734,885.04			3,112,044.11
Others	2,165,742,201.75			1,710,079,795.44

2. Temporarily idle fixed assets

Items	Original carrying amount	Accumulated depreciation	Provision for Impairment loss	Carrying amount	Notes
Buildings	1,728,734,506.05	339,607,514.06	82,842,948.92	1,306,284,043.07	

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Original carrying amount	Accumulated depreciation	Provision for Impairment loss	Carrying amount	Notes
Machinery and Equipment	1,797,673,770.32	554,613,740.47	487,738,553.86	755,321,475.99	
Transportation vehicles	5,249,899.09	2,704,779.54	228,627.13	2,316,492.42	
Electronic equipment	567,358.05	457,352.33		110,005.72	
Office equipment	778,646.38	675,857.95	19,685.19	83,103.24	
Others	31,149,586.25	19,506,074.19	3,758,318.02	7,885,194.04	
Total	**3,564,153,766.14**	**917,565,318.54**	**574,588,133.12**	**2,072,000,314.48**	

3. Disposal of Fixed Assets

Items	Carrying amount at year end	Carrying amount at year beginning	Reasons for transferring to disposal of fixed assets
Machinery and Equipment	3,281,739,459.97	246,889,209.99	Intend to dispose
Buildings	773,914,264.92	62,706,310.11	Intend to dispose
Transportation vehicles	21,129,144.66	11,629,896.02	Intend to dispose
Office equipment	2,477,327.96	340,674.52	Intend to dispose
Electronic equipment		130,255.82	Intend to dispose
Others	1,001,438.57	90,298.64	Intend to dispose
Total	**4,080,261,636.08**	**321,786,645.10**	

8.23 Construction in progress

Items	Closing balance			Opening balance		
	Gross carrying amount	Provision for Impairment loss	Carrying amount	Gross carrying amount	Provision for Impairment loss	Carrying amount
Tromocho Copper Mine Project	5,316,960,573.68	345,667,152.34	4,971,293,421.34	8,673,593,387.24	302,705,488.89	8,370,887,898.35
Mo -Pb-Zn Polymetallic Mine in Chalukou, Songling District, Daxinganling	1,231,912,537.45		1,231,912,537.45	1,220,847,124.35		1,220,847,124.35

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Closing balance			Opening balance		
	Gross carrying amount	Provision for Impairment loss	Carrying amount	Gross carrying amount	Provision for Impairment loss	Carrying amount
Reconstruction of Hydropower Aluminum Project after Ludian 6.5 earthquake	942,584,733.58		942,584,733.58	222,674,505.41		222,674,505.41
The second phase of the Academy of Sciences	727,583,287.97		727,583,287.97	493,220,789.24		493,220,789.24
Fangchenggang 2 million tons alumina project	497,972,630.91		497,972,630.91	3,425,986,657.88		3,425,986,657.88
Lancang Lead Mine Prospecting Project	374,711,017.14		374,711,017.14	349,865,950.62		349,865,950.62
Nimu Copper Multi-metal Project	370,299,874.30		370,299,874.30	369,460,466.37		369,460,466.37
Yiliang Chihong Safety Measures Project	366,594,142.17		366,594,142.17	242,900,683.73		242,900,683.73
Chifeng Yuntong Environmental Protection Upgrade and Reconstruction Project	359,312,584.01		359,312,584.01	146,850,285.46		146,850,285.46
Liangshan Mining Co., Ltd. Lala Copper Mine Luodang Mining Area Deep Mine Section Mining Project	354,854,970.32		354,854,970.32	181,207,304.95		181,207,304.95
Moon Bay Health Care Project	300,351,320.88		300,351,320.88	269,584,039.83		269,584,039.83
Hongnipo-Banshantou prospecting	293,982,387.08		293,982,387.08	282,308,914.72		282,308,914.72
Autonomous capacity building project	275,443,704.89		275,443,704.89	85,836,343.02		85,836,343.02
Rongda Lead-Zinc-Silver Mine Deep Resources Replacement Technical Reform Project	268,636,477.18		268,636,477.18	190,912,367.17		190,912,367.17
Prospecting project in Huize production area	244,700,036.33		244,700,036.33	263,982,926.52		263,982,926.52
Detailed investigation of the Kangde Nongshe gold polymetallic mining area in Maduo County, Qinghai Province	221,632,545.55		221,632,545.55	219,447,905.35		219,447,905.35
Honghe Wenshan High Pressure Gas Pipeline Project	196,494,995.88		196,494,995.88	146,276,194.03		146,276,194.03

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Closing balance			Opening balance		
	Gross carrying amount	Provision for Impairment loss	Carrying amount	Gross carrying amount	Provision for Impairment loss	Carrying amount
GY project	193,699,827.74		193,699,827.74	206,182,232.26		206,182,232.26
Daxinganling Yunye Mining Tayuan Second Branch Line Processing 300,000 Tons of Lead, Zinc and Copper Mine Project	178,191,406.82		178,191,406.82	263,982,926.52		263,982,926.52
35,000 tons of battery foil project	162,089,740.56		162,089,740.56	197,031,614.09		197,031,614.09
Luxi Silicon Aluminum Alloy New Technology Promotion Demonstration Project	173,944,898.27	12,041,714.08	161,903,184.19	173,428,725.44	12,041,714.08	161,387,011.36
Yiliang Chihong Resources continues to replace the project	159,794,929.86		159,794,929.86	261,542,399.18		261,542,399.18
Yiliang Chihong Prospecting Project	150,413,315.72		150,413,315.72	1,047,911.55		1,047,911.55
Tieglonen	137,063,817.10		137,063,817.10	105,227,039.81		105,227,039.81
Laomjing tailings pond	133,302,902.00		133,302,902.00	242,900,683.73		242,900,683.73
Mengnuo lead-zinc mine deep prospecting and resource continuous replacement project	132,428,606.54		132,428,606.54	118,251,392.22		118,251,392.22
Guinea Port Project	127,126,616.10		127,126,616.10	321,252,360.90		321,252,360.90
Green and Low-Carbon Hydropower and Aluminum Processing Integration Heqing Project (Phase II)	123,512,154.40		123,512,154.40	169,497,342.96		169,497,342.96
Luochuan Coal Mine Project	116,660,728.42		116,660,728.42	114,479,997.72		114,479,997.72
Carbon New Material Project	222,759,072.48	112,500,000.00	110,259,072.48	162,979,174.48		162,979,174.48
The supporting worker of the 2800MM six-roller irreversible full oil lubrication cold rolling mill in the calendering plant	103,227,381.01		103,227,381.01	54,702,817.44		54,702,817.44
Smart factory of high-end electronics and environmentally friendly packaging materials	61,292,983.09		61,292,983.09	1,360,729,110.56		1,360,729,110.56

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Closing balance			Opening balance		
	Gross carrying amount	Provision for Impairment loss	Carrying amount	Gross carrying amount	Provision for Impairment loss	Carrying amount
Aluminum alloy plate and strip production line project for automobile lightweight	27,488,755.52		27,488,755.52	776,748,784.12		776,748,784.12
Sangongyiye	18,972,314.34		18,972,314.34	822,707,615.88		822,707,615.88
Guinea Mine Project	15,590,056.73		15,590,056.73	1,704,493,890.86		1,704,493,890.86
Railroad Garage	9,970,626.97	9,970,626.97		1,507,878,179.07	9,970,626.97	1,497,907,552.10
Aluminium Ash Resource Utilization Environmental Protection Technology Demonstration Project				1,221,347,124.35		1,221,347,124.35
500,000 tons of alloy aluminum product structure adjustment and upgrading technological transformation				1,194,141,277.70		1,194,141,277.70
Alxa Left Banner Helan Mountain 200MW Wind Power Project				1,107,076,810.30		1,107,076,810.30
Others	5,484,894,685.98	1,429,824,249.11	4,055,070,436.87	7,136,886,067.67	1,638,619,208.31	5,498,266,859.36
Engineering materials	169,173,469.87	20,663.49	169,152,806.38	339,472,742.27	20,663.49	339,452,078.78
Total	**20,245,626,108.84**	**1,910,024,405.99**	**18,335,601,702.85**	**36,348,944,066.97**	**1,963,357,701.74**	**34,385,586,365.23**

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

1. Changes of significant construction in progress in current year

Project name	Budget	Opening balance	Increase in current year	Amount transferred to fixed assets in current year	Other decrease in current year	Closing balance	Amount injected as a proportion of budget amount (%)	Construction progress (%)	Amount of accumulated capitalized interests	Including: Capitalized interests in current year	Interest capitalization rate for current year (%)	Sources of funds
Tromocho Copper Mine Project	38,056,358,513.25	8,673,593,387.24	1,430,823,659.53	4,787,456,473.09		5,316,960,573.68	95.95	95.95	1,160,498,903.58	72,884,945.27	9.00	Self-funded/loan
Mo -Pb-Zn Polymetallic Mine in Chalukou, Songling District, Daxinganling	7,485,090,000.00	1,220,847,124.35	11,065,413.10			1,231,912,537.45	16.31	18.00	6,413,147.21	1,299,379.79	4.75	Self-funded/loan
Reconstruction of Hydropower Aluminum Project after Ludian 6.5 earthquake	5,752,750,000.00	222,674,505.41	2,156,902,291.91	1,335,731,452.82	101,260,610.92	942,584,733.58	88.51	88.51	164,458,275.37	3,502,399.80	5.70	Self-funded/loan
The second phase of the Academy of Sciences	1,469,434,100.00	493,220,789.24	234,362,498.73			727,583,287.97	49.51	49.51	45,442,324.01	22,820,565.86	4.35	Self-funded/loan
Fangchenggang 2 million tons alumina project	5,920,650,000.00	3,425,986,657.88	569,505,131.78	3,307,513,433.30	190,005,725.45	497,972,630.91	95.00	95.00				Self-funded
Lancang Lead Mine Prospecting Project	784,425,000.00	349,865,950.62	25,059,866.52		214,800.00	374,711,017.14	50.00	50.00	3,619,857.58			Self-funded/loan
Nimu Copper Multi-metal Project	500,000,000.00	369,460,466.37	839,407.93			370,299,874.30	73.89	73.89	10,689,248.92	212,722.26	4.35	Self-funded

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Project name	Budget	Opening balance	Increase in current year	Amount transferred to fixed assets in current year	Other decrease in current year	Closing balance	Amount injected as a proportion of budget amount (%)	Construction progress （%）	Amount of accumulated capitalized interests	Including: Capitalized interests in current year	Interest capitalization rate for current year (%)	Sources of funds
Yiliang Chihong Safety Measures Project	683,315,500.00	242,900,683.73	135,439,646.91	10,976,925.11	769,263.36	366,594,142.17	57.00	57.00				Self-funded
Chifeng Yuntong Environmental Protection Upgrade and Reconstruction Project	4,094,554,900.00	146,850,285.46	381,348,762.33	168,886,463.78		359,312,584.01	8.78	8.78	63,041,609.99	16,102,668.20	4.81	Loan and government grant
Liangshan Mining Co., Ltd. Lala Copper Mine Luodang Mining Area Deep Mine Section Mining Project	463,595,400.00	181,207,304.95	173,647,665.37			354,854,970.32	76.54	76.54	5,480,771.00	4,095,840.44	5.54	Self-funded/ loan
Moon Bay Health Care Project	498,000,000.00	269,584,039.83	108,416,295.14	77,649,014.09		300,351,320.88	98.87	85.00	8,483,755.10	8,483,755.10	5.64	Self-funded/ loan
Hongnipo-Banshantou prospecting	1,940,285,890.00	282,308,914.72	11,673,472.36			293,982,387.08	15.15	15.15				Self-funded
Autonomous capacity building project	421,600,000.00	85,836,343.02	189,607,361.87			275,443,704.89	65.33	80.00				Loan and government grant
Rongda Lead-Zinc-Silver Mine Deep Resources	487,059,600.00	190,912,367.17	77,724,110.01			268,636,477.18	39.23	35.00				Self-funded/

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Project name	Budget	Opening balance	Increase in current year	Amount transferred to fixed assets in current year	Other decrease in current year	Closing balance	Amount injected as a proportion of budget amount (%)	Construction progress (%)	Amount of accumulated capitalized interests	Including: Capitalized interests in current year	Interest capitalization rate for current year (%)	Sources of funds
Replacement Technical Reform Project												
Prospecting project in Huize production area	1,199,334,798.00	263,982,926.52	91,596,088.04	80,713,935.12	30,165,043.11	244,700,036.33	83.45	85.00				Self-funded
Detailed investigation of the Kangde Nongshe gold polymetallic mining area in Maduo County, Qinghai Province	451,542,800.00	219,447,905.35	2,184,640.20			221,632,545.55	63.22	63.22				Self-funded
Total	**70,207,996,501.25**	**16,638,679,651.86**	**5,600,196,311.73**	**9,768,927,697.31**	**322,415,442.84**	**12,147,532,823.44**			**1,468,127,892.76**	**129,402,276.72**		

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

2. Impairment loss of construction in progress recognized in current year

Items	Amount recognized in current year	Basis for recognition
Carbon New Material Project	112,500,000.00	Refer to the investment situation of similar enterprises in the market and the analysis of the benefit calculation after production
Tromocho Copper Mine Project	88,427,229.49	Impairment of lime plant in Cal del Centro
138,000 tons of annual anode carbon project carbon	33,924,366.86	Project suspension
Improve the 70,000 tons/year oil fracturing proppant production line technical transformation and expansion project	21,388,467.37	Project shutdown
150,000 tons of carbon anode project	17,000,081.02	Project suspension
Ultra-low emission, comprehensive efficiency improvement renovation project for thermal power plants in 2016	3,481,217.55	Huayu discontinued
Zhaotong Scientific Research Office Project	2,354,481.94	Project suspension
2015 new cathode steel rod mechanism and electrolytic cell magnetic fluid stabilization technology (52)	1,757,025.67	Huayu discontinued
Carbon Potential Tapping Reform Project	1,665,000.00	Huayu discontinued
Non-combustible thermal insulation material project	1,240,000.00	Project suspension
2016 transformation of general aluminum and casting alloy production lines-equipment required to be installed	1,029,221.92	Huayu discontinued
Upgrade and transformation project of secondary aluminum alloy production line in 2018	906,011.44	Huayu discontinued

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Amount recognized in current year	Basis for recognition
Temporary wall project of office and scientific research base	887,510.00	Project suspension
Casting and crushing system	826,015.07	Project suspension
2018 Thermal Power Plant 3 Unit Bag Dust Collector Modification Project	235,042.74	Huayu discontinued
Expansion Project of Daaozi Waste Rock Yard in Shizishan Mine of Yuxi Mining Industry	47,169.81	Related to deep engineering, no projects will be carried out in the future
Total	**287,668,840.88**	

3. Construction materials

Items	Opening balance	Closing balance
Special-purpose materials	49,530,952.91	82,528,754.20
Special-purpose tools	2,899,194.73	2,750,522.66
Special-purpose equipment	116,722,658.74	254,172,801.92
Total	**169,152,806.38**	**339,452,078.78**

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

8.24 Right-of-use assets

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance
1. Total original carrying amount	**5,840,353,067.51**	**377,420,990.18**	**4,211,179,238.89**	**2,006,594,818.80**
Including: Land	41,176,433.66	247,225,363.39	43,649,534.50	244,752,262.55
Buildings	232,128,326.05	121,364,573.71	225,748,808.94	127,744,090.82
Machinery, transportation and office equipment	5,567,048,307.80	8,831,053.08	3,941,780,895.45	1,634,098,465.43
Others				
2. Total accumulated depreciation	**1,858,061,373.76**	**613,860,831.85**	**2,027,069,964.07**	**444,852,241.54**
Including: Land	7,255,569.52	225,617,559.64	153,344.39	232,719,784.77
Buildings	40,377,321.49	66,576,665.50	90,010,782.48	16,943,204.51
Machinery, transportation and office equipment	1,810,428,482.75	321,666,606.71	1,936,905,837.20	195,189,252.26
Others				
3. Total net book value of right-of-use assets	**3,982,291,693.75**			**1,561,742,577.26**
Including: Land	33,920,864.14			12,032,477.78
Buildings	191,751,004.56			110,800,886.31
Machinery, transportation and office equipment	3,756,619,825.05			1,438,909,213.17
Others				
4. Total impairment loss		**15,790,482.70**		**15,790,482.70**

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance
Including: Land				
Buildings				
Machinery, transportation and office equipment		15,790,482.70		15,790,482.70
Others				
5. Total carrying amount of right-of-use assets	**3,982,291,693.75**			**1,545,952,094.56**
Including: Land	33,920,864.14			12,032,477.78
Buildings	191,751,004.56			110,800,886.31
Machinery, transportation and office equipment	3,756,619,825.05			1,423,118,730.47
Others				

8.25 Intangible assets

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance
1. Total original carrying amount	**72,357,757,300.97**	**3,082,723,794.21**	**1,936,495,301.28**	**73,503,985,793.90**
Including: Software	2,264,745,443.68	321,662,237.34	14,560,556.16	2,571,847,124.86
Land use rights	23,048,747,382.47	1,942,678,030.45	548,885,594.39	24,442,539,818.53
Patents	728,713,498.69	99,505,802.84	684,734.29	827,534,567.24
Non-proprietary technology	401,429,067.67		10,743,952.86	390,685,114.81

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance
Trademarks	365,387.41	27,000.00		392,387.41
Copyrights	14,921,768.49			14,921,768.49
Concession	616,081,061.16	131,794,052.76		747,875,113.92
Exploration right	15,185,122,907.47	82,793,584.87	115,657,128.25	15,152,259,364.09
Mining right	29,562,142,512.28	502,022,201.19	850,101,958.37	29,214,062,755.10
Others	535,488,271.65	2,240,884.76	395,861,376.96	141,867,779.45
2. Total accumulated amortization	**12,807,341,006.22**	**2,031,526,565.11**	**286,159,034.34**	**14,552,708,536.99**
Including: Software	776,002,438.70	93,002,136.70	6,439,167.46	862,565,407.94
Land use rights	4,158,175,322.07	681,996,123.20	114,178,253.59	4,725,993,191.68
Patents	340,721,493.64	51,216,981.77	49,020.57	391,889,454.84
Non-proprietary technology	231,985,436.65	14,638,495.88	10,743,952.86	235,879,979.67
Trademarks	349,677.89	14,258.21		363,936.10
Copyrights	2,470,038.47	699,745.55		3,169,784.02
Concession	47,707,897.94	4,423,689.00		52,131,586.94
Exploration right	2,305,283,944.32		14,907,200.00	2,290,376,744.32

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance
Mining right	4,818,409,202.14	1,182,498,860.95	85,730,706.73	5,915,177,356.36
Others	126,235,554.40	3,036,273.85	54,110,733.13	75,161,095.12
3. Total provision for impairment loss	**783,291,172.00**	**639,405,529.70**	**163,569,939.78**	**1,259,126,761.92**
Including: Software	27,394,865.39	432,181.96	52,025.16	27,775,022.19
Land use rights	334,064,826.64		80,933,551.17	253,131,275.47
Patents				
Non-proprietary technology	124,834,758.81			124,834,758.81
Trademarks				
Copyrights	198,112.16			198,112.16
Concession				
Exploration right	81,785,982.45	17,207,019.42	22,167,300.00	76,825,701.87
Mining right	136,011,829.54	621,766,328.32	34,447,409.00	723,330,748.86
Others	79,000,797.01		25,969,654.45	53,031,142.56
4. Total carrying amount of intangible assets	**58,767,125,122.75**			**57,692,150,494.99**
Including: Software	1,461,348,139.59			1,681,506,694.73

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance
Land use rights	18,556,507,233.76			19,463,415,351.38
Patents	387,992,005.05			435,645,112.40
Non-proprietary technology	44,608,872.21			29,970,376.33
Trademarks	15,709.52			28,451.31
Copyrights	12,253,617.86			11,553,872.31
Concession	568,373,163.22			695,743,526.98
Exploration right	12,798,052,980.70			12,785,056,917.90
Mining right	24,607,721,480.60			22,575,554,649.88
Others	330,251,920.24			13,675,541.77

8.26 Development expenditure

Items	Opening balance	Increase in current year		Decrease in current year			Closing balance
		Internal development expenditure	Others	Intangible assets recognized	Recognized in profit or loss for the current period	Others	
Expensed expenditure		884,034,152.79			884,034,152.79		
Capitalized expenditure	361,376,500.71	505,270,759.12		80,518,948.54	189,539,336.07	43,015,577.04	553,573,398.18
Total	**361,376,500.71**	**1,389,304,911.91**		**80,518,948.54**	**1,073,573,488.86**	**43,015,577.04**	**553,573,398.18**

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

8.27 Goodwill

1. Original carrying amount of goodwill

Name of investee or item resulting in goodwill	Opening balance	Increase in current year	Decrease in current year	Closing balance
Yunnan Copper (Group) Co., Ltd.	3,350,848,901.18			3,350,848,901.18
Aluminum Corporation of China Limited Lanzhou Branch	1,924,258,933.74			1,924,258,933.74
Chinalco Mining International	1,693,772,908.96			1,693,772,908.96
Shanxi Huaxing Aluminum Industry Co., Ltd.	1,163,948,530.80			1,163,948,530.80
Yunnan Chihong Zinc and Germanium Co., Ltd	1,104,629,281.70			1,104,629,281.70
Yunnan Jinding Zinc Industry Co., Ltd.	948,855,240.31			948,855,240.31
Aluminum Corporation of China Limited Qinghai Branch	217,267,876.26			217,267,876.26
China Copper (Shanghai) Copper Industry Co., Ltd.	197,567,517.83			197,567,517.83
Aluminum Corporation of China Limited Guangxi Branch	189,419,065.24			189,419,065.24
Yunnan Wenshan Dounan Manganese Co., Ltd.	153,179,023.47			153,179,023.47
Aluminum Corporation of China Limited	130,532,156.60			130,532,156.60
Qinghai Hongxin Mining Co., Ltd.	112,959,921.79			112,959,921.79
China Rare (Guangxi) Jinyuan Rare Earth New Materials Co., Ltd.	77,538,926.54			77,538,926.54
Yunnan Aluminum Co., Ltd.	57,611,495.90			57,611,495.90

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Name of investee or item resulting in goodwill	Opening balance	Increase in current year	Decrease in current year	Closing balance
Northeast Light Alloy Co., Ltd.	55,038,932.83			55,038,932.83
Yunnan Huize Lead-Zinc Mine	43,470,555.17			43,470,555.17
New Balhu Right Banner Rongda Mining Co., Ltd.	39,434,160.32			39,434,160.32
China Copper Co., Ltd.	21,633,728.63			21,633,728.63
Yunnan Wenshan Aluminum Co., Ltd.	21,540,614.19			21,540,614.19
Beijing Luneng Qingxin Environmental Technology Co., Ltd.	19,223,852.59			19,223,852.59
Kunming Metallurgical Research Institute Co., Ltd.	18,618,869.00			18,618,869.00
Huize Andes Mining Co., Ltd.	16,976,229.74			16,976,229.74
Yunnan Chengyuan Investment Co., Ltd.	15,221,434.00			15,221,434.00
PT.NusapatiPrima	15,997,451.54		1,034,897.20	14,962,554.34
Shanghai Nonferrous Economic and Trade Materials Co., Ltd.	12,494,593.35			12,494,593.35
Jiangsu Guosheng New Material Co., Ltd.	10,719,626.03			10,719,626.03
Yunnan Metallurgical Group Import and Export Logistics Co., Ltd.	10,144,226.20			10,144,226.20
Yunnan Yun Aluminum Yongxin Aluminum Co., Ltd.	7,203,567.52			7,203,567.52
Yunnan Metallurgical Yunxin Silicon Material Co., Ltd.	6,142,422.57			6,142,422.57

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Name of investee or item resulting in goodwill	Opening balance	Increase in current year	Decrease in current year	Closing balance
Yunnan Jianshui County Manganese Industry Co., Ltd.	4,952,194.30			4,952,194.30
Yunnan Metallurgical Group Jun'an Insurance Broker Co., Ltd.	4,372,534.77			4,372,534.77
Lhasa Tianli Mining Co., Ltd.	3,698,484.64			3,698,484.64
Yunnan Yun Aluminum Runxin Aluminum Co., Ltd.	3,223,040.11			3,223,040.11
Ganzi Prefecture Yinfeng Mining Co., Ltd.	1,819,370.00			1,819,370.00
Hangzhou Naite Valve Co., Ltd.	1,039,415.00			1,039,415.00
Suzhou Xinchangguang Thermal Energy Technology Co., Ltd.	979,119.90			979,119.90
China Nonferrous Metals Industry Huakun Engineering Contracting Company	579,407.09			579,407.09
Chinalco Science and Technology Research Institute Co., Ltd	398,653.39			398,653.39
Kunming Kehui Electric Co., Ltd.	295,721.83			295,721.83
Yunnan PetroChina Huineng Energy Co., Ltd.	189,707.14			189,707.14
Ningnan Sanxin Mining Development Co., Ltd.	46,296,929.03		46,296,929.03	
Total	**11,704,094,621.20**		**47,331,826.23**	**11,656,762,794.97**

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

2. Provision for goodwill

Name of investee or item resulting in goodwill	Opening balance	Increase in current year	Decrease in current year	Closing balance
Yunnan Wenshan Dounan Manganese Co., Ltd.	153,179,023.47			153,179,023.47
Ningnan Sanxin Consolidated Goodwill	46,296,929.03		46,296,929.03	
Yunnan Huize Lead-Zinc Mine	43,470,555.17			43,470,555.17
Yunnan Wenshan Aluminum Co., Ltd.	20,640,614.19			20,640,614.19
Yunnan Chengyuan Investment Co., Ltd.	15,221,434.00			15,221,434.00
Yunnan Metallurgical Group Import and Export Logistics Co., Ltd.	10,144,226.20			10,144,226.20
Yunnan Yun Aluminum Yongxin Aluminum Co., Ltd.	7,203,567.52			7,203,567.52
Yunnan Metallurgical Yunxin Silicon Material Co., Ltd.	6,142,422.57			6,142,422.57
Yunnan Jianshui County Manganese Industry Co., Ltd.	4,952,194.30			4,952,194.30
Yunnan Metallurgical Group Jun'an Insurance Broker Co., Ltd.	4,372,534.77			4,372,534.77
Yunnan Yun Aluminum Runxin Aluminum Co., Ltd.	3,223,040.11			3,223,040.11
Suzhou Xinchangguang Thermal Energy Technology Co., Ltd.	979,119.90			979,119.90
China Nonferrous Metals Industry Huakun Engineering Contracting Company	579,407.09			579,407.09
Shanghai Nonferrous Economic and Trade Materials Co., Ltd.		12,494,593.35		12,494,593.35

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Name of investee or item resulting in goodwill	Opening balance	Increase in current year	Decrease in current year	Closing balance
Total	**316,405,068.32**	**12,494,593.35**	**46,296,929.03**	**282,602,732.64**

8.28 Long-term prepaid expenses

Items	Opening balance	Increase in current year	Amortization in current year	Other decrease in current year	Closing balance	Reasons for other decrease
Compensation for demolition	671,315,611.40	226,144,410.55	175,627,973.55		721,832,048.40	
Engineering facility renovation	307,175,330.48	44,493,078.00	72,183,842.59	20,299,632.75	259,184,933.14	Changes in scope of consolidation
Large tools and moulds	227,769,266.29	134,830,273.97	110,471,997.93	2,317,274.80	249,810,267.53	Changes in scope of consolidation
Cutting and stripping fees	276,162,242.67	54,750,378.17	91,593,333.38	1,253,355.82	238,065,931.64	Changes in scope of consolidation
Rental fees	97,284,002.75	31,010,148.03	27,015,245.22	3,613,798.10	97,665,107.46	Changes in scope of consolidation
Others	337,265,241.30	170,854,929.43	128,180,386.92	90,135,605.89	289,804,177.92	Changes in scope of consolidation
Total	**1,916,971,694.89**	**662,083,218.15**	**605,072,779.59**	**117,619,667.36**	**1,856,362,466.09**	

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

8.29 Deferred tax assets and deferred tax liabilities

1. Deferred tax assets and deferred tax liabilities not presented at the net amount after offset

Items	Closing balance		Opening balance	
	Deferred tax assets/liabilities	Deductible /taxable temporary difference	Deferred tax assets/liabilities	Deductible /taxable temporary difference
1. Deferred tax assets	**4,365,905,948.70**	**21,233,247,317.94**	**4,553,251,701.38**	**21,919,988,449.41**
Impairment loss for assets	2,005,347,488.12	10,000,986,733.47	1,853,951,086.37	9,083,099,750.47
Deductible losses	998,175,593.12	4,722,501,808.12	987,248,433.76	4,914,413,183.00
Offset unrealized profit	561,890,416.43	2,499,343,737.15	529,009,372.37	2,441,955,989.47
Derivative financial instruments	197,658,595.42	983,243,339.57	9,253,759.90	44,750,599.83
Accrued but not paid payroll	146,249,933.80	726,028,183.67	216,570,992.52	974,915,129.10
Termination benefits	139,836,551.97	719,305,658.41	48,525,475.76	238,547,059.10
Deferred income	81,125,521.55	372,214,094.84	45,779,441.09	287,248,954.60
Provisions	52,477,850.20	274,192,749.80	12,922,500.00	51,690,000.00
Others	183,143,998.09	935,431,012.91	849,990,639.61	3,883,367,783.84
2. Deferred tax liabilities	**5,043,151,516.51**	**17,162,906,787.74**	**5,032,392,035.76**	**21,710,831,206.83**

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Fair value changes of available-for-sale financial assets recognized through other comprehensive income	227,967,760.91	931,696,136.68	104,200,758.09	448,301,080.95
Assets evaluation appreciation	3,607,772,871.57	11,979,110,074.82	4,020,260,212.91	16,716,258,681.54
Depreciation and amortization of fixed asset and intangible assets	102,491,470.67	597,081,633.34	28,083,331.63	153,657,062.31
Others	1,104,919,413.36	3,655,018,942.90	879,847,733.13	4,392,614,382.03

2. Details of unrecognized deferred tax assets

Items	Closing balance	Opening balance
Deductible temporary differences	30,487,688,974.95	28,815,410,391.98
Deductible losses	16,247,903,458.34	13,563,616,855.67
Total	**46,735,592,433.29**	**42,379,027,247.65**

3. Deductible losses of unrecognized deferred tax assets that will expire in the following years:

Year	Closing balance	Opening balance	Notes
2020		1,848,911,708.61	
2021	1,075,428,007.64	2,782,014,132.94	
2022	1,793,165,460.14	2,002,162,148.13	
2023	2,462,232,241.94	2,583,249,880.64	
2024	3,930,455,197.67	4,347,278,985.35	

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Year	Closing balance	Opening balance	Notes
2025	6,986,622,550.95		
Total	**16,247,903,458.34**	**13,563,616,855.67**	

8.30 Other non-current assets

Items	Closing balance	Opening balance
Investment in PPP highway construction period	6,735,604,914.95	2,505,671,962.22
Industrial ore and raw ore to be washed	2,941,267,452.29	2,176,613,858.28
Long-term entrusted loans	1,750,000,000.00	1,750,000,000.00
Input tax to be deducted	1,501,250,409.90	1,022,819,778.11
Advance payment for mining rights	809,721,535.21	813,822,439.93
Long-term contract assets	669,739,710.04	799,919,319.88
Tank materials	544,378,696.06	523,831,240.02
Prepaid investment	476,024,759.74	272,009,200.84
Deferred gains and losses from sale and leaseback transactions	464,709,525.72	880,876,969.43
Prepaid land and house payments	380,160,171.51	212,963,100.66
Advance payment for engineering equipment	279,428,263.80	807,197,299.35
Deferred lease income during rent-free period	257,900,062.30	207,198,211.54

Items	Closing balance	Opening balance
Others	453,076,728.45	765,495,456.68
Total	**17,263,262,229.97**	**12,738,418,836.94**

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

8.31 Provision for assets impairment

Items	Opening balance	Increase in current year				Decrease in current year					Closing balance
		Amount recognized in current year	Amount increased due to combination	Amount increased due to other reasons	Total	Reversal of asset impairment loss	Resale amount	Amount decreased due to combination	Amount decreased due to other reasons	Total	
1. Bad debt provision	11,066,746,573.49	2,713,868,005.41		385,935,303.80	3,099,803,309.21	361,453,197.03	1,124,022,074.07	125,396,740.10		1,610,872,011.20	12,555,677,871.50
2. Provision for inventory write down	2,140,643,934.99	1,743,095,315.74			1,743,095,315.74	276,810,762.76	2,093,005,919.26	35,006,350.11	10,356,217.82	2,415,179,249.95	1,468,560,000.78
3. Provision for impairment of contract assets	247,096,957.03	469,130,882.07			469,130,882.07	28,918,326.37			75,000.00	28,993,326.37	687,234,512.73
4. Provision for impairment of assets held for sale											
5. Provision for impairment of debt investment											
6. Provision for impairment of financial assets held for trading	1,793,061,092.40	147,183,405.32			147,183,405.32		19,762,400.00	2,468,717.66	16,916,901.76	39,148,019.42	1,901,096,478.30
7. Provision for impairment of held-to-maturity investments	11,326,850.00	-11,326,850.00			-11,326,850.00						
8. Provision for impairment of Long-term equity investment	582,805,688.48	66,725,953.09			66,725,953.09		217,488,473.67			217,488,473.67	432,043,167.90

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Opening balance	Increase in current year				Decrease in current year					Closing balance
		Amount recognized in current year	Amount increased due to combination	Amount increased due to other reasons	Total	Reversal of asset impairment loss	Resale amount	Amount decreased due to combination	Amount decreased due to other reasons	Total	
9. Provision for impairment of investment properties	98,870,745.77	7,794,720.21		12,061,057.80	19,855,778.01				19,624,788.32	19,624,788.32	99,101,735.46
10. Provision for impairment of fixed assets	15,880,827,649.82	1,252,476,091.28		19,624,788.32	1,272,100,879.60		224,536,298.69	104,220,400.07	15,446,659.00	344,203,357.76	16,808,725,171.66
11. Provision for impairment of construction in progress	1,963,357,701.74	287,668,840.88			287,668,840.88		57,340,270.89	238,196,299.70	45,465,566.04	341,002,136.63	1,910,024,405.99
12. Provision for impairment of bearer biological assets											
13. Provision for impairment of oil and gas assets											
14. Provision for impairment of right-of-use assets		15,790,482.70			15,790,482.70						15,790,482.70
15. Provision for impairment of intangible assets	783,291,172.00	639,405,529.70			639,405,529.70		64,465,979.41	69,769,038.51	29,334,921.86	163,569,939.78	1,259,126,761.92
16. Goodwill impairment provision	316,405,068.32	12,494,593.35			12,494,593.35		46,296,929.03			46,296,929.03	282,602,732.64

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Opening balance	Increase in current year				Decrease in current year					Closing balance
		Amount recognized in current year	Amount increased due to combination	Amount increased due to other reasons	Total	Reversal of asset impairment loss	Resale amount	Amount decreased due to combination	Amount decreased due to other reasons	Total	
17. impairment of contract acquisition cost											
18. Provision for impairment of contract performance costs											
19. Other provisions for impairment	3,014,076,708.41	292,086,820.76			292,086,820.76	102,442,502.89	32,985,975.48	3,999,862.57	98,042,801.39	237,471,142.33	3,068,692,386.84
Total	**37,898,510,142.45**	**7,636,393,790.51**		**417,621,149.92**	**8,054,014,940.43**	**769,624,789.05**	**3,879,904,320.50**	**579,057,408.72**	**235,262,856.19**	**5,463,849,374.46**	**40,488,675,708.42**

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

8.32 Short-term loans

Categories of borrowings	Closing balance	Opening balance
Pledged loan	1,045,875,767.74	3,233,232,693.08
Mortgage loan	1,076,830,492.48	2,636,284,367.64
Guaranteed loan	20,448,813,111.29	13,280,856,467.14
Credit loan	68,919,919,401.70	76,732,564,866.95
Total	**91,491,438,773.21**	**95,882,938,394.81**

8.33 Financial liabilities held for trading

Items	Fair value at year end	Fair value at year beginning
Held for trading Financial liabilities	27,448,021.45	71,429,707.82
Including: Traded bonds issued		
Financial liabilities measured by fair value reckoned in profit and loss of the current period		
Others	17,115,766.41	
Total	**44,563,787.86**	**71,429,707.82**

8.34 Financial liabilities measured at fair value through profit or loss

Items	Fair value at year end	Fair value at year beginning
Held for trading Financial liabilities		
Financial liabilities measured by fair value reckoned in profit and loss of the current period		
Others	129,214,479.29	18,291,901.26
Total	**129,214,479.29**	**18,291,901.26**

8.35 Financial assets sold under repurchase agreements

Items	Closing balance	Opening balance
Securities		
Notes	607,000,000.00	892,679,687.53
Loans		
Others	1,552,700,000.00	789,000,000.00

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Closing balance	Opening balance
Total	**2,159,700,000.00**	**1,681,679,687.53**

8.36 Derivative financial liabilities

Items	Closing balance	Opening balance
Futures contract	484,381,237.72	51,919,229.17
Lock in exchange rate for foreign currency loan	19,100,700.00	
Total	**503,481,937.72**	**51,919,229.17**

8.37 Notes payable

Categories	Closing balance	Opening balance
Commercial acceptances	1,018,765,079.47	649,325,450.85
Bank acceptances	13,538,971,312.77	13,363,533,453.47
Total	**14,557,736,392.24**	**14,012,858,904.32**

8.38 Account payables

1. Aging analysis

Aging	Closing balance	Opening balance
Within 1 year (including 1 year)	29,508,793,410.80	31,300,254,760.55
1-2 years (including 2 years)	4,202,115,915.21	4,132,265,298.98
2-3 years (including 3 years)	1,824,853,544.39	1,680,248,497.49
Over 3 years	2,653,215,144.59	2,754,108,147.67
Total	**38,188,978,014.99**	**39,866,876,704.69**

2. Significant trade payables aged over one year

Creditor	Closing balance	Reason for unpaid
Qujing Power Supply Bureau of Yunnan Power Grid Co., Ltd.	251,958,795.08	Have not reached the agreed payment conditions
Yunnan Construction Investment Second Construction Co., Ltd.	224,048,658.97	Have not reached the agreed payment conditions

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Yunnan Power Grid Co., Ltd. Honghe Power Supply Bureau Jianshui Bureau	123,204,485.00	Have not reached the agreed payment conditions
Maguanyun Copper and Zinc Industry Co., Ltd.	87,952,384.83	Have not reached the agreed payment conditions
Jinchengxin Mining Management Co., Ltd.	84,411,418.38	Have not reached the agreed payment conditions
Seven Metallurgical Construction Group Co., Ltd.	59,891,722.65	Have not reached the agreed payment conditions
Yunnan Engineering Construction General Contracting Co., Ltd.	51,919,820.17	Have not reached the agreed payment conditions
Qujing Liyu Carbon Co., Ltd.	47,760,000.00	Have not reached the agreed payment conditions
Hunan Lianshao Construction Engineering (Group) Co., Ltd.	33,923,904.93	Have not reached the agreed payment conditions
China Enfi Engineering Technology Co., Ltd.	32,912,718.53	Have not reached the agreed payment conditions
The Fourteenth Metallurgical Construction Company of China National Nonferrous Metals Industry	30,754,365.82	Have not reached the agreed payment conditions
Yunnan Kaixin Industry and Trade Co., Ltd.	30,183,301.93	Have not reached the agreed payment conditions
Yunnan Construction Investment Eleventh Construction Co., Ltd.	30,073,463.93	Have not reached the agreed payment conditions
Minmetals Ersanye Construction Group Co., Ltd.	29,851,760.25	Have not reached the agreed payment conditions
Yunnan Construction Investment Tenth Construction Co., Ltd.	26,708,377.25	Have not reached the agreed payment conditions

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Chongqing Fuling Road and Bridge Engineering Co., Ltd.	26,218,691.32	Have not reached the agreed payment conditions
Henan New Great Wall Construction Co., Ltd.	26,179,169.62	Have not reached the agreed payment conditions
Liaoning Jindi Second Construction Engineering Co., Ltd.	25,708,136.98	Have not reached the agreed payment conditions
Zhenjiang Liyu Carbon Co., Ltd.	24,841,378.12	Have not reached the agreed payment conditions
Sinochem Second Construction Group Co., Ltd.	23,037,126.81	Have not reached the agreed payment conditions
Yunnan Construction Investment Installation Co., Ltd.	22,849,672.09	Have not reached the agreed payment conditions
Wenzhou Dongda Mining Construction Engineering Co., Ltd. in Deqin Branch	22,846,879.44	Have not reached the agreed payment conditions
Zhongwei Construction Engineering Co., Ltd.	22,695,118.87	Have not reached the agreed payment conditions
Yunnan Phosphate Group Engineering Construction Co., Ltd.	22,647,667.58	Have not reached the agreed payment conditions
Zhoukou Zongheng Highway Engineering Co., Ltd.	22,417,547.85	Have not reached the agreed payment conditions
Yunnan Construction Investment Second Installation Engineering Company	22,221,552.76	Have not reached the agreed payment conditions
Xinyang Modern Road and Bridge Construction Co., Ltd.	21,369,813.78	Have not reached the agreed payment conditions
Sichuan Fusheng Construction Group Co., Ltd.	20,949,845.60	Have not reached the agreed payment conditions

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Yunnan Jinchengxin Mining Management Co., Ltd.	20,837,636.51	Have not reached the agreed payment conditions
Zhenjiang Yugao Carbon Co., Ltd.	20,707,659.39	Have not reached the agreed payment conditions
Chengdu Shuntie Materials Co., Ltd.	20,128,657.00	Have not reached the agreed payment conditions
Total	**1,511,211,731.44**	

8.39 Advances received from customers

1. Aging analysis

Aging	Closing balance	Opening balance
Within 1 year (including 1 year)	1,657,000,823.45	2,246,228,621.25
Over 1 year	460,614,007.21	409,037,255.80
Total	**2,117,614,830.66**	**2,655,265,877.05**

2. Significant advances from customers aged over one year

Creditors	Closing balance	Reason for not carried forward
House purchase fund	66,208,442.26	Not settled
Qinghai Liuyang Xinda Nonferrous Metals Co., Ltd.	50,474,976.92	Not settled
Guangdong Sixteenth Metallurgical Construction Co., Ltd.	26,200,000.00	Not settled
Guiyang Baiyun Urban Construction Investment Group Co., Ltd.	20,000,000.00	Not settled
Shanghai Pumin Industrial Co., Ltd.	14,325,674.04	Not settled
Qinghai Yellow River Hydropower Recycling Aluminum Industry Co., Ltd.	11,993,936.44	Not settled
Total	**189,203,029.66**	

8.40 Contract liabilities

Items	Closing balance	Opening balance
Sales received in advance	2,221,272,631.96	2,168,182,429.91
Construction funds received in advance	2,330,910,376.74	1,818,426,366.70

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Closing balance	Opening balance
Total	**4,552,183,008.70**	**3,986,608,796.61**

8.41 Employee benefits payable

1. Classification of employee benefits payable

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance
Short-term employee benefits	1,826,863,668.38	20,474,721,720.62	20,911,151,252.45	1,390,434,136.55
Post-employment benefits – defined contribution plan	255,296,815.27	1,976,806,588.62	1,947,782,069.03	284,321,334.86
Termination benefits	664,964,514.79	598,543,880.38	603,801,518.53	659,706,876.64
Other benefits due within one year	70,135,038.16	7,856,078.80	64,339,601.24	13,651,515.72
Others	33,855.78	4,213,774.25	4,219,336.54	28,293.49
Total	**2,817,293,892.38**	**23,062,142,042.67**	**23,531,293,777.79**	**2,348,142,157.26**

2. Short-term employee benefits

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance
Salaries, bonuses, allowances and subsidies	988,994,863.88	15,384,258,118.77	15,854,241,411.61	519,011,571.04
Employee welfare	99,819,509.17	1,261,519,580.01	1,249,848,530.65	111,490,558.53
Social Insurance	72,807,806.89	1,270,387,527.57	1,257,609,979.64	85,585,354.82
Including: Medical insurance	34,149,357.81	1,121,953,595.66	1,108,471,094.38	47,631,859.09
Injury insurance	27,537,453.38	68,843,493.89	70,242,165.87	26,138,781.40
Maternity insurance	4,764,395.72	27,482,109.15	26,948,883.42	5,297,621.45
Others	6,356,599.98	52,108,328.87	51,947,835.97	6,517,092.88
Housing funds	61,734,521.05	1,465,570,039.89	1,454,437,263.43	72,867,297.51
Labor union funds and employee education funds	416,528,298.57	522,132,086.12	412,607,422.07	526,052,962.62
Short-term paid leave		6,000.00	6,000.00	
Short-term profit sharing plan	15,095,443.39	52,893,306.97	17,928,014.56	50,060,735.80
Others	171,883,225.43	517,955,061.29	664,472,630.49	25,365,656.23

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance
Total	**1,826,863,668.38**	**20,474,721,720.62**	**20,911,151,252.45**	**1,390,434,136.55**

3. Defined contribution plan

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance
Basic pensions insurance	60,030,583.83	1,113,742,932.64	1,108,360,212.16	65,413,304.31
Unemployment insurance	40,479,442.97	44,180,695.18	42,592,373.13	42,067,765.02
Annuity	154,786,788.47	818,882,960.80	796,829,483.74	176,840,265.53
Total	**255,296,815.27**	**1,976,806,588.62**	**1,947,782,069.03**	**284,321,334.86**

8.42 Tax and surcharge payable

Items	Opening balance	Payable in current year	Amount paid in current year	Closing balance
Value added tax	643,012,488.33	6,599,710,647.23	6,260,116,320.08	982,606,815.48
Consumption taxes	35.78	4,246.02	4,246.02	35.78
Resource taxes	163,440,163.99	1,123,902,477.04	1,142,345,292.85	144,997,348.18
Corporate income taxes	820,568,053.50	2,246,653,308.59	2,228,950,590.70	838,270,771.39
City construction and maintenance taxes	38,950,621.33	357,246,635.14	334,667,469.72	61,529,786.75
Property taxes	60,786,079.52	468,322,820.81	478,528,172.62	50,580,727.71
Land use taxes	96,460,782.88	537,745,238.10	566,541,962.59	67,664,058.39
Individual income taxes	109,782,068.03	467,829,385.36	450,907,108.94	126,704,344.45
Education surcharges (including local education surcharges)	37,569,172.51	321,957,567.15	304,949,242.84	54,577,496.82
Others	361,059,751.17	1,124,996,213.75	1,092,085,113.52	393,970,851.40
Total	**2,331,629,217.04**	**13,248,368,539.19**	**12,859,095,519.88**	**2,720,902,236.35**

8.43 Other payables

Items	Closing balance	Opening balance
Interest payable	878,925,859.05	1,084,827,790.07

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Closing balance	Opening balance
Dividend payable	1,219,019,645.19	1,504,807,816.98
Other payable	14,547,066,370.60	19,734,873,306.19
Total	**16,645,011,874.84**	**22,324,508,913.24**

1. Interest payable

Items	Closing balance	Opening balance
Interests of long-term borrowings with interests payable by installment and principal payable upon maturity	155,689,673.21	437,354,294.70
Corporate bond interests	584,612,254.72	414,084,137.81
Interests of short-term borrowings	117,318,010.22	198,733,878.46
Interests of preference shares/ perpetual debts classified as financial liabilities		
Other interests	21,305,920.90	34,655,479.10
Total	**878,925,859.05**	**1,084,827,790.07**

2. Dividend payable

Items	Closing balance	Opening balance
Dividends for ordinary shares	464,077,504.66	680,928,361.22
Others	754,942,140.53	823,879,455.76
Total	**1,219,019,645.19**	**1,504,807,816.98**

3. Other payable

（1） Other payables presented by nature

Items	Closing balance	Opening balance
Engineering, materials and equipment	5,750,516,867.89	7,737,944,160.22
Cash pledge and guarantee deposit	4,182,882,277.60	4,115,972,271.81
Temporary receipts of payment on behalf of others	1,382,580,900.59	1,558,708,171.95
Intercourse funds	907,180,145.16	995,696,345.87
Temporary borrowings	737,664,031.28	772,900,828.12
Share acquisition	353,643,312.50	475,574,799.48

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Rental service fees	222,431,463.65	143,557,098.72
Repair fees	154,255,117.47	128,593,647.10
Party Construction expenses	136,305,647.24	65,906,084.13
Labor fees	130,977,906.81	183,367,205.01
Accrued expense	63,704,870.38	58,423,995.26
Redemption and collection of perpetual debts		2,511,257,595.00
Others	724,923,830.03	986,971,103.52
Total	**14,747,066,370.60**	**19,734,873,306.19**

（2） Significant other payables aged over one year

Creditor	Closing balance	Reason for unpaid
China Harbour Engineering Co., Ltd.	339,687,019.26	Shareholder loan
China Railway Construction China Africa Construction Co., Ltd.	311,843,945.54	Shareholder loan
China Securities Co., Ltd.	99,213,528.75	Not settled
Yunnan Construction Investment Holding Group Co., Ltd.	79,686,491.00	Not settled
Dalian Bihai Environmental Protection Equipment Co., Ltd.	52,783,851.85	Have not reached agreed settlement date
The Sixth Metallurgical Construction of China's Nonferrous Metal Industry	51,779,882.25	Have not reached agreed settlement date
China Nonferrous Metals Processing Technology Co., Ltd.	40,372,084.45	Have not reached agreed settlement date
Gansu Coal Geological Exploration Institute	40,038,700.00	Have not reached agreed settlement date
Huadian Heavy Industry Co., Ltd.	35,846,167.64	Have not reached agreed settlement date
Baotou Aluminum Group Construction and Installation Engineering Co., Ltd.	34,528,448.60	Have not reached agreed settlement date
Qinghai Ruotian Geophysical and Chemical Exploration Joint Stock Cooperative Company	32,458,100.00	Pre-mining preparation fund
Dongfang Electric Group Dongfang Boiler Co., Ltd.	29,195,000.00	Have not reached agreed settlement date

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Creditor	Closing balance	Reason for unpaid
Beijing Qingxin Environmental Technology Co., Ltd.	21,909,867.81	Have not reached agreed settlement date
Inner Mongolia First Power Construction Engineering Co., Ltd.	21,117,499.85	Have not reached agreed settlement date
Fujian-Taiwan (Fuzhou) Blue Economic Industrial Park Investment and Development Co., Ltd.	20,000,000.00	Have not reached agreed settlement date
Inner Mongolia Baotou Aluminum Park Management Committee	19,400,000.00	Have not reached agreed settlement date
Harbin Boiler Factory Co., Ltd.	19,008,800.00	Have not reached agreed settlement date
Tianjin Yikun Construction Engineering Co., Ltd.	18,800,000.00	Not settled
Fujian Longjing Environmental Protection Co., Ltd.	17,604,158.92	Has not reached agreed settlement date
Dongfang Electric Co., Ltd.	17,200,000.00	Have not reached agreed settlement date
Shanxi Feiyuda Mechanical Engineering Co., Ltd.	16,404,749.03	Have not reached agreed settlement date
Luoyang Ruochuan Industrial Co., Ltd.	15,000,000.00	Not settled
Eleventh Metallurgical Construction Group Co., Ltd.	14,834,198.90	Have not reached agreed settlement date
Shanxi Hejin Gaomengou Coal Industry Co., Ltd.	14,815,600.00	Have not reached agreed settlement date
Qiye Pingguo Aluminum Headquarters	14,723,581.25	Have not reached agreed settlement date
Shanxi Hejin Chaoyang Coal Industry Co., Ltd.	14,577,400.00	Have not reached agreed settlement date
711 Research Institute of China Shipbuilding Industry Corporation	13,857,898.66	Have not reached agreed settlement date
Henan Dongda Mining Co., Ltd. Gongyi Branch	13,445,665.81	Have not reached agreed settlement date
Henan Zhongbei Mine Engineering Co., Ltd.	12,471,536.90	Have not reached agreed settlement date
Dexu Refractories Co., Ltd.	12,213,657.31	Have not reached agreed settlement date

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Creditor	Closing balance	Reason for unpaid
Shijiazhuang Viak Technology Co., Ltd.	10,459,497.96	Performance bond
Xiamen Luyang Environmental Technology Co., Ltd.	10,400,691.10	Have not reached agreed settlement date
Hunan Lianshao Construction Engineering (Group) Co., Ltd.	10,047,248.44	Funds shortage
Railway Branch of Taiyuan Chemical Industry Group Co., Ltd.	10,000,000.00	Have not reached agreed settlement date
Total	**1,485,725,271.28**	

8.44 Non-current liabilities due within one year

Items	Closing balance	Opening balance
Long-term loans due within one year	12,445,749,260.80	27,078,004,287.99
Bonds payable due within one year	19,111,739,193.60	10,000,000,000.00
Long-term payables due within one year	1,879,996,778.85	3,136,352,116.42
Other long-term liabilities due within one year	887,130,103.28	1,043,630,449.70
Total	**34,324,615,336.53**	**41,257,986,854.11**

8.45 Other current liabilities

Items	Closing balance	Opening balance
Short-term bonds payable	25,367,175,629.68	28,364,961,277.53
Output tax to be transferred	1,945,025,749.54	1,992,709,206.99
Loan on finance lease	269,500,000.00	
ABS continued involvement in liabilities	18,900,000.00	18,900,000.00
Gold lease		7,018,609,600.82
Others	264,555.51	999,440.96
Total	**27,600,865,934.73**	**37,396,179,526.30**

8.46 Long-term borrowings

Items	Closing balance	Opening balance
Pledged loan	3,987,870,000.00	8,591,040,081.53
Mortgage loan	11,087,416,731.48	6,725,809,011.26

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Closing balance	Opening balance
Guaranteed loan	19,896,169,572.17	23,365,756,867.50
Credit loan	80,850,056,867.27	44,508,772,095.80
Total	**115,821,513,170.92**	**83,191,378,056.09**

8.47 Bonds payable

1. Categories of bonds payable

Items	Closing balance	Opening balance
Senior dollar bonds	8,482,849,934.78	9,057,384,593.17
19 China Aluminum Group MTN005	2,000,000,000.00	2,000,000,000.00
19 China Aluminum Group MTN002	2,000,000,000.00	2,000,000,000.00
19 China Aluminum Group MTN001	2,000,000,000.00	2,000,000,000.00
2017 medium-term note 005 (Rio Tinto)	2,000,000,000.00	2,000,000,000.00
19 China Aluminum Group MTN007	2,000,000,000.00	2,000,000,000.00
The first public issuance of corporate bonds in 2019	1,999,196,298.41	1,998,604,346.49
The second tranche of public issuance of corporate bonds in 2019 (variety 2)	1,997,264,737.15	1,997,096,940.29
2019 first tranche of medium-term notes	1,985,264,050.70	1,982,228,208.34
2018 the second tranche of public issuance of corporate bonds (variety 2)	1,597,070,992.36	1,596,191,987.63
20 China Aluminum Group MTN001A	1,430,812,770.00	
20 medium-term note TN001	880,751,200.00	
20 China Aluminum Group MTN002	1,000,000,000.00	
18 China Aluminum Group MTN002B (Rio Tinto)	1,000,000,000.00	1,000,000,000.00
20 China Aluminum Group MTN003	1,000,000,000.00	
The third tranche of public issuance of corporate bonds in 2019 (variety one)	999,623,191.19	999,462,074.18
The second tranche of public issuance of corporate bonds in 2020	999,616,669.38	
The first public issuance of corporate bonds in 2018 (variety 2)	898,806,855.29	898,315,177.44

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

2020 first tranche of medium-term notes	897,972,259.16	
20 China Aluminum Group MTN001B	500,000,000.00	
20 Yuntong 01 (Code: 149134)	500,000,000.00	
The first public issuance of corporate bonds in 2020	499,853,135.50	
Open Source-Chinalco Leasing Supply Side Reform No. 1	146,471,835.43	
2018 the second tranche of public issuance of corporate bonds (variety one)		1,397,318,324.76
The first public issuance of corporate bonds in 2018 (variety one)		1,098,217,658.67
2018 first tranche of medium-term notes		1,992,339,394.74
18 China Aluminum Group MTN004		3,000,000,000.00
18 China Aluminum Group MTN003		2,000,000,000.00
18 China Aluminum Group MTN002A (Rio Tinto)		2,000,000,000.00
18 China Aluminum Group MTN001		3,000,000,000.00
18 China Aluminum Group MTN005		2,000,000,000.00
2018 Chinalco Hong Kong Three-Year Senior Bond		2,776,981,160.57
Total	**36,815,553,929.35**	**48,794,139,866.28**

2. Changes in bonds payable (preferred stocks/ perpetual debts divided into financial liabilities excluded)

Bond name	Par value	Issue date	Bond term	Issued Amount	Opening balance
Senior dollar bonds	8,494,460,000.00	2017/4/21	5 years	8,455,385,484.00	9,057,384,593.17
19 China Aluminum Group MTN005	2,000,000,000.00	2019/8/15	5 years	2,000,000,000.00	2,000,000,000.00
19 China Aluminum Group MTN002	2,000,000,000.00	2019/4/24	3 years	2,000,000,000.00	2,000,000,000.00
19 China Aluminum Group MTN001	2,000,000,000.00	2019/1/24	3 years	2,000,000,000.00	2,000,000,000.00
2017 medium-term note 005 (Rio Tinto)	2,000,000,000.00	2017/10/30	5 years	2,000,000,000.00	2,000,000,000.00

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

19 China Aluminum Group MTN007	2,000,000,000.00	2019/10/16	5 years	2,000,000,000.00	2,000,000,000.00
The first public issuance of corporate bonds in 2019	2,000,000,000.00	2019/1/23	3 years	1,998,002,000.00	1,998,604,346.49
The second tranche of public issuance of corporate bonds in 2019 (variety 2)	2,000,000,000.00	2019/8/9	10 years	1,997,000,000.00	1,997,096,940.29
2019 first tranche of medium-term notes	2,000,000,000.00	2019/5/24	5 years	1,980,000,000.00	1,982,228,208.34
2018 the second tranche of public issuance of corporate bonds (variety 2)	1,600,000,000.00	2018/9/18	5 years	1,595,200,000.00	1,596,191,987.63
20 China Aluminum Group MTN001A	1,500,000,000.00	2020/3/13	5 years	1,500,000,000.00	
20 dium-term note MTN001	1,000,000,000.00	2020/3/24	5 years	1,000,000,000.00	
20 China Aluminum Group MTN002	1,000,000,000.00	2020/8/26	3 years	1,000,000,000.00	
18 China Aluminum Group MTN002B (Rio Tinto)	1,000,000,000.00	2018/7/13	5 years	1,000,000,000.00	1,000,000,000.00
20 China Aluminum Group MTN003	1,000,000,000.00	2020/9/18	5 years	1,000,000,000.00	
The third tranche of public issuance of corporate bonds in 2019 (variety one)	1,000,000,000.00	2019/9/5	3 years	999,400,000.00	999,462,074.18
The second tranche of public issuance of corporate bonds in 2020	1,000,000,000.00	2020/03/20	3 years	999,486,000.00	
The first public issuance of corporate bonds in 2018 (variety 2)	900,000,000.00	2018/9/18	5 years	897,300,000.00	898,315,177.44
2020 first tranche of medium-term notes	900,000,000.00	2020/3/26	3 years	897,300,000.00	
20 China Aluminum Group MTN001B	500,000,000.00	2020/3/13	10 years	500,000,000.00	
20 Yuntong 01 (Code: 149134)	500,000,000.00	2020/6/2	3 years	500,000,000.00	

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The first public issuance of corporate bonds in 2020	500,000,000.00	2020/3/5	5 years	499,835,000.00	
Open Source-Chinalco Leasing Supply Side Reform No. 1	145,152,000.00	2020/8/30	3years	145,152,000.00	
2018 the second tranche of public issuance of corporate bonds (variety one)	1,400,000,000.00	2018/3/22	3 years	1,395,800,000.00	1,397,318,324.76
The first public issuance of corporate bonds in 2018 (variety one)	1,100,000,000.00	2018/9/7	3 years	1,096,700,000.00	1,098,217,658.67
2018 first tranche of medium-term notes	2,000,000,000.00	2018/3/22	3 years	1,982,000,000.00	1,992,339,394.74
18 China Aluminum Group MTN004	3,000,000,000.00	2018/10/26	3 years	3,000,000,000.00	3,000,000,000.00
18 China Aluminum Group MTN003	2,000,000,000.00	2018/8/17	3 years	2,000,000,000.00	2,000,000,000.00
18 China Aluminum Group MTN002A (Rio Tinto)	2,000,000,000.00	2018/7/13	5 years	2,000,000,000.00	2,000,000,000.00
18 China Aluminum Group MTN001	3,000,000,000.00	2018/5/24	3 years	3,000,000,000.00	3,000,000,000.00
18 China Aluminum Group MTN005	2,000,000,000.00	2018/12/10	3 years	2,000,000,000.00	2,000,000,000.00
2018 Chinalco Hong Kong Three-Year Senior Bond	2,609,960,000.00	2018/9/7	3 years	2,722,384,000.00	2,776,981,160.57
Total	**56,149,572,000.00**			**56,160,944,484.00**	**48,794,139,866.28**

(Continued)

Bond name	Issued in current year	Interest at par value	Amortization of premium price	Repayment in current year	Closing balance
Senior dollar bonds		479,934.78	575,014,593.17		8,482,849,934.78
19 China Aluminum Group MTN005					2,000,000,000.00
19 China Aluminum Group MTN002					2,000,000,000.00

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Bond name	Issued in current year	Interest at par value	Amortization of premium price	Repayment in current year	Closing balance
19 China Aluminum Group MTN001					2,000,000,000.00
2017 winning ticket 005 (Rio Tinto)					2,000,000,000.00
19 China Aluminum Group MTN007					2,000,000,000.00
The first public issuance of corporate bonds in 2019			-591,951.92		1,999,196,298.41
The second tranche of public issuance of corporate bonds in 2019 (variety 2)			-167,796.86		1,997,264,737.15
2019 first tranche of medium-term notes			-3,035,842.36		1,985,264,050.70
2018 the second tranche of public issuance of corporate bonds (variety 2)			-879,004.73		1,597,070,992.36
20 China Aluminum Group MTN001A	1,430,812,770.00				1,430,812,770.00
20 dium-term note MTN001	880,751,200.00				880,751,200.00
20 China Aluminum Group MTN002	1,000,000,000.00				1,000,000,000.00
18 China Aluminum Group MTN002B (Rio Tinto)					1,000,000,000.00
20 China Aluminum Group MTN003	1,000,000,000.00				1,000,000,000.00
The third tranche of public issuance of corporate bonds in 2019 (variety one)			-161,117.01		999,623,191.19
The second tranche of public issuance of corporate bonds in 2020	999,486,000.00		-130,669.38		999,616,669.38
The first public issuance of corporate bonds in 2018 (variety 2)			-491,677.85		898,806,855.29

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Bond name	Issued in current year	Interest at par value	Amortization of premium price	Repayment in current year	Closing balance
2020 first tranche of medium-term notes	897,300,000.00		-672,259.16		897,972,259.16
20 China Aluminum Group MTN001B	500,000,000.00				500,000,000.00
20 Yuntong 01 (Code: 149134)	500,000,000.00				500,000,000.00
The first public issuance of corporate bonds in 2020	499,835,000.00		-18,135.50		499,853,135.50
Open Source-Chinalco Leasing Supply Side Reform No. 1	145,152,000.00	1,319,835.43			146,471,835.43
2018 the second tranche of public issuance of corporate bonds (variety one)				1,397,318,324.76	
The first public issuance of corporate bonds in 2018 (variety one)				1,098,217,658.67	
2018 first tranche of medium-term notes				1,992,339,394.74	
18 China Aluminum Group MTN004				3,000,000,000.00	
18 China Aluminum Group MTN003				2,000,000,000.00	
18 China Aluminum Group MTN002A (Rio Tinto)				2,000,000,000.00	
18 China Aluminum Group MTN001				3,000,000,000.00	
18 China Aluminum Group MTN005				2,000,000,000.00	
2018 Chinalco Hong Kong Three-Year Senior Bond				2,776,981,160.57	
Total	**7,853,336,970.00**	**1,799,770.21**	**568,866,138.40**	**19,264,856,538.74**	**36,815,553,929.35**

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

8.48 Lease liabilities

Items	Closing balance	Opening balance
Lease payments	1,153,842,810.05	1,044,802,617.52
Less: Unrecognized Financial Charges	204,380,314.79	81,135,014.73
Non-current liabilities reclassified to due within one year	834,081,791.66	840,407,778.83
Net lease liabilities	**115,380,703.60**	**123,259,823.96**

8.49 Long-term payables

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance
Long-term payables	4,516,697,543.59	1,822,952,705.30	4,142,920,846.70	2,196,729,402.19
Special payables	343,306,925.99	307,018,397.13	177,599,823.28	472,725,499.84
Total	**4,860,004,469.58**	**2,129,971,102.43**	**4,320,520,669.98**	**2,669,454,902.03**

1. Top five long-term payables

Items	Closing balance	Opening balance
China Foreign Trade Financial Leasing Co., Ltd.	396,140,998.40	442,745,821.67
Yunnan Provincial Department of Natural Resources	358,340,000.00	352,220,000.00
SPDB Financial Leasing Co., Ltd.	240,217,763.16	50,344,835.52
Yunnan Provincial Department of Land and Resources	155,799,525.46	182,416,356.27
Guoxin Financial Leasing Co., Ltd.	73,499,999.95	139,166,666.63
Total	**1,223,998,286.97**	**1,166,893,680.09**

2. Top five special payables

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance
Demolition Compensation	121,829,785.91	20,242,845.82	3,312,883.91	138,759,747.82
Reconstruction of North Shanty Area of Gymnasium	58,041,907.38	37,615,366.26	42,845,585.26	52,811,688.38
Renovation of Shanty Towns in Nanliu Street	24,598,559.94			24,598,559.94

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance
National Emergency Drill Training Base	21,000,000.00			21,000,000.00
Sangongyiye special project	35,840,000.00	17,410,000.00	35,137,251.13	18,112,748.87
Total	**261,310,253.23**	**75,268,212.08**	**81,295,720.30**	**255,282,745.01**

8.50 Long-term employee benefits payable

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance
Post-employment benefits -defined benefit plan (net debt)	813,861,477.68	61,054,706.99	186,777,485.06	688,138,699.61
Termination benefits	852,540,279.25	184,434,637.96	394,389,664.84	642,585,252.37
Other long-term benefits	122,159,072.03	41,466,724.77	54,040,276.68	109,585,520.12
Total	**1,788,560,828.96**	**286,956,069.72**	**635,207,426.58**	**1,440,309,472.10**

8.51 Provisions

Items	Closing balance	Opening balance
Disposal expense	2,496,483,940.75	2,537,808,176.55
External guarantee	25,074,189.07	17,510,418.56
Pending litigation	262,623,694.92	104,666,162.08
Product warranty	11,191,226.69	548,840.27
Restructuring obligations		471,698.11
Onerous loss contracts to be performed	44,296,000.00	44,296,000.00
Others	834,889,385.63	794,813,508.20
Total	**3,674,558,437.06**	**3,500,114,803.77**

8.52 Deferred income

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance
Compensation for demolition	1,603,486,323.16	193,693,586.54	1,569,110,185.21	228,069,724.49
Scientific research project	227,702,794.65	125,997,764.59	191,668,266.01	162,032,293.23
Interest subsidy from government	97,761,555.03	614,800.00	14,292,929.86	84,083,425.17

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Sale and leaseback	125,706,516.81		66,862,517.03	58,843,999.78
Environmental protection project	64,142,921.20	26,380,400.00	31,789,046.08	58,734,275.12
Others	117,983,796.16	42,530,926.87	71,164,497.01	89,350,226.02
Total	**2,236,783,907.01**	**389,217,478.00**	**1,944,887,441.20**	**681,113,943.81**

8.53 Other Non-current Liabilities

Items	Closing balance	Opening balance
Output tax to be transferred	182,859,154.52	125,757,539.84
Borrowings	45,000,000.00	142,727,282.34
Lease payments for mining area	23,274,232.56	25,432,259.96
Liabilities of compound financial instruments		194,759,081.68
Others	10,196,397.68	21,518,635.35
Total	**261,329,784.76**	**510,194,799.17**

8.54 Paid-in capital

Name of Investors	Opening balance		Increase in current year	Decrease in current year	Closing balance	
	Amount invested	Proportion (%)			Amount invested	Proportion (%)
State-owned Assets Supervision and Administration Commission (SASAC)	22,680,000,000.00	90.00			22,680,000,000.00	90.00
National Council for Social Security Fund (SSF)	2,520,000,000.00	10.00			2,520,000,000.00	10.00
Total	**25,200,000,000.00**	**100.00**			**25,200,000,000.00**	**100.00**

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

8.55 Other equity instruments

Financial instruments issued	Opening balance	Increase in the year	Decrease in current year	Closing balance
Perpetual bond	120,574,567,264.14	2,000,000,000.00	4,004,453,070.71	118,570,114,193.43
Total	**120,574,567,264.14**	**2,000,000,000.00**	**4,004,453,070.71**	**118,570,114,193.43**

Note: The Group entrusted Taiping Asset Management Co., Ltd. to set up a bond investment plan in current year, raising RMB 1 billion; the Group issued the fourth phase of 2020 perpetual medium-term notes in current year, raising RMB 1.0 billion; the Group repaid RMB 4 billion of medium-term notes in current year.

8.56 Capital reserve

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance
Capital (or share) premiums	4,064,721,508.31			4,064,721,508.31
Other capital reserve[Notes]	21,410,227,396.58	1,610,871,302.02		23,021,098,698.60
Total	**25,474,948,904.89**	**1,610,871,302.02**		**27,085,820,206.91**
Including: Exclusive state-owned capital reserve				

Notes: (1) According to the signing of the strategic cooperation agreement with the Chongqing Government, the Company introduced an external investor, Chongqing Aluminum Industry Development and Investment Group Co., Ltd. (hereinafter referred to as "Chongqing Aluminum Industry Investment Company") to establish China Aluminum Group High-end Manufacturing Co., Ltd. (hereinafter referred to as "China Aluminum High-end Manufacturing"). Chongqing Aluminum Industry Investment Corporation acquired 35% of Chinalco's high-end manufacturing net assets at a consideration of RMB 5.25 billion. The company recognized the difference between the investment amount of Chongqing Aluminum Industry Investment Corporation and its share of net assets to increase the capital reserve by RMB 1.154 billion;

(2) According to the "Caiqi [2005] No. 12 Corporate Restructuring of the Interim Provisions on State-owned Capital Management and Financial Treatment", the Group will transfer the wage balance formed by the implementation of "work efficiency linkage" to the capital reserve in the current period. Due to the above matters, the Group’s capital reserve increased by RMB 342 million;

(3) The Company’s subsidiary, China Aluminum International Engineering Corporation Limited., acquired the minority shareholders of its subsidiary Jiuye Construction Co., Ltd. during the current period. Due to the above matters, the Group’s capital reserve increased by RMB 55 million;

(4) Aluminum Corporation of China, a subsidiary of the Company, received special financial funds in the current period. Because the special funds are used for key national technological transformation projects, Aluminum Corporation of China has injected the funds as the state capital of the project. Due to the above matters, the Group’s capital reserve increased by RMB 16 million.

8.57 Special reserves

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance	Notes
Safety reserve	345,326,236.58	736,656,122.88	668,993,413.97	412,988,945.49	

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance	Notes
Keep simple reproduction expenses	511,129.95			511,129.95	
Others					
Total	**345,837,366.53**	**736,656,122.88**	**668,993,413.97**	**413,500,075.44**	

Note: The special reserve is mainly based on the requirements of the Group in accordance with the provisions of the [2012] No. 16 "Administrative Measures for the Extraction and Use of Enterprise Work Safety Expenses" promulgated by the Ministry of Finance and the State Administration of Work Safety on 14 February 2012. Provisions of mining and gas production, transportation, metallurgy, machinery manufacturing, and construction services are recognized with corresponding safety production fees.

8.58 Surplus reserve

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance
Statutory surplus reserve	1,419,398,973.78			1,419,398,973.78
Discretionary surplus reserve				
Reserve fund				
Enterprise development fund				
Others				
Total	**1,419,398,973.78**			**1,419,398,973.78**

8.59 Retained earnings

Items	Current year	Prior year
Retained earnings at the beginning of the period	-55,088,265,770.48	-50,708,828,561.17
Add for the period	2,214,061,930.57	1,887,624,556.07
Including: Net profit attributable to owners of the Group for the period	2,214,061,930.57	1,887,624,556.07
Other adjustments		
Less for the period	5,416,955,879.09	6,267,061,765.38
Including: Appropriation to surplus reserve		
Appropriation to general risk reserve	85,703,391.86	2,656,906.46

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Current year	Prior year
Dividends distributed in the year		
Transfer to paid-in capital		
Others[Note]	5,331,252,487.23	6,264,404,858.92
Closing balance	-58,291,159,719.00	-55,088,265,770.48

Notes: (1) The Group distributed interest on perpetual bonds during the current period, reducing the total amount of retained earnings by RMB 3.427 billion;

(2) In accordance with Guobanfa (the State Council) [2016] No. 45, the Group's "Notice of the State-owned Assets Supervision and Administration Commission of the State Council and the Ministry of Finance on the Guidance of the Separation and Handover of "Sangongyiye" in the family residential areas of State-owned Enterprise Workers" and (Financial Enterprise [2005]] No. 62). The relevant provisions of the "Notice of the Ministry of Finance on Financial Management Issues Concerning the Separation of Social Functions of Enterprises", offsetting the total amount of retained earnings of RMB 1.904 billion.

8.60 Operating Revenue and Operating Costs

Items	Current year		Prior year	
	Revenue	Costs	Revenue	Costs
Subtotal of main business	**357,762,849,880.02**	**320,081,494,536.02**	**346,254,263,145.13**	**311,681,953,870.18**
Sale of product	322,749,130,952.98	290,249,790,205.38	308,493,024,610.42	280,551,638,478.33
Rendering of service	11,265,621,238.50	9,925,476,819.92	12,792,529,393.81	11,034,423,593.68
Engineering construction	18,515,659,876.14	16,226,243,183.92	19,235,073,395.38	16,467,713,398.64
Others	5,232,437,812.40	3,679,984,326.80	5,733,635,745.52	3,628,178,399.53
Subtotal of other business	**8,868,726,864.43**	**7,500,149,436.75**	**10,171,053,725.58**	**8,232,720,035.18**
Sale of materials	5,731,285,731.20	5,124,734,184.25	6,550,752,727.48	5,720,903,655.20
Logistics	1,650,949,331.37	1,356,546,458.27	1,643,878,440.95	1,314,954,343.35
Lease	475,641,352.94	272,269,717.20	680,229,484.80	361,460,637.25
Others	1,010,850,448.92	746,599,077.03	1,296,193,072.35	835,401,399.38
Total	**366,631,576,744.45**	**327,581,643,972.77**	**356,425,316,870.71**	**319,914,673,905.36**

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

8.61 Selling expenses

Items	Current year	Prior year
Transportation expense	1,785,907,660.37	1,926,266,343.78
Salaries	573,699,374.57	641,864,542.97
Packing expense	390,758,903.03	371,320,220.39
Handling charges	145,794,035.18	272,479,500.24
Storage fee	69,583,037.59	93,531,255.50
Sales and service fees	63,194,293.69	138,220,391.01
Lease fee	50,833,656.28	21,880,676.06
Travel expense	43,875,270.22	45,442,603.28
Depreciation expense	40,637,359.01	40,653,325.44
Business expense	25,065,783.58	32,374,036.26
Office allowance	21,333,432.16	7,861,115.27
Repair expense	8,184,444.24	6,650,667.00
Insurance expense	7,433,582.74	10,924,448.71
Exhibition fees	3,468,416.34	2,475,955.13
Post and communication fees	2,629,835.95	2,044,967.76
Loss of products and samples	2,250,641.01	647,074.19
Utility expense	2,180,967.26	2,166,333.06
Others	381,192,918.36	313,966,921.22
Total	**3,618,023,611.58**	**3,930,770,377.27**

8.62 Administrative expenses

Items	Current year	Prior year
Salaries	5,945,539,633.46	5,754,388,827.07
Repair expense	721,966,851.64	611,247,809.87
Depreciation	719,224,247.97	645,410,742.46

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Amortizaiton	442,204,776.78	439,444,200.34
Loss on cessation	415,579,965.21	377,695,139.44
Agency fees	219,121,399.39	245,164,924.18
Lease management fees	179,423,551.31	196,327,203.33
Exploration expense	153,992,910.97	94,024,024.43
Travel expense	116,223,045.92	217,787,987.45
Consulting fees	97,678,617.30	88,489,280.98
Insurance expense	73,911,093.27	82,432,413.57
Office allowance	72,224,101.51	238,428,840.45
Transportation expense	69,663,595.13	62,128,100.68
Safety production fees	54,808,961.44	45,570,500.42
Party Construction expense	82,379,600.08	64,826,395.39
Business entertainment expense	48,689,620.96	44,140,257.31
Legal fees	44,363,179.21	17,850,727.03
Pollutant discharge fees	12,496,743.43	19,390,544.07
Conference expense	6,640,244.46	11,708,958.79
Others	634,129,162.81	1,032,057,024.99
Total	**10,110,261,302.25**	**10,288,513,902.25**

8.63 Financial Expenses

Items	Current year	Prior year
Interest expenses	13,060,803,191.57	15,001,485,573.31
Interest income	1,095,531,367.89	866,464,477.28
Net exchange loss	-483,483,450.29	85,822,610.22
Others	834,654,971.31	495,140,423.99
Total	**13,283,410,245.28**	**14,544,338,909.80**

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

8.64 Other income

Items	Current year	Prior year
VAT levied immediately returned	184,603,034.00	194,200,713.63
Special support funds	26,363,005.03	325,387,575.33
Government grants	126,649,614.61	190,699,514.36
Others	35,686,165.27	50,242,446.36
Total	**373,301,818.91**	**760,530,249.68**

8.65 Investment income

Sources of investment income	Current year	Prior year
Income from long-term equity investments under equity method	380,141,819.19	702,426,162.04
Income from disposal of long-term equity investments	1,314,298,530.39	456,090,560.54
Income from financial assets held for trading during holding period(applicable under new Standards for Financial Instruments)	36,760,863.80	4,346,143.45
Income from disposal of financial assets held for trading (applicable under new Standards for Financial Instruments)	10,728,929.90	62,567,259.03
Investment income from financial assets measured at fair value through profit or loss during holding period	22,200,732.85	131,593,739.11
Investment income from disposal of financial assets measured at fair value through profit or loss	583,735,262.61	6,157,013.43
Income from held-to-maturity investments during holding period	10,771,235.14	59,823,278.32
Income from disposal of held-to-maturity investments	368,290.35	
Income from available-for-sale financial assets	5,032,228,192.99	8,389,143,253.26
Income from disposal of available-for-sale financial assets	321,634,986.50	58,767,362.57
Interest income from debt investments during holding period (applicable under new Standards for Financial Instruments)		
Interest income from other debt investments during holding period (applicable under new Standards for Financial Instruments)		
Income from disposal of debt investments (applicable under new Standards for Financial Instruments)		
Income from disposal of other debt investments (applicable under new Standards for Financial Instruments)		

Sources of investment income	Current year	Prior year
Income from other non-current financial assets during holding period(applicable under new Standards for Financial Instruments)		
Income from disposal of other non-current financial assets (applicable under new Standards for Financial Instruments)		
Gains from remeasurement of equity investments at fair value when obtaining control		1,346,449,691.57
Gains from remeasurement of equity investments retained at fair value after losing control		
Income from other equity instruments during holding period(applicable under new Standards for Financial Instruments)	84,862,420.24	3,332,410.52
Others	-181,961,877.35	660,802,923.38
Total	**7,615,769,386.61**	**11,881,499,797.22**

8.66 Profit/(loss) from changes in fair value

Sources of gains on changes in fair value	Current year	Prior year
Financial assets held for trading (applicable under new Standards for Financial Instruments)	106,284,511.89	10,309,848.33
Financial assets measured at fair value through profit or loss (applicable under former Standards for Financial Instruments)	-1,546,981.90	-2,840,478.83
Derivative financial assets	-21,958,715.20	-200,835.00
Other non-current financial assets		
Financial liabilities held for trading (applicable under new Standards for Financial Instruments)	-22,953,943.45	-33,355,395.32
Financial liabilities at fair value through profit or loss (applicable under former Standards for Financial Instruments)	-31,034,253.05	3,367,369.88
Derivative financial liabilities		
Investment properties measured at fair value		
Others	-2,138,710.28	
Total	**26,651,908.01**	**-22,719,490.94**

8.67 Credit impairment losses

Items	Current year	Prior year
Impairment loss for bad debts	-1,904,110,260.92	-1,089,932,529.01

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Current year	Prior year
Others	-3,999,862.57	-87,094,351.34
Total	**-1,908,110,123.49**	**-1,177,026,880.35**

8.68 Asset impairment losses

Items	Current year	Prior year
Impairment loss for bad debts (applicable under former Standards for Financial Instruments)	-448,304,547.46	-1,306,250,520.69
Impairment loss for inventories	-1,466,284,552.98	-2,236,447,304.84
Impairment loss for available-for-sale financial assets (applicable under former Standards for Financial Instruments)	-147,183,405.32	-225,846,971.11
Impairment loss for held-to-maturity investments (applicable under former Standards for Financial Instruments)	11,326,850.00	26,082,983.00
Impairment loss for long-term equity investments	-66,725,953.09	-75,723,482.46
Impairment loss for investment properties	-7,794,720.21	-86,623.22
Impairment loss for fixed assets	-1,252,476,091.28	-1,435,342,264.29
Impairment loss for construction in progress	-287,668,840.88	-641,262,714.46
Impairment loss for intangible assets	-639,405,529.70	-362,271,791.17
Impairment loss for goodwill	-12,494,593.35	-5,351,654.67
Impairment loss for right-of-use assets	-15,790,482.70	
Impairment loss for contract assets	-440,212,555.70	
Others	-185,644,455.30	-564,842,477.35
Total	**-4,958,658,877.97**	**-6,827,342,821.26**

8.69 Gains on disposal of assets

Items	Current year	Prior year	The amount of the non-recurring gains and losses of the year
Income from disposal of fixed assets	-11,916,427.19	-735,103,813.00	-11,916,427.19
Income from land purchase and storage	84,612,405.28	79,835,216.93	84,612,405.28
Income from disposal of intangible assets	66,581,644.75	64,576,263.09	66,581,644.75

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Current year	Prior year	The amount of the non-recurring gains and losses of the year
Zombie enterprise management		-929,030,704.71	
Others	804,853.52		804,853.52
Total	**140,082,476.36**	**-1,519,723,037.69**	**140,082,476.36**

8.70 Non-operating Income

1. Details of non-operating income

Items	Current year	Prior year	The amount of the non-recurring gains and losses of the year
Gains on retirement of non-current assets	13,013,445.24	18,791,733.43	13,013,445.24
Donations received	26,889.60	2,325,291.57	26,889.60
Government grants unrelated to normal course of business	293,492,149.47	264,004,756.04	293,492,149.47
Indemnity	286,980,193.41	176,522,518.92	286,980,193.41
Amount that cannot be paid	104,417,425.25	75,976,360.49	104,417,425.25
Gains on liquidation of Zhongfu Aluminum	89,493,378.29		89,493,378.29
Others	81,025,887.55	191,637,154.92	81,025,887.55
Total	**868,449,368.81**	**729,257,815.37**	**868,449,368.81**

2. Details of government grants

Items	Current year	Prior year
Subsidies for “Sangongyiye”	162,394,675.62	65,496,979.79
Land premium compensation	108,738,593.57	162,883,831.13
Industrial development fund	6,259,892.58	5,675,182.80
Yiliang Chihong government high water stage pool relocation compensation	4,732,199.38	
Subsidy for No.1 pump land resumption	2,000,000.00	
Subsidy for Huichaku project		1,000,000.00
Subsidy for Siheyuan east shanty reform project		4,260,000.00

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Current year	Prior year
Subsidy for exceptional poverty		2,370,000.00
Standardization Award from the Bureau of Industry and Information Technology of Guanshan Lake District Yang City		1,000,000.00
Award from Financial and Treasury Administration Bureau of Yuhua District Changsha City		2,265,000.00
Other small-scale subsidies	9,366,788.32	19,053,762.32
Total	**293,492,149.47**	**264,004,756.04**

8.71 Non-operating expenses

Items	Current year	Prior year	The amount of the non-recurring gains and losses of the year
Losses on disposal of non-current assets	368,927,689.36	227,631,871.56	368,927,689.36
Donations	79,930,158.21	57,974,596.81	79,930,158.21
Penalty and overdue fine	190,514,268.21	305,651,227.99	190,514,268.21
Overseas epidemic prevention fees	86,301,026.32		86,301,026.32
"Sangongyiye”	5,029,700.75	48,582,236.44	5,029,700.75
Losses on cessation	9,997,589.20	38,822,944.14	9,997,589.20
Others	225,322,094.24	414,516,307.47	225,322,094.24
Total	**966,022,526.29**	**1,093,179,184.41**	**966,022,526.29**

8.72 Income tax expenses

1. Income Tax Expenses

Items	Current year	Prior year
Income tax expenses calculated based on the taxation law and relevant regulations in current period	2,286,052,996.17	1,610,736,943.86
Adjustment of deferred income taxes	309,111,926.21	426,030,818.24
Others		
Total	**2,595,164,922.38**	**2,036,767,762.10**

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

2. Reconciliation of accounting profit and income tax expenses

Items	Current year
Total consolidated profit	10,068,397,061.58
Income tax expenses calculated at the statutory / applicable tax rate	2,289,064,284.59
Effects of different applicable tax rates on subsidiaries	-130,123,279.57
Effects of adjustments of income taxes in previous periods	-80,941,001.02
Effects of non-taxable income	-1,342,980,219.21
Effects of non-deductible costs, expenses, and losses	320,208,454.28
Effects of utilizing deductible losses that are not previously recognized as deferred tax assets	-362,713,336.29
Effects of deductible temporary differences or deductible losses that are not recognized as deferred tax assets in current year	2,579,049,198.74
Others	-676,399,179.14
Income tax expenses	**2,595,164,922.38**

8.73 Other comprehensive income attributed to owners/shareholders of the company

1. Other items of comprehensive income and its income tax impact and transfer profit and loss

Items	Current year		
	Pre-tax amount	Income tax	After-tax amount
1. Other comprehensive income that cannot be reclassified into profit or loss	**-31,574,139.39**	**-3,895,060.46**	**-27,679,078.93**
(1). Remeasurement of defined benefit plan - changes in net liability /(net asset)	-2,334,929.08	-246,500.68	-2,088,428.40
(2). Other comprehensive income that cannot be reclassified to profit or loss under equity method	-803,854.61		-803,854.61
(3). Equity instrument designated as at fair value through other comprehensive income - Changes in fair value (applicable under new Standards for Financial Instruments)	-28,435,355.70	-3,648,559.78	-24,786,795.92
(4). Company's credit risk - Changes in fair value (applicable under new Standards for Financial Instruments)			
(5). Others			
2. Other comprehensive income that may be reclassified subsequently to profit or loss	**-9,135,977,279.82**	**-271,174,103.16**	**-8,864,803,176.66**

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Current year		
	Pre-tax amount	Income tax	After-tax amount
(1).Other comprehensive income that can be reclassified to profit or loss under equity method	-793,878.33	-161,091.08	-632,787.25
Less: Amount previously recognized in other comprehensive income and reclassified to profit or loss in current period			
Subtotal	-793,878.33	-161,091.08	-632,787.25
(2). Debt instrument measured at fair value through other comprehensive income - Changes in fair value (applicable under new Standards for Financial Instruments)			
Less: Amount previously recognized in other comprehensive income and reclassified to profit or loss in current period			
Subtotal			
(3). Gains or losses on changes in fair value of available-for-sale financial assets (applicable under former Standards for Financial Instruments)	11,245,874.10	1,699,291.67	9,546,582.43
Less: Amount previously recognized in other comprehensive income and reclassified to profit or loss in current period			
Subtotal	11,245,874.10	1,699,291.67	9,546,582.43
(4). Reclassification of financial assets to other comprehensive income (applicable under new Standards for Financial Instruments)			
Less: Amount previously recognized in other comprehensive income and reclassified to profit or loss in current period			
Subtotal			
(5). Gains or losses on reclassification of held-to-maturity investments to available-for-sale financial assets (applicable under former Standards for Financial Instruments)			
Less: Amount previously recognized in other comprehensive income and reclassified to profit or loss in current period			
Subtotal			

Items	Current year		
	Pre-tax amount	**Income tax**	**After-tax amount**
(6). Debt instrument measured at fair value through other comprehensive income - Credit impairment loss (applicable under new Standards for Financial Instruments)			
Less: Amount previously recognized in other comprehensive income and reclassified to profit or loss in current period			
Subtotal			
(7). Cash flow hedge reserve (Effective portion of gains or losses on cash flow hedge)	-250,718,972.80	-39,359,767.09	-211,359,205.71
Less: Amount transfer to initial cost of the hedged item			
Other comprehensive income and reclassified to profit or loss in current period	64,352,858.92	9,989,581.66	54,363,277.26
Subtotal	-315,071,831.72	-49,349,348.75	-265,722,482.97
(8). Translation differences of financial statements presented in foreign currencies	-8,831,357,443.87	-223,362,955.00	-8,607,994,488.87
Less: Amount previously recognized in other comprehensive income and reclassified to profit or loss in current period			
Subtotal	-8,831,357,443.87	-223,362,955.00	-8,607,994,488.87
(9). Others			
Less: Amount previously recognized in other comprehensive income and reclassified to profit or loss in current period			
Subtotal			
3. Total other comprehensive income	**-9,167,551,419.21**	**-275,069,163.62**	**-8,892,482,255.59**

(Continued）

Items	Prior year		
	Pre-tax amount	**Income tax**	**Pre-tax amount**
1. Other comprehensive income that will not be reclassified subsequently to profit or loss	**-25,008,477.38**	**-25,855,022.03**	**846,544.65**
(1). Remeasurement of defined benefit plan - changes in net liability /(net asset)	-19,366,956.23	-3,055,419.49	-16,311,536.74

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Prior year		
	Pre-tax amount	Income tax	Pre-tax amount
(2). Other comprehensive income that cannot be reclassified to profit or loss under equity method			
(3). Equity instrument designated as at fair value through other comprehensive income - Changes in fair value (applicable under new Standards for Financial Instruments)	-5,641,521.15	-22,799,602.54	17,158,081.39
(4). Company's credit risk - Changes in fair value (applicable under new Standards for Financial Instruments)			
(5). Others			
2. Other comprehensive income that may be reclassified subsequently to profit or loss	2,075,555,206.58	15,585,077.00	2,059,970,129.58
(1).Other comprehensive income that can be reclassified to profit or loss under equity method	**93,499,204.56**		**93,499,204.56**
Less: Amount previously recognized in other comprehensive income and reclassified to profit or loss in current period			
Subtotal	93,499,204.56		93,499,204.56
(2). Debt instrument measured at fair value through other comprehensive income - Changes in fair value (applicable under new Standards for Financial Instruments)			
Less: Amount previously recognized in other comprehensive income and reclassified to profit or loss in current period			
Subtotal			
(3). Gains or losses on changes in fair value of available-for-sale financial assets (applicable under former Standards for Financial Instruments)	120,399,517.26	17,100,145.68	103,299,371.58
Less: Amount previously recognized in other comprehensive income and reclassified to profit or loss in current period			
Subtotal	120,399,517.26	17,100,145.68	103,299,371.58
(4). Reclassification of financial assets to other comprehensive income (applicable under new Standards for Financial Instruments)			

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Prior year		
	Pre-tax amount	Income tax	Pre-tax amount
Less: Amount previously recognized in other comprehensive income and reclassified to profit or loss in current period			
Subtotal			
(5). Gains or losses on reclassification of held-to-maturity investments to available-for-sale financial assets (applicable under former Standards for Financial Instruments)			
Less: Amount previously recognized in other comprehensive income and reclassified to profit or loss in current period			
Subtotal			
(6). Debt instrument measured at fair value through other comprehensive income - Credit impairment loss (applicable under new Standards for Financial Instruments)			
Less: Amount previously recognized in other comprehensive income and reclassified to profit or loss in current period			
Subtotal			
(7). Cash flow hedge reserve (Effective portion of gains or losses on cash flow hedge)	24,480,790.89	2,346,289.28	22,134,501.61
Less: Amount transfer to initial cost of the hedged item			
Other comprehensive income and reclassified to profit or loss in current period	47,013,828.35	3,861,357.96	43,152,470.39
Subtotal	-22,533,037.46	-1,515,068.68	-21,017,968.78
(8). Translation differences of financial statements presented in foreign currencies	1,889,081,763.70		1,889,081,763.70
Less: Amount previously recognized in other comprehensive income and reclassified to profit or loss in current period			
Subtotal	1,889,081,763.70		1,889,081,763.70
(9). Others	-4,892,241.48		-4,892,241.48

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Prior year		
	Pre-tax amount	Income tax	Pre-tax amount
Less: Amount previously recognized in other comprehensive income and reclassified to profit or loss in current period			
Subtotal	-4,892,241.48		-4,892,241.48
3. Total other comprehensive income	**2,050,546,729.20**	**-10,269,945.03**	**2,060,816,674.23**

2. Adjustment of other comprehensive income items

Items	Remeasurement of defined benefit plan	Changes in fair value of other equity instruments	Share of Other comprehensive income to be reclassified into profit and loss of investee under the equity method	Changes in fair value of the available-for-sale financial assets
1. Opening balance in prior year	118,193,412.59	-50,464,013.59	120,858.73	169,999,663.82
2. Increase or decrease in prior year (loss expressed with "-")	-16,311,536.74	30,636,683.59	93,499,204.56	103,299,371.58
3. Opening balance in current year	101,881,875.85	-19,827,330.00	93,620,063.29	273,299,035.40
4. Increase or decrease in current year (loss expressed with "-")	-2,088,428.40	-24,786,795.92	-632,787.25	9,546,582.43
5. Closing balance in current year	99,793,447.45	-44,614,125.92	92,987,276.04	282,845,617.83

(Continued)

Items	Cash flow hedging reserve (Effective portion on cash flow hedging profit and loss)	Translation differences of financial statements in foreign currencies	Others	Total
1. Opening balance in prior year	642,947,864.03	-277,625,331.68	-1,860,719.43	601,311,734.47

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

2. Increase or decrease in prior year (loss expressed with "-")	-21,017,968.78	1,889,081,763.70	-4,892,241.48	2,074,295,276.43
3. Opening balance in current year	621,929,895.25	1,611,456,432.02	-6,752,960.91	2,675,607,010.90
4. Increase or decrease in current year (loss expressed with "-")	-265,722,482.97	-8,607,994,488.87	-803,854.61	-8,892,482,255.59
5. Closing balance in current year	356,207,412.28	-6,996,538,056.85	-7,556,815.52	-6,216,875,244.69

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

8.74 Segment information

Items	Aluminum sector		Copper sector		Engineering Sector		Tombarthite Sector	
	Current year	Prior year	Current year	Prior year	Current year	Prior year	Current year	Prior year
Operating Revenue	217,347,893,017.07	224,170,372,930.70	152,902,922,322.67	133,169,789,190.05	23,025,950,957.87	31,059,791,611.63	4,110,915,700.29	4,121,688,999.27
Income from investment in joint ventures and associates	328,372,672.79	318,623,099.16	357,467,783.23	395,348,287.76	20,736,899.25	-4,779,193.39	-155,845.16	-1,834,331.94
Asset impairment losses	-1,965,034,908.88	-2,091,807,460.54	-2,265,744,506.86	-3,874,431,398.84	-566,600,453.43	-6,981,953.83	-11,997,844.82	-2,987,087.75
Credit impairment losses (applicable under new Standards)	-978,833,786.49	-169,751,436.18	33,952,481.03	-240,025,499.16	-1,058,840,091.11	-686,895,399.73		
Income before tax	2,365,478,603.76	1,428,046,994.67	2,966,026,423.45	603,612,498.50	-1,824,780,557.88	344,773,252.74	134,629,720.44	98,829,896.05
Income tax expenses	600,540,217.37	677,754,071.10	1,580,677,690.12	894,810,897.57	31,616,939.92	122,248,501.14	32,597,819.18	18,080,735.10
Net income	1,764,938,386.39	750,292,923.57	1,385,348,733.33	-291,198,399.07	-1,856,397,497.80	222,524,751.60	102,031,901.26	80,749,160.95
Total assets	250,090,053,295.41	235,578,272,514.71	201,405,385,201.60	209,675,697,313.91	54,514,024,346.55	55,999,463,120.62	4,962,170,359.85	4,886,228,277.44
Total liabilities	153,688,480,167.67	155,068,438,497.42	142,135,139,176.67	149,016,059,545.76	38,877,111,663.29	40,604,083,169.79	1,403,985,641.82	1,353,780,055.73

(Continued)

Items	Others		Offset		Total	
	Current year	Prior year	Current year	Prior year	Current year	Prior year
Operating Revenue	4,445,289,793.61	12,849,575,693.15	34,813,063,573.10	48,554,111,709.22	367,019,908,218.41	356,817,106,715.58
Income from investment in joint ventures and associates	91,115,859.24	171,832,514.44	417,395,550.16	176,764,213.99	380,141,819.19	702,426,162.04
Asset impairment losses	-144,877,732.58	-900,240,521.18	4,403,431.40	-49,105,600.88	-4,958,658,877.97	-6,827,342,821.26
Credit impairment losses (applicable under new Standards)	-919,413.89	287,279.72	-96,530,686.97	80,641,825.00	-1,908,110,123.49	-1,177,026,880.35
Income before tax	5,974,103,931.67	5,608,130,036.18	2,832,321,554.00	3,021,818,756.30	6,783,136,567.44	5,061,573,921.84
Income tax expenses	333,914,805.12	324,754,528.00	-15,817,450.67	880,970.81	2,595,164,922.38	2,036,767,762.10
Net income	5,640,189,126.55	5,283,375,508.18	2,848,139,004.67	3,020,937,785.49	4,187,971,645.06	3,024,806,159.74

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Others		Offset		Total	
	Current year	Prior year	Current year	Prior year	Current year	Prior year
Total assets	421,747,951,639.05	452,205,954,312.91	300,315,280,233.38	305,995,541,979.67	632,404,304,609.08	652,350,073,559.92
Total liabilities	164,966,577,257.93	171,637,687,546.49	96,212,179,411.09	101,953,520,244.38	404,859,114,496.29	415,726,528,570.81

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

8.75 Consolidated cash flow statement

1. Supplementary information for consolidated cash flow statement

Items	Current year	Prior year
1. To reconcile net profit to cash flows from operating activities:		
Net profit	4,187,971,645.06	3,024,806,159.74
Add: Asset Impairment losses	4,958,658,877.97	6,827,342,821.26
Credit impairment losses (applicable under new Standards)	1,908,110,123.49	1,177,026,880.35
Depreciations of fixed assets, oil and gas assets, and bearer biological assets	17,579,909,609.38	14,965,704,559.21
Amortizations of right-of-use assets	613,860,831.85	648,403,065.49
Amortizations of intangible assets	2,016,619,365.11	2,244,022,846.87
Amortizations of long-term prepaid expenses	599,059,378.32	502,879,392.91
Losses on disposal of fixed assets, intangible assets and other long-term assets (gain expressed with "-")	-140,082,476.36	1,522,633,037.69
Losses on disposal of fixed assets (gain expressed with "-")	355,914,244.12	215,906,955.11
Losses on changes in fair value (gain expressed with "-")	-26,651,908.01	22,719,490.94
Financial expenses (gain expressed with "-")	13,060,803,191.57	14,908,450,249.57
Investment losses (gain expressed with "-")	-7,615,769,386.61	-11,881,499,797.22
Decrease in deferred tax assets (increase expressed with "-")	-121,985,465.58	-10,136,292.66
Increase in deferred tax liabilities (decrease expressed with "-")	587,501,455.03	436,167,110.90
Decrease in inventories (increase expressed with "-")	1,421,023,001.98	-2,046,286,896.09
Decrease in operating receivables (increase expressed with "-")	-577,654,382.77	-12,173,434,471.77
Increase in operating payables (decrease expressed with "-")	-8,099,514,584.95	5,258,356,096.51
Others		
Net cash flows from operating activities	30,707,773,519.60	25,643,061,208.81
2. Significant investing and financing activities that do not involve cash receipts and payments		
Debts converted to capital		

Items	Current year	Prior year
Convertible debts due within one year		
Fixed assets acquired in under finance lease		
3. Net changes in cash and cash equivalents		
Closing balance of cash	43,585,266,544.07	45,343,026,020.40
Less: Opening balance of cash	45,343,026,020.40	51,762,877,058.51
Add: Closing balance of cash equivalents		
Less: Opening balance of cash equivalents		
Net increase in cash and cash equivalents	-1,757,759,476.33	-6,419,851,038.11

2. Cash and cash equivalents

Items	Current year	Prior year
I. Cash	43,585,266,544.07	45,343,026,020.40
Including: Cash on hand	2,600,540.32	6,917,243.60
Bank deposits that are available for payment at anytime	33,873,962,982.56	36,076,264,903.42
Other monetary fund that are available for payment at anytime	385,957,352.56	233,513,602.04
Demand deposits in central bank that are available for payment at anytime		
Deposits in banks and other financial institutions	9,322,745,668.63	9,026,330,271.34
Loans to banks and other financial institutions		
Cash equivalents		
Including: Bond investments due within three months		
Closing balance of cash and cash equivalents	43,585,266,544.07	45,343,026,020.40
Including: Cash and cash equivalents with restricted use of parent company or subsidiaries		

8.76 Foreign currency monetary items

Items	Closing balance in foreign currency	Exchange rate	Closing balance in RMB (translated)
Cash at bank and in hand			**25,530,497,894.41**
Including: USD	3,850,883,359.35	6.5249	25,126,628,831.42

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Closing balance in foreign currency	Exchange rate	Closing balance in RMB (translated)
EUR	1,816,050.40	8.025	14,573,804.46
HKD	106,171,424.65	0.8416	89,353,870.99
IDR	281,526,625,412.45	0.0005	140,763,312.71
SOL/ NE	67,796,551.15	1.802	122,169,385.17
CAD	3,233,448.40	5.1161	16,542,645.36
INR	57,151,158.00	0.0891	5,092,168.18
SAR	1,901,998.65	1.739	3,307,575.65
IDR	6,402,820,280.00	0.0005	3,201,410.14
VND	9,634,043,768.00	0.0003	2,890,213.13
CNF	3,810,373,500.00	0.0007	2,667,261.45
MYR	1,500,551.27	1.6173	2,426,841.57
BOB	860,037.42	0.9375	806,285.08
AUD	14,809.54	5.0163	74,289.10
Accounts receivables			**2,425,567,892.08**
Including: USD	355,734,606.82	6.5249	2,321,132,736.04
EUR	6,253,810.54	8.025	50,186,829.58
HKD	5,244,373.44	0.8416	4,413,664.69
AUD	311,116.54	5.0163	1,560,653.90
VND	141,830,430,103.00	0.0003	42,549,129.03
INR	27,190,070.00	0.0891	2,422,635.24
IDR	6,604,487,194.00	0.0005	3,302,243.60
Short-term borrowings			**17,131,300,956.76**
Including: USD	2,625,526,974.63	6.5249	17,131,300,956.76
Long-term borrowings			**11,319,897,208.92**
Including: USD	1,732,999,179.06	6.5249	11,307,646,343.45
JPY	193,842,808.00	0.0632	12,250,865.47

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Closing balance in foreign currency	Exchange rate	Closing balance in RMB (translated)
Bonds payable			**11,087,315,564.83**
Including: USD	1,699,231,492.41	6.5249	11,087,315,564.83

8.77 Restricted ownership and rights assets

Items	Book value at year end	Reason for restriction
Cash and cash equivalents	5,202,537,950.56	Note 1
Notes receivable	91,870,715.10	Note 2
Accounts receivable	751,240,633.17	Note 3
Receivables financing	1,587,136,895.91	Note 4
Inventories	1,308,312.89	Note 5
Fixed assets	11,144,737,753.81	Note 6
Intangible assets	2,159,624,162.90	Note 7
Construction in progress	1,132,239.74	Note 8
Others	447,942,846.32	Note 9

Note 1: The reasons for restriction on monetary funds with restricted ownership and use rights,refer to note 8.1.

Note 2: As of 31 December 2020, the balance of notes receivable with restricted ownership and use rights of the Group is RMB 91,870,715.10, mainly including the balance pledged by the Company's subsidiary, CHINALCO High-end Manufacturing Co., Ltd. of RMB 91,870,715.10.

Note 3: As of 31 December 2020, the balance of accounts receivable with restricted ownership and use rights of the Group is RMB 751,240,633.17, mainly due to the pledged accounts receivable of the Company's subsidiary, China Aluminum International Engineering Corporation Limited.

Note 4: As of 31 December 2020, the balance of receivables financing with restricted ownership and use rights of the Group is RMB 1,587,136,895.91, mainly due to the pledged notes receivable of the Company's subsidiary, Aluminum Corporation of China Limited of RMB1,499,259,491.13 and China Aluminum International Engineering Corporation Limited of RMB 87,877,404.78.

Note 5: As of 31 December 2020, the balance of inventories with restricted ownership and use rights of the Group is RMB 1,308,312.89, mainly due to the seized inventories related to litigations of the Company's subsidiary, China Copper Co., Ltd.

Note 6: As of 31 December 2020, the balance of fixed assets with restricted ownership and use rights of the Group is RMB 11,144,737,753.81, mainly including the balance mortgaged for loan and financing leased by the Company's subsidiary, China Copper Co., Ltd. of RMB 5,386,642,876.98, the balance mortgaged by the Company's subsidiary, Aluminum Corporation of China Limited of RMB 5,191,184,740.52; the balance mortgaged by the Company's subsidiary, China Aluminum International Engineering Corporation Limited of RMB 15,753,063.46; the balance mortgaged for financing lease by the Company's subsidiary, CHINALCO High-end Manufacturing Co., Ltd. of RMB 537,021,481.08 and the balance bonded by the Company's subsidiary, Chinalco Asset Management Co., Ltd. of RMB 14,135,591.77.

Note 7: As of 31 December 2020, the balance of intangible assets with restricted ownership and use rights of the Group is RMB 2,159,624,162.90, mainly including the balance mortgaged by the Company's subsidiary, Aluminum Corporation of China Limited of RMB 1,233,451,009.31, the balance mortgaged for loan and bonded by the Company's subsidiary, China Copper Co., Ltd. of RMB 877,201,978.02 and the balance pledged for loan by the Company's subsidiary, CHINALCO High-end Manufacturing Co., Ltd. of RMB 48,971,175.57.

Note 8: As of 31 December 2020, the balance of construction in progress with restricted ownership and use rights of the Group is RMB 1,132,239.74, mainly due to the seized construction in progress related to litigations of the Company's subsidiary, China Copper Co., Ltd.

Note 9: As of 31 December 2020, the balance of others with restricted ownership and use rights of the Group is RMB 447,942,846.32, mainly due to the long-term equity investment pledged for loan by the Company's subsidiary, Aluminum Corporation of China Limited.

Note 9 Contingencies

9.1 Pending litigation

1. The Company's subsidiary Aluminum Corporation of China Limited, and its affiliated units are defendants in certain litigation matters. Although the outcome of such litigations or other legal proceedings has not yet to be determined, management of Aluminum Corporation of China Limited believes that any liability arising will not have material adverse effects on the financial position or operating results of the Group. As of 31 December 2020, Aluminum Corporation of China Limited has been sued by the counterparties involving lawsuits amounting to approximately RMB 229,466,800.00 mainly disputed in the workload and settlement price of construction projects located in mainland China. According to the opinion of the company's legal adviser, Aluminum Corporation of China Limited believes that the allegations involved can be effectively defended, therefore no relevant estimated liabilities for claims or penalty interest are recognized.

2. In December 2011, Yunnan Copper Co., Ltd. (the " Yunnan Copper "), affiliated to China Copper Co., Ltd. which is a subsidiary of the Company, entered into "the Sale and Purchase Contract on Copper Wire Rod for Electrical Purpose" and "the Sale and Purchase Contract on Cathode Copper" with Jiangmen Jiangci Electrical Enterprise Co., Ltd. (the " Jiangmen Jiangci "), agreeing that Jiangmen Jiangci shall purchase copper wire rods for electrical purpose and cathode coppers from Yunnan Copper in 2012, payment is made by commercial acceptance. After the contracts were signed, Yunnan Copper provided the product in accordance with the agreements, but Jiangmen Jiangci did not make full payment. As of 5 February 2013, Jiangmen Jiangci still owed Yunnan Copper RMB 66,619,535.28 for goods. Due to the overdue commercial acceptance payment of RMB 16,620,710.26 by Jiangmen Jiangci to China Minsheng Banking Corp., Ltd. Kunming branch, Yunnan Copper was subject to the recourse of the bank and paid RMB 6,420,710.26 to the bank. The total amount owed by Jiangmen Jiangci to Yunnan Copper was RMB 83,240,245.54. After repeated unsuccessful attempts to recover the debts, Yunnan Copper filed a lawsuit to The Supreme People's Court of Yunnan Province in January 2013. On 6 March 2013, Jiangmen Jiangci filed an objection to the jurisdiction to The Supreme People's Court of Yunnan Province while the objection was rejected in in April 2013. On 25 April 2013, Jiangmen Jiangci lodged an appeal against the decision to the Supreme Court. On 10 October 10 2013, the Supreme Court held a hearing on the objection to the jurisdiction. In November 2013, the Supreme Court rejected Jiangmen Jiangci's objection. On 19 May 2014, evidence exchange was performed. On 20 May 2014, The Supreme People's Court of Yunnan Province opened a court session. In December 2014, Yuntong received the written judgment of first instance from the Higher People's Court of Yunnan Province as follows:

(1) Jiangmen Jiangci shall pay the principal of RMB 69,652,348.58 in arrears, and the liquidated damages for the overdue payment calculated at a 50% increase in the working capital loan interest rate stipulated by the People's Bank of China for the same period, to Yunnan Copper within ten days from the effective date of this judgement, calculated from 24 August 2012 till the date of actual whole payment of the arrears.

(2) Jiangmen Jiangci shall pay the attorney's fees of RMB 630,000.00 to Yunnan Copper within ten days after the effective date of this judgment.

(3) If Jiangmen Jiangci fails to fulfill the obligations mentioned in 1) and 2) above within the period stipulated in this judgment, Yunnan Copper shall have the priority of compensation with the respect to the money obtained from the auction and the sale of the pledged equipment like drawing machines and enameled copper wire, nine vehicles, the bonded 182,463 shares of China Guangfa Bank Co., Ltd. and its equity derivatives.

Jiangmen Jiangci refused to accept the court judgment of first instance and filed an appeal to the Supreme Court in December 2014 regarding the attorney's fees therein. On 21 May 2015, the second instance held for trial. On 5 August, Yunnan Copper received the Supreme Court's judgment which dismissed the appeal and sustain the original judgment. Yunnan Copper submitted the “Application for Compulsory Enforcement” to the Provincial Supreme Court on 21 August 2015. The Provincial Supreme Court put the case on file on 1 September 2015. On 25 December 2017, an enforce payment of RMB 30,000,000.00 was received. In June 2019, Kunming Intermediate People's Court evaluated and auctioned the 180,000 shares of China Guangfa Bank Co., Ltd. held by Jiangmen Jiangci for two times. Both auctions were aborted due to no bids. In February 2020, Kunming Intermediate People's Court sold 180,000 shares of China Guangfa Bank Co., Ltd. held by Jiangmen Jiangci. Yunnan Copper received a payment of RMB 1,731,100 in 2020 by the sale and execution. As of 31 December 2020, Jiangmen Jiangci still owed Yunnan Copper RMB 46,311,375.02 and a provision for bad debts of RMB 46,311,375.02 has been accrued.

3. On 31 March 31 2010, Yunnan Copper Co., Ltd. (the " Yunnan Copper "), affiliated to China Copper Co., Ltd. which is a subsidiary of the Company, signed the “Equity Transfer Agreement on Yunnan Kaitong Nonferrous Metals Co., Ltd.” with Yunnan Kaitong (Group) Co., Ltd. (the "Kaitong Group"). The agreement stipulated that Yunnan Copper shall transfer its 40% equity of Yunnan Copper Kaitong Nonferrous Metals Co., Ltd. (the "Kaitong Nonferrous") to Kaitong Group while Kaitong Group shall pay for Kaitong Nonferrous's debts of RMB 540,174,345.96 to Yunnan Copper.

As of 17 June 2015, Kaitong Group has paid a total of RMB 307,860,107.87 in arrears (including default deposit) to Yunnan Copper by cash and offset payments, while the payment to Yunnan Copper accordance with the contract terms has not been made since 18 June 2015. On 3 July 2016, Yunnan Copper sued Kaitong Group to The Supreme People’s Court of Yunnan Province, demanding Kaitong Group: (1) Repay the debts on creditor’s rights (deduct default deposit) of RMB 332,314,238.09, (2) Continue to perform the contract to pledge 100% of its equity in Kaitong Nonferrous to the Company, (3) Pay liquidated damages for overdue payment on equity pledge registration, (4) Pay all litigation fees, litigation security fees and litigation security guarantee fees occurred in this case. On 21 September 2016, evidence exchange was performed by the judge of The Supreme People’s Court of Yunnan Province. On 22 September 2016, The Supreme People’s Court of Yunnan Province opened a court session publicly. On 16 June 2017, Yunnan Copper obtained the court judgement of first instance. The main content of the verdict is as follows: (1) Kaitong Group shall repay Yunnan Copper a total of RMB 332,314,238.09 within ten days after the entry into force of this judgment, (2) Kaitong Group shall pledge 100% of its equity in Kaitong Nonferrous to Yunnan Copper within 30 days after the entry into force of this judgment. Kaitong Group appealed against the court judgment of first instance. On 22 December 2017, the Fifth Circuit Court of the Supreme People's Court opened a trial and made a final judgment on 28 December, which dismissed the appeal and sustain the original judgment. Yunnan Copper applied to the court for enforcement in March 2018. In April 2019, the court evaluated the equity of Jinsha Company held by Kaitong Group. Kaitong Group raised an objection to execution which was then rejected by Kunming Intermediate People's Court. And Kaitong Group raised a reconsideration on the objection to execution. On 28 February 2020, Yunnan Copper received “Yun's enforcement decision (2020) No. 10 execution judgment” by The Supreme People’s Court of Yunnan Province, ruling that a reconsideration on the objection to execution was rejected. Later, the court auctioned 12.408% of equity in Jinsha Company held by Kaitong Group. The sale procedure was performed in December 2020 after the aborted auctions due to no bids.

4. Yuxi Mining Co., Ltd. (the " Yuxi Mining "), affiliated to China Copper Co., Ltd. which is a subsidiary of the Company, sued the defendant Yunnan Simao Shanshui Copper Co., Ltd. (the " Simao Shanshui ") to Yuxi Intermediate People's Court of Yunnan Province due to a dispute over sales contract involving an amount of RMB 222,274,400.

The two parties above sign the “Copper Ore Entrusted Processing Contract” on 20 September 2016. However, Simao Shanshui failed to fulfill its obligations as stipulated in the contract. Yuxi Mining has sent letters to Simao Shanshui requesting performance of the contract several times, but the delivery of copper concentrate, which was outputted by 823,500 tons of selected copper ore, was never made by Simao Shanshui. In August 2019, Yuxi Mining filed a lawsuit against Simao Shanshui. In October 2019, Simao Shanshui filed an objection to the jurisdiction to Yuxi Intermediate People's Court, and then filed an appeal to The Supreme People’s Court in December 2019 after the objection was rejected by the Intermediate People's Court. In April 2020, the appeal was rejected by The Supreme People’s Court of Yunnan Province and now the case is in the stage of first instance subjected to Yuxi Intermediate People's Court. Regarding the relevant facts of this case, Pu'er Shanhai Industry and Trade Co., Ltd., another shareholder of Simao Shanshui, filed a lawsuit to Yuxi Intermediate People's Court in November 2019, suing Yuxi Mining and 3 natural person shareholders due to disputes related to the Company, petitioning the court to declare contracts such as “Copper Ore Entrusted Processing Contract” and related documents, which were signed by Yuxi Mining and Simao Shanshui invalid, and petitioning the court to order Yuxi Mining to return all the copper concentrate to Simao Shanshui. In November 2020, Yuxi Intermediate People's Court rejected Pu'er Shanhai Industry and Trade Co., Ltd.'s litigation in the first instance. In December 2020, Pu'er Shanhai Industry and Trade Co., Ltd. appealed against the judgement of the first instance, and the case is now in the stage of second instance.

5. Sixth Metallurgical Construction Company of China Nonferrous Metals Industry (the " Sixth Metallurgical "), affiliated to China Aluminum International Engineering Corporation Limited which is a subsidiary of the Company, has a dispute over the construction contracts with Shougang Jingtang Iron and Steel United Liability Co., Ltd. (the " Jingtang Iron and Steel ").

In November 2014, Jingtang Iron and Steel filed a lawsuit with Tangshan intermediate people's court, claiming that according to the workload completed by the Sixth Metallurgical and after deducting the expenses that should be borne by the Sixth Metallurgical, the Sixth Metallurgical overcharged a total of RMB 25.78 million from Jingtang Iron and Steel, requesting the Sixth Metallurgical to return the overcharged project funds. In March 2015, Sixth Metallurgical filed a lawsuit to The Supreme People's Court of Hebei Province, stating that after the project is completed, Jingtang Iron and Steel failed to using the same valuation method stipulated in the contract, and part of the project budgets declared by Sixth Metallurgical was not reviewed and settled, that Jingtang Iron and Steel shall pay RMB 292.28 million for the project, interest and all litigation costs as well.

Sixth Metallurgical submitted applications to Tangshan Intermediate People's Court and The Supreme People's Court of Hebei Province respectively, applying that the trail for civil case "Tang Min Chuzi (2014) No. 205" appealed by Jingtang Iron and Steel against Sixth Metallurgical to be suspended by Tangshan Intermediate People's Court, and to be arraigned by The Supreme People's Court of Hebei Province instead jointly with the civil case "Jimin Yichuzi (2015) No. 3" appealed by Sixth Metallurgical against Jingtang Iron and Steel. The Supreme People's Court of Hebei Province accepted the application and opened a hearing on the combined case in December 2015. It was judged that Jingtang Iron and Steel shall pay RMB 63.49 million and related interest to Sixth Metallurgical. In July 2019, the second instance ruled to revoke the judgement for *(2015) Jimin Yichuzi No. 3* by The Supreme People's Court of Hebei Province and remanded it for a retrial. In retrial stage of the first instance Six Metallurgical applied to The Supreme People's Court of Hebei Province for supplementary cost appraisal and for freezing the funds of Jingtang Iron and Steel of RMB 100 million as a property preservation measure. At present, the case is still in the retrial stage of the first instance.

6. Sixth Metallurgical Construction Company of China Nonferrous Metals Industry (the " Sixth Metallurgical "), affiliated to China Aluminum International Engineering Corporation Limited which is a subsidiary of the Company, has a dispute over the construction contracts with Zhonghe Anshan Shengshide Real Estate Co., Ltd. (the " Zhonghe Shengshide ").

In September 2016, Sixth Metallurgical filed a lawsuit to Anshan Intermediate People's Court, petitioning the court to order Zhonghe Shengshide for a payment of RMB 55.11 million, relevant interest on arrears, a priority of compensation with the respect construction price on Buildings 5#, 6# , 7#, 8# and underground garages in Zhonghe Shengshihaoting Project-PhraseⅡto Sixth Metallurgical and all litigation fees that shall be borne by Zhonghe Shengshide. In June 2019, The Supreme People's Court of Liaoning Province revoked the judgment of first instance by Intermediate People's Court of Liaoning Province and ordered a retrial. The case is now on trial.

7. Sixth Metallurgical Construction Company of China Nonferrous Metals Industry (the " Sixth Metallurgical"), affiliated to China Aluminum International Engineering Corporation Limited which is a subsidiary of the Company, has a dispute over the contracts with Xinjiang Qinghua Investment Holdings Co., Ltd. (the "Qinghua Investment") and Xinjiang Qinghua Energy Group Co., Ltd. (the "Qinghua Energy").

On 28 December 2018, Sixth Metallurgical filed an arbitration application to Urumqi Arbitration Commission in Urumqi City, Xinjiang Uygur Autonomous Region, petitioning the court to order Qinghua Investment to pay the project arrears and interest amounting RMB 61.36 million, and all litigation fees shall be borne by Qinghua Investment.The Urumqi Arbitration Commission accepted the arbitration application and issued the "Notice of Acceptance of The Arbitration Application (2018) Urumqi Arbitration No. 0375" on 18 February 2019. In August 2019, The People's Court of Yining County ruled on the case, freezing the shares of Yili Qinghua Energy Development Company and Yining County Qinghua Hydropower Development Co., Ltd. held by of Qinghua Energy for two years. On 11 January 2021, the "Urumqi Arbitral Judgment (2018) No. 0375" was received. The Arbitration Commission considered the involved projects were in a dispute of over the construction funds due to construction engineering subcontracting and judgement has yet to be ruled, and the decision was made to suspend the trial, which shall be based on the outcome of the two subcontracting cases respectively.

8. Sixth Metallurgical Construction Company of China Nonferrous Metals Industry (the " Sixth Metallurgical "), affiliated to China Aluminum International Engineering Corporation Limited which is a subsidiary of the Company, has a dispute over the construction contracts with Xinyang Jieming Earth and Stone Engineering Co., Ltd. (the "Xinyang Jieming").

In September 2017, Xinyang Jieming filed a lawsuit to Zhengzhou Intermediate People's Court, petitioning the court to order Henan New Great Wall Construction Co., Ltd. (the "New Great Wall Construction") to pay the project arrears and interest amounting to RMB 72.12 million, and all litigation fees shall be borne by New Great Wall Construction. Sixth Metallurgical shall bear the joint and several liability for the aforementioned payment liability borne by New Great Wall Construction and Zhengzhou Airport State-owned Assets Management Co., Ltd. shall bear the joint and several liability within limited construction funds. In July 2019, the judgment of first instance ruled that New Great Wall Construction shall pay the project arrears and interest amounting RMB 51.7567 million to Xinyang Jieming, and Sixth Metallurgical shall bear the joint and several liability. New Great Wall Construction, Xinyang Jieming and Sixth Metallurgical appealed against the aforementioned judgment in August 2019 respectively, and The Supreme People's Court of Henan Province has accepted such appeals. On 6 July 2020, the judgment of second instance was received that Sixth Metallurgical shall bear the joint and several liability within limited amount of RMB 53.607 million. The case is now at the stage ready to be retrial.

In August 2020, New Great Wall Construction appealed to Zhengzhou Intermediate People's Court on the contract dispute against Xinyang Jieming, petitioning the court to order that the total construction costs subcontracted by New Great Wall Construction to Xinyang Jieming shall be RMB 26.9237 million, to order that Xinyang Jieming shall return the overpaid construction costs of RMB 66.1361 million and all litigation fees shall be borne by Xinyang Jieming. Sixth Metallurgical is the third party in this case. Zhengzhou Intermediate People's Court has accepted the case and ruled the freezing of deposits held in banks of Xinyang Jieming amounting of RMB 58 million. The case is now on trial.

9. Sixth Metallurgical Construction Company of China Nonferrous Metals Industry (the " Sixth Metallurgical "), affiliated to China Aluminum International Engineering Corporation Limited which is a subsidiary of the Company, has a dispute over the construction contracts with Henan Hongxuan Real Estate Co., Ltd. the "Hongxuan Company").

On 31 May 2018, Sixth Metallurgical filed a lawsuit to Anyang Intermediate People's Court, petitioning the court to order that Hongxuan Company shall pay the construction costs and warranty in a total amount of RMB 77.07 million, and all litigation fees shall be borne by Hongxuan. Meanwhile, Hongxuan also filed a lawsuit against Sixth Metallurgical, petitioning to order that Sixth Metallurgical shall deliver the complete construction completion documentations and pay the damages of RMB 29.98 million. In September 2019, Anyang Beiguan District People's Court issued "The First Instance Judgment（2019）No. 2800 of Henan Province No. 0503 Civil Case", which ruled the withdraw of the Hongxuan against Sixth Metallurgical appeal. On 23 November 2020, "Anyang Intermediate People's Court (2018) Henan Province 05 civil case judgment No. 117 civil judgment" ruled that Hongxuan Company shall pay the construction costs amounting RMB 44.9251 million and relevant interest. Both parties appealed against the judgment and the case is now on trial.

10. Sixth Metallurgical Construction Company of China Nonferrous Metals Industry (the " Sixth Metallurgical "), affiliated to China Aluminum International Engineering Corporation Limited which is a subsidiary of the Company, has a dispute over the construction contracts with Yingkou Zhongwang Aluminum Co., Ltd. (the "Zhongwang Aluminum").

In May 2019, Sixth Metallurgical filed an arbitration application to Yingkou Arbitration Commission, petitioning to order that Zhongwang Aluminum shall pay the construction costs amounting RMB 127.866 million and relevant interest, petitioning for a seizure of over 60,000 square meters of land and property owned by Zhongwang Aluminum amounting of RMB127.866 million as a property preservation. In October 2019, Yingkou Intermediate People's Court issued "the Notice of Assistance (2019) No. 20 of Liaoning Province 08 Property Insurance", requesting the seizure of Zhongwang Aluminum's property located in the western area of Yingkou City for three years with the assistance of Yingkou City Real Estate Registration Center. Zhongwang Aluminum filed counterclaims that Six Metallurgical shall bear the quality compensation. The case is now on trial.

11. Sixth Metallurgical Construction Company of China Nonferrous Metals Industry (the " Sixth Metallurgical "), affiliated to China Aluminum International Engineering Corporation Limited which is a subsidiary of the Company, has a dispute over the construction contracts with Qiu Haijie, Zhang Jun, Guo Zhiming and Zeng Minghai.

In April 2018, Qiu Haijie, Zhang Jun, Guo Zhiming and Zeng Minghai filed a lawsuit to Tummert Left Flag People's Court of Inner Mongolia Autonomous Region, petitioning to order that Sixth Metallurgical shall pay the construction payments in arrears amounting of RMB 26 million, which exceeded the amount accepted by the appellate court and then transferred to Hohhot Intermediate People's Court. In May 2018, Hohhot Intermediate People's Court issued the judgement of first instance, ruled the freezing of deposits held in banks of Sixth Metallurgical amounting of RMB 36 million, or RMB 36 million due from Hohhot Economic and Technological Development District Boyuan Real Estate Development Co., Ltd. In June 2019, an application for alternation of claims, in which the appeal amount increased from RMB 36 million to RMB 60.9549 million, was served by Hohhot Intermediate People's Court. In 2018, Sixth Metallurgical appealed against the judgment by Hohhot Intermediate People's Court and filed an objection to the jurisdiction to The Supreme People’s Court of Inner Mongolia Autonomous Region. In April 2019, The Supreme People’s Court of Inner Mongolia Autonomous Region issued “(2019) Civil Ruling" No. 27 of the Inner Mongolia Higher People's Court” which dismissed the appeal and sustain the original judgment. The case is now on trial.

12. Sixth Metallurgical Construction Company of China Nonferrous Metals Industry (the " Sixth Metallurgical "), affiliated to China Aluminum International Engineering Corporation Limited which is a subsidiary of the Company, has a dispute over the construction contracts with Kaiyang County Ronghe Urban Development Investment Co., Ltd. (the "Kaiyang Ronghe").

In January 2020, Sixth Metallurgical filed a lawsuit to Guiyang Intermediate People's Court of Guizhou Province, petitioning to order that Kaiyang Ronghe shall pay the construction costs amounting to RMB 8,031.59 million and the overdue interest, and all litigation fees shall be borne by Kaiyang Ronghe. Guiyang Intermediate People's Court of Guizhou Province has accepted the case and the case is now on trial.

13. Sixth Metallurgical Construction Company of China Nonferrous Metals Industry (the " Sixth Metallurgical "), affiliated to China Aluminum International Engineering Corporation Limited which is a subsidiary of the Company, has a dispute over the construction contracts with Henan Taixing Real Estate Co., Ltd. (the "Henan Taixing").

In June 2020, Henan Taixing filed a lawsuit to Zhengzhou Intermediate People's Court of Henan Province, petitioning to order that Sixth Metallurgical shall pay the construction liquidated damages of construction delay and interest amounting RMB 59.5986 million, and all litigation fees shall be borne by Sixth Metallurgical. Zhengzhou Intermediate People's Court ruled as a withdrawal by Henan Taixing due to the absence of case acceptance fee paid by Henan Taixing within required time. In August 2020, Henan Taixing filed a new lawsuit to Zhengzhou Intermediate People's Court of Henan Province, as the content and the amount remain the same.

In November 2019, Sixth Metallurgical filed a lawsuit Zhengzhou Intermediate People's Court of Henan Province, petitioning to a termination of the construction contract and to order that Henan Taixing shall pay the remaining construction costs, interest, compensation and so on.

In December 2020, Zhengzhou Intermediate People's Court of Henan Province, issued the “Civil Judgment of the Zhengzhou Intermediate People's Court of Henan Province (2019) Yu 01 Legal instruments of the court of first instance in civil cases No. 2290)in the case of Sixth Metallurgical sued Henan Taixing”, ruling a termination of the construction contract signed by Henan Taixing and Sixth Metallurgical, ruling that Henan Taixing shall pay the construction costs amounting RMB 6.3336 million and relevant interest, and Sixth Metallurgical shall have the priority of compensation with the respect to the money obtained from the auction and the discount sale of the involving construction within the limited of construction costs in arrears amounting RMB 6.3336 million. The case is now at the stage of second instance since both Sixth Metallurgical and Henan Taixing appealed against the judgment.

Zhengzhou Intermediate People's Court of Henan Province issued “Civil Judgment of the Intermediate People's Court of Zhengzhou City, Henan Province (2020) Yu 01 Legal instruments of the court of first instance in civil cases No. 791)” on the prosecution of Henan Taixing against Sixth Metallurgical, ruling a termination of the involved construction contract signed by Henan Taixing and Sixth Metallurgical, a dismissal of other claims by Henan Taixing, and all case acceptance fees and security fees shall be borne by Henan Taixing. The case is now at the stage of second instance since Henan Taixing appealed against the judgment.

14. Sixth Metallurgical Construction Company of China Nonferrous Metals Industry (the " Sixth Metallurgical "), affiliated to China Aluminum International Engineering Corporation Limited which is a subsidiary of the Company, has a dispute over the construction contracts with Henan Zhongfu Industrial Co., Ltd. (the "Henan Zhongfu").

In August 2020, Sixth Metallurgical filed a lawsuit to Zhengzhou Intermediate People's Court of Henan Province, petitioning to order that Henan Zhongfu shall pay the construction costs and interest amounting RMB 76.156 million, and all litigation fees and security fees shall be borne by Henan Zhongfu. In January 2021, the Zhengzhou Intermediate People's Court of Henan Province issued “the Civil Judgment of the Zhengzhou Intermediate People's Court of Henan Province (2020) Yu 01 Legal instruments of the court of first instance in civil cases No. 788”, ruling that Zhengzhou shall pay the construction costs and interest amounting to RMB 53.8972 million to Sixth Metallurgical, and other claims by Sixth Metallurgical were rejected. The case is now at the stage of second instance.

15. Sixth Metallurgical Construction Company of China Nonferrous Metals Industry (the " Sixth Metallurgical "), affiliated to China Aluminum International Engineering Corporation Limited which is a subsidiary of the Company, has a dispute over the construction contracts with Inner Mongolia Hengda Real Estate Co., Ltd. (the "Hengda Real Estate").

In December 2020, Sixth Metallurgical filed a lawsuit to Hohhot Intermediate People's Court, petitioning to order that Hengda Real Estate shall pay the construction costs amounting RMB 50.7587 million and the interest, a priority of compensation with the respect to the money obtained from the auction and the discount sale of the construction in F12 Supporting Living Area (Building 1, Building 2, Building 5, Building 6, Building 9, Building 10, Business District 1-3, Kindergarten, South Gate, North Gate and Underground Garage) in south of Genghis Khan East Street, West of The Wantong Road, south of Genghis Khan East Street, West of The Wantong Road in Hohhot City, within the limited of construction costs in arrears amounting RMB 50.7587 million, and all litigation fees, security fees and guarantee shall be borne by Hengda Real Estate.

Due to the breach of the contract by Hengda Real Estate during the performance of the contract, Sixth Metallurgical applied for pre-litigation property preservation to Hohhot Intermediate People's Court.Hohhot Intermediate People's Court issued a "Civil Ruling" (2020) No. 28 on the application for property preservation by Sixth Metallurgical, ruling a seizure of Commercial Building 2 in F12 Supporting Living Area (building area of 2,682.15 square meters, real estate certificate number of “Mon (2018) Hohhot City Real Estate Rights No. 0024649)”, 1-3 floors of Commercial Building 3 (building area of 1, 069.01 square meters, real estate certificate number of Meng (2018) Hohhot City Real Estate Rights No. 0023608) in the new district of Hohhot City under the name of Hengda Real Estate.Hohhot Intermediate People's Court has accepted the case and the case is now on trial.

16. Chinalco Great Wall Construction Co., Ltd. (the " Great Wall Construction "), affiliated to China Aluminum International Engineering Corporation Limited which is a subsidiary of the Company, has a dispute over the construction contracts with Changge Hongji Weiye Real Estate Development Co., Ltd. (the " Hongji Weiye ").

On 25 April 2019, Great Wall Construction filed a lawsuit to Xuchang Intermediate People's Court of Henan Province due to disputes over the construction contracts. The claims are as follows:

(1) Hongji Weiye shall be ordered to pay a construction payment in arrears amounting RMB 89.4323 million and the interest amounting RMB4.4716 million (interest is provisionally calculated at an annual interest rate of 12% from 19 November 2018 to 18 April 2019) to Great Wall Construction. The principle and the interest are provisionally amounted to RMB 93.9039 million in total, and the interest shall be up to the date determined by the judgment.

(2) Great Wall Construction shall be ordered to have a priority of compensation with the respect to the money obtained from the auction and the discount sale of the construction Building 27 and 31 in Changge Diamond City A located on the north side of Getian Avenue in Changge, within the limited of construction costs in arrears amounting RMB 89.4323 million by Hongji Weiye.

(3) The litigation fees, security fees and guarantees in this case shall all be borne by Hongji Weiye.

On 8 January 2020, Great Wall Construction submitted an Application for Alternation of Claims to Xuchang Intermediate People's Court of Henan Province, in which the claims are changed as follows:

（1）Hongji Weiye shall be ordered to pay a construction payment amounting RMB 56.2155 million and interest (interest shall be calculated at an annual interest rate of 12% from 19 November 2018 up to the date determined by the judgment) to Great Wall Construction.

（2）Great Wall Construction shall be ordered to have a priority of compensation with the respect to the money obtained from the auction and the discount sale of the construction Building 27 and 31 in Changge Diamond City A located on the north side of Getian Avenue in Changge, within the limited of construction costs in arrears amounting RMB 56.2155 million by Hongji Weiye.

（3）The preservation security fees amounting RMB 25,400 and evaluation fees amounting RMB 0.85 million in this case shall be borne by Hongji Weiye.

(4) The litigation fees and security fees in this case shall be borne by Hongji Weiye.

On 2 September 2020, Xuchang Intermediate People's Court of Henan Province issued a Civil Judgment (2019) Yu 10 Legal instruments of the court of first instance in civil cases No. 58 on the case, ruling that Hongji Weiye shall pay a construction payment amounting RMB 50.3478 million and interest to Great Wall Construction, Hongji Weiye shall pay the evaluation fees amounting RMB 0.85 million, Great Wall Construction shall maintain the quality problems on construction in the scope of its own. Hongji Weiye appealed against the judgment of first instance judgment to The

Supreme People's Court of Henan Province. In February 2021, The Supreme People's Court of Henan Province issued the "Civil Judgment" (2020) Yu Civil Final Edition No. 1118, which dismissed the appeal and sustain the original judgment. The acceptance fees for the second instance shall all be borne by Hongji Weiye. The case is now at the execution stage.

17. China Nonferrous Metals Industry's 12th Metallurgical Construction Co., Ltd. (the " Twelfth Metallurgical"), affiliated to China Aluminum International Engineering Corporation Limited which is a subsidiary of the Company, has a dispute over the construction contracts with Huainan Zhongsheng Real Estate Co., Ltd. (the " Huainan Zhongsheng "), Zhirongcheng Investment (Beijing) Co., Ltd. (the " Zhirongcheng "), Beijing Wuzhou Hengyou International Investment Co., Ltd. (the "Wuzhou Hengyou"),Ganzhou Hualong Real Estate Development Co., Ltd. (the " Ganzhou Hualong ") and Chen Quanhong.

In April 2016, Twelfth Metallurgical filed a lawsuit to The Supreme People's Court of Shanxi Province, petitioning to order that Huainan Zhongsheng shall return the principal amount of the advanced land use right grant amounting RMB 450 million, the interest amounting RMB 151.18 million and the liquidated damages for overdue payment amounting RMB 150.81 million to Twelfth Metallurgical and the litigation fees and property preservation fees in this case shall be borne by Chen Quanhong.

The Supreme People's Court of Shanxi Province accepted the case in April 2016 and issued a civil ruling No. 27 of the legal instrument of the court of first instance in the first instance of the Jin civil case, ruling to seize the State-Owned construction land use right of 90,250.79 square meters area on the south side of National Day West Road and 16,481.42 square meters area on the north side of Shijian Lake East Road in in Ancheng Town, Tianjiaan District, Huainan City from Huainan Zhongsheng as the land-use right owner. In September 2016, The Supreme People's Court of Shanxi Province issued a (2016) legal instrument No. 27-1 of the court of first instance in Jin civil cases, ruling additionally to freeze the deposits held in banks of the defendants Huainan Zhongsheng, Zhirongcheng, Wuzhou Hengyou, Ganzhou Hualong and Chen Quanhong amounting RMB 509 million or corresponding property instead. The land use right of 42,871.68 square meters and 33,201.40 square meters area on the south side of National Day West Road in Ancheng Town, Tianjiaan District, Huainan City was subsequently seized.

On 14 October 2019, the Supreme Court issued a final judgment of second instance, ruling that District Government of Tianjiaan shall pay RMB 443 million to Huainan Zhongsheng while on 24 December 2019, Twelfth Metallurgical applied on behalf of Huainan Zhongsheng for a compulsory enforcement to The Supreme People's Court of Anhui Province. The case is now at the compulsory enforcement stage.

18. China Nonferrous Metals Industry's 12th Metallurgical Construction Co., Ltd. (the " Twelfth Metallurgical"), affiliated to China Aluminum International Engineering Corporation Limited which is a subsidiary of the Company, has a dispute over the construction contracts with Taiyuan Jiaxin Palm Real Estate Development Co., Ltd. (the "Jiaxin Palm").

In September 2018, Twelfth Metallurgical filed a lawsuit to Taiyuan Intermediate People's Court of Shanxi Province, petitioning to order that Jiaxin Palm shall pay construction costs in arrears, liquidated damages and relevant pecuniary losses amounting RMB 53.31 million in total. Meanwhile, the construction contract between the two parties shall be terminated. Taiyuan Intermediate People's Court accepted the case on 12 October 2018.

Twelfth Metallurgical applied to Taiyuan Intermediate People's Court for preservation, and Taiyuan Intermediate People's Court seized 41 houses under Jiaxin Palm's name for the period from 20 March 2019 to 19 March 2022. The case is now on trial.

19. China Nonferrous Metals Industry's 12th Metallurgical Construction Co., Ltd. (the " Twelfth Metallurgical"), affiliated to China Aluminum International Engineering Corporation Limited which is a subsidiary of the Company, has a dispute over the construction contracts with Northern Storage and Transportation Co., Ltd. of China Aviation Oil Group (the "Northern Storage and Transportation").

In June 2020, TWELFTH Metallurgical filed an arbitration application to Beijing Arbitration Commission, petitioning to order that Northern Storage and Transportation shall pay construction costs in arrears and relevant interest amounting RMB 72.8684 million in total, and all the arbitration fees shall be borne by Northern Storage and Transportation.

In October 2020, Northern Storage and Transportation Commission filed a counterclaim to Beijing Arbitration Commission regarding quality problems of the construction, petitioning to order that Twelfth Metallurgical shall pay the construction repair costs, administrative fees increased due to quality rectification, liquidated damages of quality and delay amounting RMB 86.0273 million to Northern Storage and Transportation, and all the arbitration fees shall be borne by Twelfth Metallurgical. Beijing Arbitration Commission has accepted the case and the case is now on trial.

20. Chinalco International (Tianjin) Construction Co., Ltd. (the "Tianjin Construction"), affiliated to China Aluminum International Engineering Corporation Limited which is a subsidiary of the Company, has disputes over arrears with 7 companies including Gao Weihua and Tianzi Environmental Protection Investment Holdings Co., Ltd. (the "Tianzi Environmental Protection").

In May 2016, Tianjin Construction filed a lawsuit to Tianjin Second Intermediate People's Court, petitioning to order that Tianzi Environmental Protection shall pay fund possession costs, purchase, storage and management fees for equipment amounting RMB 35.75 million, for which the other seven defendants shall bear the joint and several liability. Tianjin Second Intermediate People's Court accepted the case in May 2016.

In June 2016, Tianjin Construction filed an "Application for Additional Defendants and Additional Claims for Litigation", petitioning that Industrial and Commercial Bank of China Limited Tianjin Free Trade Zone Branch (the "ICBC Free Trade Zone Branch") to be added as a defendant, petitioning to order that Tianzi Environmental Protection shall pay advance principle and interest of construction in arrears and investment in equipment amounting RMB 176.7 million, Huazhiyuan International Trade (Tianjin) Co., Ltd. (the " Huazhiyuan ") shall bear the joint and several liability within the agreed scope of guaranty, and ICBC Free Trade Zone Branch shall bear the joint and several liability on all the claims within the agreed scope of guaranty.

In March 2017, the judgment of first instance ruled that Tianjin Construction won the case thus Tianzi Environmental Protection and Tianzi Environmental Protection has appealed to Tianjin Supreme Court. Tianjin Supreme Court ruled to revoked the judgment of first instance by Tianjin Intermediate People's Court and ordered a retrial. The case is now on trial.

21. Chinalco International (Tianjin) Construction Co., Ltd. (the "Tianjin Construction"), affiliated to China Aluminum International Engineering Corporation Limited which is a subsidiary of the Company, has a dispute over the construction contracts with Shanxi Tongde Aluminum Co., Ltd. (the "Tongde Aluminum").

In January 2021, Tianjin Construction filed a lawsuit to Xinzhou Intermediate People's Court, petitioning to order that the construction contract between the two parties shall be terminated, Tongde Aluminum shall pay the construction costs amounting RMB 49.166 million, the material costs amounting RMB 7.2737 million, the attention costs amounting RMB 1.44 million as the total amount is RMB 57.8797 million, the penal Interest shall be paid, and that all litigation costs shall be borne by Tongde Aluminum. Xinzhou Intermediate People's Court has accepted the case and the case is now on trial.

22. Guiyang Aluminum and Magnesium Design Research Institute Engineering Contracting Co., Ltd. (the "Guiyang Institute Contracting Company"), affiliated to China Aluminum International Engineering Corporation Limited which is a subsidiary of the Company, has a dispute over the construction contracts with Guizhou Huada Real Estate Development Co., Ltd. (the "Guizhou Huada").

Guiyang Institute Contracting Company filed an application for arbitration with Guiyang Arbitration Commission in December 2018 due to a dispute with Guizhou Huada Project General Contract, and on 20 January 2020, Guiyang Arbitration Commission issued (2019) Guizhou Province Arbitration Letter No. 0727, which was awarded as follows:

（1）It is confirmed that the initial expenses of 150 million yuan and project funds of 70 million yuan advanced by Guiyang Institute contracting company for Guizhou Huada, totaling 220 million yuan, are all due, and Guizhou Huada shall return 220 million yuan of due creditor's rights to Guiyang Institute contracting company within 30 days after the delivery of this ruling..

（2）Guizhou Huada shall, within 30 days after the delivery of this ruling, pay the advance expenses of RMB 150 million and the interest of the creditor's rights of RMB 70 million advanced by Guiyang Institute contracting company until the creditor's rights are paid off.

（3）Guizhou Huada shall, within 30 days after the delivery of this ruling, pay the liquidated damages for overdue repayment of creditor's rights by Guiyang Institute contracting company, based on the advance payment of RMB 220 million, from 19 September, 2019, at the rate of 6% per annum until the time when the advance payment is paid off.

（4）Guizhou Huada shall, within 30 days after the service of this award, pay to the contracting company of Guiyang Institute RMB 200,000 of liquidated damages, RMB 1.2 million of lawyer's fees, RMB 400,000 of preservation guarantee fee, and RMB 300,000 of preservation fee for overdue mortgage registration. The total arbitration fee is RMB 2.2087 million. The contracting company of Guiyang institute shall bear RMB 662,600, and Guizhou Huada shall bear RMB 1.5461 million.

On January 15, 2016, Guiyang Institute Contracting company signed a "credit guarantee contract" with Anshun Xixiu

City Investment Development Co., Ltd. (hereinafter referred to as "Xixiu City investment") and Huada Company, which agreed that Xixiu City Investment shall bear joint and several liability for the funds advanced by Guiyang Institute Contracting company. Xixiu City insurance contract breach of contract in the process of performance, failure to perform joint and several liability. The Guiyang Institute Contracting Company filed a lawsuit to the intermediate people's Court of Guiyang City, Guizhou Province, located in Guiyang City, Guizhou Province. It is requested that Xixiu City Investment should be ordered to pay RMB 367 million due creditor's rights (based on the content of (2019) GZZ No. 0727 award, which is tentatively calculated to April 7, 2020) to Guiyang Institute Contracting Company within the scope of RMB 250 million, and be ordered to pay RMB 7.75 million liquidated damages and bear all litigation costs. In November 2020, Guizhou Guiyang intermediate people's Court issued the civil judgment of Guizhou Guiyang intermediate people's Court ((2020) Qian 01 min Chu No. 1451). Xixiu City Investment owed the due creditor's rights of Guiyang Institute Contracting Company to Huada Company to undertake joint and several liability for repayment within RMB250 million to Guiyang Institute Contracting Company, and rejected other claims of Guiyang Institute Contracting Company. At present, the case is in the stage of second instance.

23. Guiyang Aluminum and Magnesium Design Research Institute Engineering Contracting Co., Ltd. (the "Guiyang Institute Contracting Company"), affiliated to China Aluminum International Engineering Corporation Limited which is a subsidiary of the Company, has a dispute over the construction contracts with Seventh Metallurgical Civil Construction Engineering Co., Ltd. (the "Seventh Construction").

In August 2020, Seventh Construction filed an arbitration application with the Guiyang Institute Contracting Company, requesting an award that Guiyang Institute Contracting Company shall pay RMB 3.9017 million for the completed works to Seventh Construction；The request awards Guiyang Institute Contracting Company to pay RMB 49.8044 million for the completed works to the Seventh Construction；The request for an award for the payment of the expected profits (expected reasonable profits) of the building B involved in the project to the Seventh Construction due to the breach of contract by Guiyang Court is RMB 4.9145 million；request for an award for the loss of RMB 4.4108 million due to the breach of contract payment of works by Guiyang Institute Contracting Company; request for an award that the long-term shutdown of the Seventh Construction caused by the delay in the demolition of the projects involved is RMB 2.3817 million; request to adjudicate Guiyang Court to the Seventh Construction due to delay in the payment of the progress of the project shall be paid reasonable profits to the date of payment; request to award the Seventh Construction to the project price involved in the project to enjoy the right of priority compensation, and Guiyang Court and Guiyang Institute Contracting Company to bear arbitration costs, preservation fees, lawyers' fees. At present, the case is still under trial.

24. Chinalco International Engineering Equipment Co., Ltd., (the "Equipment Company"), affiliated to China Aluminum International Engineering Corporation Limited which is a subsidiary of the Company, has a dispute over the contracts with Qinghai Western Hydropower Co., Ltd. (the " Western Hydropower ").

On 21 December 2018, the Company filed a lawsuit with the Qinghai Provincial High People's Court in Qinghai Province, requesting that Western Hydropower pay the arrears and corresponding interest totaling RMB 142.67 million, and that Western Hydropower bear all legal costs. The Qinghai Provincial High People's Court has accepted the request for litigation and filed a case, and issued the Notice of Acceptance of Cases by the Case Court of the Qinghai Provincial High People's Court (2018) Qinghai Civil First Instance Judgment No. 207). On 13 May 2019, the Qinghai Provincial High People's Court issued a first-instance judgment, ordering Qinghai West Hydropower Co., Ltd. to pay Chinalco International Engineering Equipment Co., Ltd. honorarium and costs of about RMB 130 million, and pay interest and breach of contract RMB 93 million (calculated until 22 December 2018, the date of prosecution, will continue to be calculated until the date of actual payment). The Company applied to the Qinghai Provincial High People's Court for enforcement because Western Hydropower failed to meet its monetary obligations as scheduled. On June 19, 2020, Qinghai Provincial Higher People's court accepted the application for bankruptcy reorganization of Western hydropower. On July 16, 2020, the enforcement ruling ((2020) Qing 01 Zhi Hui No. 51 one) was made to terminate the enforcement procedure.

On 21 December 2018, the Equipment Company filed a lawsuit to The Supreme People’s Court of Qinghai Province located in Qinghai Province, requesting to order Western Hydropower to pay arrears and corresponding interest, totaling RMB 196.24 million, and Western Hydropower shall bear all litigation costs. The Supreme People’s Court of Qinghai Province has accepted the litigation request and filed the case, and issued the "Notice of Acceptance of Cases by the Qinghai Provincial Higher People's Court" ((2018) Qingminchu No. 208). In August 2019, The Supreme People’s Court of Qinghai Province issued a judgment of first instance, ruling that Western Hydropower shall pay approximately RMB 161 million owed by China Aluminum International Engineering Corporation Limited as well as interest and liquidated damages (calculated since 1 January 2017 until the actual payment date). As Western

Hydropower failed to perform its financial payment obligations as scheduled, the Equipment Company applied to The Supreme People's Court of Qinghai Province for compulsory execution. On 19 June 2020, The Supreme People's Court of Qinghai Province accepted the bankruptcy and reorganization application of Western Hydropower. On 16 July 2020, an execution ruling ((2020) Qing01 Zhihui No. 51) was issued to terminate the enforcement procedure.

25. The Company's subsidiary China Aluminum International Engineering Corporation Limited, and its affiliated unit Qingdao Xinfu Co-creation Asset Management Co., Ltd. (the "Qingdao Xinfu") has a dispute over the contracts with Qingdao Liangyou Food Co., Ltd. (the ""Qingdao Liangyou"), Shandong Real Estate Development Group Qingdao Company (the "Shandong Housing"), Liang Yongjian and Wang Xiaoning.

From 2017 to 2018, the Company signed the "Qingdao Hong Kong Shopping Mall (Ting Town) project cooperation agreement" and supplementary agreement with Qingdao Xinfu, Liang Yongjian, Wang Xiaoning and Shandong Fangfang respectively. In order to revitalize the Ting Town project, the Company provides loans to Qingdao Xinfu. The Company's principal of due creditor's rights to Qingdao Xinfu is RMB 616.3497 million. The final repayment period of Qingdao Xinfu's loans to the Company is 30 April, 2020. The interest of these debts is calculated according to the loan contract of each period, and the project payment is paid back to the company in proportion. On 26 June, 2017, the Company signed the equity pledge contract with Liang Yongjian and Wang Xiaoning. Liang Yongjian and Wang Xiaoning pledged their 10% equity of Qingdao Xinfu to the Company to guarantee Qingdao Xinfu's obligation to repay the loan principal and interest to the company under the cooperation agreement. On 26 June, 2017, the Company signed the "joint and several liability guarantee contract" with Qingdao Liangyou, and signed the "joint and several liability guarantee contract" with Liang Yongjian and Wang Xiaoning. Qingdao Liangyou, Liang Yongjian and Wang Xiaoning are required to bear unlimited joint and several liability for all debt principal and interest of Qingdao Xinfu to the Company confirmed in the "cooperation agreement". On 29 July, 2017, the scope of guarantee was extended to the loan under the supplementary agreement.

According to the agreement on cooperation, the parties cooperate with each other to realize the creditor's rights through the project sales collection. However, the project cannot be sold and paid back due to the non-payment of land transfer fee of the project by Shandong housing. The behavior of Shandong housing violates the agreement of the cooperation agreement and constitutes a breach of contract.

As Qingdao Xinfu failed to repay the above due loan, Qingdao Liangyou, Liang Yongjian and Wang Xiaoning should fulfill their guarantee obligations. Shandong Fangfang's behavior constitutes a breach of contract. The Company filed an arbitration application with Beijing Arbitration Commission in Beijing. Request for a ruling:

（1）Qingdao Xinfu repays the principal of the loan at maturity of RMB 616.3497 million and the provisional interest and liquidated damages of RMB 244.9593 million;

（2）The company's creditor's rights to Qingdao Xinfu are prior to those of Shandong Fangfang and Liang Yongjian to Qingdao Xinfu respectively;

（3）Apply for the auction sale of the houses from the first floor to the fourth floor above the ground of Hong Kong land shopping mall, No. 93, Hong Kong Middle Road, Shinan District, Qingdao City, purchased by Qingdao Xinfu. The proceeds from the auction sale shall have priority in paying off the debt of arbitration claim (1) in accordance with the contract;

（4）Apply for auction and sale of 6% equity (RMB 600,000) and 4% equity (RMB 400,000) held by Liang Yongjian and Wang Xiaoning respectively. The proceeds from auction and sale shall be paid off the debt of arbitration claim (1) in priority;

（5）Request for Arbitration: Liang Yongjian, Wang Xiaoning and Qingdao Liangyou shall be jointly and severally liable to the company within the scope of arbitration request (1);

（6）It is requested to adjudicate that Shandong Provincial Real Estate shall bear the liability for breach of contract to the Company and compensate the Company for the interest loss of RMB 46.1013 million temporarily. It shall also bear the supplementary liability for compensation when the claim in Item (1) of the company cannot be fully paid off;

（7）The five applicants shall be jointly liable for the legal fees, preservation fees and arbitration fees of the Company.

On 2 June, 2020, Beijing Arbitration Commission issued the notice on acceptance of (2020) jzcz No. 1571 arbitration case and accepted the Company's application for arbitration. At present, the case is still in the process of trial.

26. Chinalco International Shandong Chemical Co., Ltd., (the "Shandong Chemical"), affiliated to China Aluminum International Engineering Corporation Limited which is a subsidiary of the Company, has a dispute over the contracts with Shandong Jiate Plastic Packaging Co., Ltd. ("Shandong Jiate"), Huang Chunqing, Huang Feng, Lin Yulei, Huang Zhongqing, Huang Shunqing and Zhao Youjie.

In November 2019, Shandong Chemical filed a lawsuit with the Zibo Intermediate People's Court, requesting an order for Shandong Jiate to pay the purchase price of RMB 74.6107 million and interest of RMB 3.0382 million. It is ordered to auction and sell off the Pledge under the pledge contract of accounts receivable and Shandong Chemical has the priority of compensation. It is also ordered to auction and sell off the Pledge under the pledge contract of maximum equity and Shandong Chemical has the priority of compensation. It is also ordered that Huang Chunqing and other six natural persons bear joint and several liability for all the money payable by Shandong Jiate. Zibo intermediate people's court accepted the case on November 25, 2019

Meanwhile, Shandong Chemical filed an application for preservation of the case. On 2 December 2019, Zibo intermediate people's Court issued (2019) No. 206 civil ruling of lu 03 minchu, it was ruled that the bank deposits of Shandong Jiate, Huang Chunqing and other 6 natural persons should be frozen at RMB 77.6489 million or their properties of corresponding value should be sealed up or detained.

The trial was held on 22 April, 2020. On 16 June, the court ruled that Shandong Chemical won the lawsuit, and that Shandong Jiate will pay RMB 72.0136 million for goods and RMB 4.8032 million for liquidated damages within 10 days after the judgment came into effect. Shandong Chemical has the right to be paid within RMB 150 million with the proceeds from the auction and sale of Huang Chunqing, Huang Feng and Lin Yulei's pledged shares in Shandong Jiate. Huang Chunqing, Huang Feng, Lin Yulei, Huang Zhongqing, Huang Shunqing and Zhao Youjie shall be jointly and severally liable to pay off the debts under the first paragraph above within RMB 150 million. Shandong Jiate filed an appeal. At present, the case is under trial.

27. Shanghai Chinalco International Supply Chain Management Co., Ltd. ("Chinalco Supply Chain"), affiliated to China Aluminum International Engineering Corporation Limited which is a subsidiary of the Company, has a dispute over the contracts with Shanghai Jinxiang Aluminum Co., Ltd. ("Jinxiang Aluminum").

In July 2020, Chinalco Supply Chain filed a lawsuit with the People's Court of Pudong New Area, Shanghai, requesting to order Jinxiang Aluminum to pay RMB 53.2549 million of contract payment and RMB 5.1127 million of liquidated damages, and bear all litigation costs. Shanghai Pudong New Area People's court has accepted the litigation claim of Chinalco Supply Chain. At present, the case is under trial.

9.2 External guarantee

1. Jiuye Construction Co., Ltd., a subsidiary of the Company, provided a joint and several liability guarantee for Mian County City Development Investment Co., Ltd. for a loan of RMB 95 million from China Development Bank Co., Ltd. The loan is due on 6 January 2023. As of 31 December 2019, the guarantee balance was RMB 28 million.
2. Hanzhong Jiuye Construction Co., Ltd., a subsidiary of the Company, provided a joint and several liability guarantee for Mian County Urban and Rural Infrastructure Construction Co., Ltd. for a loan of RMB 100 million from Agricultural Development Bank of China. The maturity date of the loan is 19 October 2027. As of 31 December 2019, the guarantee balance was RMB 63.6 million.

9.3 Commitment matters

1. The Company's subsidiaries China Aluminum International Engineering Corporation Limited (the "Chinalco International") and Yunnan Communications Investment and Construction Group Co., Ltd. (the " Yunnan Communications Investment ") formed a social capital consortium to jointly invest with the local government in the establishment of three project Companies, Yunnan Ningyong Expressway Co., Ltd. (the “Ningyong Expressway”), Yunnan Linyun Expressway Co., Ltd. (the “Linyun Expressway”), and Yunnan Linshuang Expressway Co., Ltd. (the “Linshuang Expressway”), to construct and operate related expressways in PPP mode. Chinalco International, Yunnan Communications Investment and the investment entities designated by local government hold 30%, 40%, and 30% of the above three PPP project Companies respectively.

   The capital composition of each project company are as follows:

The investment entities designated by local government to invest 30% of the total project investment (of which RMB 30 million as registered capital, the rest as capital reserves). Chinalco International and Yunnan Communications Investment invest RMB 30 million and RMB 40 million respectively as subscribed registered capital.

Meanwhile, Chinalco International and Yunnan Communications Investment provide credit enhancement for the differences between the total investment and capital of the project companies according to the relative proportion of the shareholding ratio (which is 3:4), and assume the obligation to raise funds for the shortfall in funding during the operating of the project companies, which shall be borne by Chinalco International at the proportion of 42.86% and by Yunnan Communications Investment in the proportion of 57.14%.

According to the relevant agreement, Chinalco International shall provide credit enhancements of no more than RMB 4.559 billion, RMB 3.19 billion, and RMB 2.086 billion (not more than RMB 9.835 billion in total) to Ningyong Expressway, Linyun Expressway, and Yunnan Linshuang Investment Loans respectively, and a letter of commitment to make up the difference shall be signed. The letter of commitment shall be signed respectively within the credit enhancement limit after negotiation with the relevant creditors.

As of the reporting date, the actual letter of commitment to make up for the difference signed and credit enhancements provided by Chinalco International are as follows:

Ningyong Expressway received RMB 11 billion in bank credit, and Chinalco International provided a letter of commitment to make up the difference of RMB 9 billion at the rate of 42.86%. The bank has actually issued RMB 3.98 billion in loans, of which RMB 1.706 billion was provided by Chinalco International with credit enhancement.

Linyun Expressway received RMB 11.1 billion in bank credit, and Chinalco International provided a letter of commitment to make up the difference of RMB 5.6 billion at the rate of 42.86%. The bank has actually issued RMB 2.8 billion in loans, of which RMB 1.2 billion was provided by Chinalco International with credit enhancement.

Linshuang Expressway received RMB 9.9 billion in bank credit, and Chinalco International provided a letter of commitment to make up the difference of RMB 4.06 billion at the rate of 42.86%. The bank has actually issued RMB 1.77 billion in loans, of which RMB 759 million was provided by Chinalco International with credit enhancement.

Note 10 Subsequent events occurring after the balance sheet date

1. On 22 January 2021, Aluminum Corporation of China Limited, a subsidiary of the company, issued the first ultra-short-term financing bond of 2021 with a total face value of RMB 2 billion (RMB 100 face value per unit) at a fair price. It expires in July 2021 to meet working capital and replace mature loans. The fixed annual coupon rate of these bonds is 2.75%.

2. On 9 March, 2021, Aluminum Corporation of China Limited, a subsidiary of the company, issued the second phase of 2021 ultra-short-term financing bonds with a total face value of RMB 2 billion (RMB 100 face value per unit) at a fair price. It expires in March 2021 to meet the working capital and replace mature loans. The fixed annual coupon rate of these bonds is 2.45%.

3. On March 11, 2021, Aluminum Corporation of China Limited, a subsidiary of the company, issued the third phase of 2021 ultra-short-term financing bonds with a total face value of RMB 2 billion (RMB 100 face value per unit) at a fair price. It expires in June 2021 to meet working capital and replace mature loans. The fixed annual coupon rate of these bonds is 2.65%.

4. On March 15, 2021, Aluminum Corporation of China Limited, a subsidiary of the company, issued the fourth phase of 2021 ultra-short-term financing bonds with a total face value of RMB 2 billion (RMB 100 face value per unit) at a fair price. It expires in June 2021 and to meet working capital and replace mature loans. The fixed annual coupon rate of these bonds is 2.75%.

5. The China Association of interbank dealers agrees to accept the registration of the Company's subsidiary China Aluminum International Engineering Corporation Limited. in issuing ultra-short-term financing bonds in China. The registered amount of ultra-short-term financing bonds of China Aluminum International Engineering Corporation Limited. is RMB 4 billion, and the registration quota is valid for 2 years from 25 September, 2020. In January 2021, the company issued the first phase of 2021 ultra-short-term financing bonds of RMB 1 billion.

Note 11 Relationships and Transactions with Related Parties

1. Subsidiaries

See Note 7 “Business Combination and Consolidated Financial Statements”.

2. Joint ventures and associates

See Note 8.18 “Long-term Equity Investments”

3. Related Party Relationships

Name of related parties	Related Party Relationships
Guizhou Chinalco Aluminum Co., Ltd.	Associates of the group
Baotou Sendu Carbon Co., Ltd.	Associates of the group
CNPC Chinalco (Beijing) Petrochemical Co., Ltd.	Joint venture of the group
Huadian Ningxia Lingwu Power Generation Co., Ltd.	Associates of the group
Ningxia Jingneng Ningdong Power Generation Co., Ltd.	Associates of the group
Qinghai Haiyuan Aluminum Industry Co., Ltd.	Associates of the group
Lualaba Copper Smelting Co., Ltd.	Associates of the group
Longxi Northwest Aluminum-Gold Bridge Welding Materials Co.,	Associates of the group
Jiangsu Zhongse Ruibili Industrial Co., Ltd.	Associates of the group
Yunnan Linyun Expressway Co., Ltd.	Associates of the group
Yunnan Ningyong Expressway Co., Ltd.	Associates of the group
China Construction Aluminum New Materials Henan Co., Ltd.	Associates of the group
Zhuzhou Tianqiao Crane Co., Ltd.	Associates of the group
Guizhou Tongye Construction Development Co., Ltd.	Associates of the group
Loudi Haochuang Development and Construction Co., Ltd.	Associates of the group
Luoyang Huazhong Aluminum Industry Co., Ltd.	Associates of the group
Sichuan Chuannan Rail Transit Operation Co., Ltd.	Associates of the group
Shanxi Qinlu Taiyue New Material Co., Ltd.	Associates of the group
Datong Coal Mine Group Huasheng Wanjie Coal Industry Co., Ltd.	Joint venture of the group
Ningxia Datang International Dam Power Generation Co., Ltd.	Joint venture of the group
Chinalco Guizhou Industrial Service Co., Ltd.	Associates of the group
Shanxi Jiexiu Xinyugou Coal Industry Co., Ltd.	Joint venture of the group
Xining Huayue Industrial Service Co., Ltd.	Joint venture of the group
Fuzhou Trading Ruimin Trading Co., Ltd.	Associates of the group
Hong Kong Xinsheng Trading Co., Ltd.	Associates of the group
Chambishi Copper Smelting Co., Ltd.	Associates of the group
Zhongheng Cooperation Investment Co., Ltd.	Joint venture of the group
Henan Huashun Tiancheng Technology Co., Ltd.	Associates of the group

Name of related parties	Related Party Relationships
Chinalco Zibo International Trade Co., Ltd.	Joint venture of the group
Loudi Zhongyu New Material Co., Ltd.	Joint venture of the group
Henan Jinrui Aijie Building Material Co., Ltd.	Associates of the group
Baotou Tiancheng Aluminum Industry Co., Ltd.	Associates of the group
Yunnan Simao Shanshui Copper Co., Ltd.	Joint venture of the group
Huozhou Coal and Electricity Group Xingshengyuan Coal Industry	Associates of the group
Peking University Medical Zibo Hospital Co., Ltd.	Associates of the group
China Merchants Properties Co., Ltd.	Joint venture of the group
China Aluminum Shituo Intelligent Technology Co., Ltd.	Associates of the group
Ningxia TianJingshenzhou Wind Power Co., Ltd.	Joint venture of the group
Guangxi Huazheng Aluminum Industry Co., Ltd.	Associates of the group
China Aluminum Workwear Technology Co., Ltd.	Joint venture of the group
Hangzhou Huanuan Technology Co., Ltd.	Associates of the group
Guangxi Huazhong Building Material Co., Ltd.	Associates of the group
Mian County Urban and Rural Infrastructure Construction Co., Ltd.	Associates of the group
Guangxi Huayin Aluminum Industry Co., Ltd.	Joint venture of the group
Zhongji Shanhe Technology Co., Ltd.	Joint venture of the group
Yunnan Kunye Construction Development Co., Ltd.	Associates of the group
Zhengzhou Qingyan Alloy Technology Co., Ltd.	Joint venture of the group
Shaanxi Provincial Electric Power Dingbian Energy Co., Ltd.	Joint venture of the group
China Aluminum South Aluminum (Fujian) Aluminum Structure	Joint venture of the group
Qujing Zhanyi District Jebsen Logistics Co., Ltd.	Associates of the group
Shanxi Huatuo Aluminum Co., Ltd.	Associates of the group
Guangxi Hualei New Material Co., Ltd.	Joint venture of the group
Henan Great Wall Logistics Co., Ltd.	Associates of the group
Huozhou Coal and Electricity Group Hejin Xuehugou Coal Industry	Associates of the group
Taiyuan China National No. 12 Metallurgical Industry Development	Associates of the group
Kunming Jinsharen Chemical Co., Ltd.	Associates of the group
Guangdong Maoming Xinxiang Property Co., Ltd.	Joint venture of the group
Guizhou Guilv Logistics Co., Ltd.	Associates of the group
Guizhou Chinalco Hengtaihe Mining Co., Ltd.	Joint venture of the group
Jiexiu Yuye Coal Preparation Co., Ltd.	Associates of the group
Longxi Northwest Aluminum Jiuding Powder Co., Ltd.	Associates of the group

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Name of related parties	Related Party Relationships
Shanxi Ganlin Jinlu Medical Investment Co., Ltd.	Associates of the group
Shanxi Gallium Huatianhe Electronic Materials Co., Ltd.	Associates of the group
Taikang Howen Construction Co., Ltd.	Associates of the group
Xi'an City Planning Urban and Rural Construction Investment	Associates of the group
Yunnan Defu Environmental Protection Co., Ltd.	Associates of the group
Yunnan Yunchuang Tendering Co., Ltd.	Associates of the group

4. Related party transactions

(1) Sale of goods

Name of related parties	Current year amount	Prior year amount
China Merchants Properties Co., Ltd.	8,909,664,685.11	2,646,936,697.18
Guangxi Hualei New Material Co., Ltd.	3,975,599,350.33	3,091,858,621.93
Chinalco Zibo International Trade Co., Ltd.	1,932,556,193.17	2,009,899,626.01
Guangxi Huayin Aluminum Industry Co., Ltd.	581,423,235.00	746,663,098.60
Baotou Tiancheng Aluminum Industry Co., Ltd.	316,355,146.36	727,096,916.81
Fuzhou Trading Ruimin Trading Co., Ltd.	210,340,943.76	
Loudi Zhongyu New Material Co., Ltd.	205,245,254.50	
Guizhou Chinalco Aluminum Co., Ltd.	55,152,144.19	75,854,224.02
Yunnan Simao Shanshui Copper Co., Ltd.	5,100,357.48	9,291,880.17
Shanxi Huatuo Aluminum Co., Ltd.	4,717,966.16	
Guangxi Huazhong Building Material Co., Ltd.	1,694,328.32	
Henan Huashun Tiancheng Technology Co., Ltd.	141,014.91	
Lualaba Copper Smelting Co., Ltd.	84,905.66	5,660.38
Longxi Northwest Aluminum-Gold Bridge Welding Materials Co., Ltd.	21,076.22	511,979.03
Total	**16,198,096,601.17**	**9,308,118,704.13**

(2) Rendering of services

Name of related parties	Current year amount	Prior year amount
Chinalco Zibo International Trade Co., Ltd.	252,346,825.81	37,948,548.92
Guangxi Hualei New Material Co., Ltd.	119,955,468.86	116,754,054.90

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Name of related parties	Current year amount	Prior year amount
Fuzhou Trading Ruimin Trading Co., Ltd.	60,092,449.63	
Guangxi Huayin Aluminum Industry Co., Ltd.	50,839,649.82	60,785,636.11
Datong Coal Mine Group Huasheng Wanjie Coal Industry	12,140,573.95	
Huozhou Coal and Electricity Group Hejin Xuehugou Coal	8,455,582.08	8,250,000.00
Baotou Tiancheng Aluminum Industry Co., Ltd.	7,438,448.79	13,879,081.66
Chambishi Copper Smelting Co., Ltd.	5,563,816.57	137,106.60
Guangxi Huazhong Building Material Co., Ltd.	724,892.43	422,695.07
Zhengzhou Qingyan Alloy Technology Co., Ltd.	149,897.58	
Qujing Zhanyi District Jebsen Logistics Co., Ltd.	11,162.24	
Total	**517,718,767.76**	**238,177,123.26**

(3) Purchase of goods

Name of related parties	Current year amount	Prior year amount
China Merchants Properties Co., Ltd.	8,962,784,177.11	46,814,736.55
Chinalco Zibo International Trade Co., Ltd.	2,104,940,888.55	1,789,771,211.14
Hong Kong Xinsheng Trading Co., Ltd.	1,837,269,832.14	
Guangxi Huayin Aluminum Industry Co., Ltd.	1,782,003,484.95	1,602,774,921.91
Chambishi Copper Smelting Co., Ltd.	1,567,480,646.80	2,810,489,479.78
Loudi Zhongyu New Material Co., Ltd.	1,180,819,167.77	
Baotou Sendu Carbon Co., Ltd.	916,212,863.58	1,355,240,430.28
Zhongheng Cooperation Investment Co., Ltd.	670,729,992.07	143,971,087.45
Guangxi Hualei New Material Co., Ltd.	631,233,256.08	441,645,997.70
Yunnan Simao Shanshui Copper Co., Ltd.	583,074,553.94	632,609,623.90
Guangxi Huazhong Building Material Co., Ltd.	18,780,323.30	1,979,297.12
CNPC Chinalco (Beijing) Petrochemical Co., Ltd.	10,256,420.13	13,528,188.39
China Aluminum Shituo Intelligent Technology Co., Ltd.	8,042,995.49	15,661,853.47
Huadian Ningxia Lingwu Power Generation Co., Ltd.	224,334.91	400,018.86
Ningxia Jingneng Ningdong Power Generation Co., Ltd.	132,795.28	
Qinghai Haiyuan Aluminum Industry Co., Ltd.	8,235.00	
Total	**20,273,993,967.10**	**8,854,886,846.55**

(4) Receiving of services

Name of related parties	Current year amount	Prior year amount
Guangxi Huayin Aluminum Industry Co., Ltd.	99,538,004.00	
Qujing Zhanyi District Jebsen Logistics Co., Ltd.	17,139,614.79	13,637,686.93

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Name of related parties	Current year amount	Prior year amount
China Aluminum Shituo Intelligent Technology Co., Ltd.	12,232,555.64	36,266,176.89
Henan Huashun Tiancheng Technology Co., Ltd.	1,550,176.99	1,475,932.04
Guangxi Hualei New Material Co., Ltd.		1,771,698.11
Lualaba Copper Smelting Co., Ltd.		37,735.85
Total	**130,460,351.42**	**53,189,229.82**

5. Related party transactions

(1) Accounts receivable

Company name	Closing balance	Opening balance
Chinalco Zibo International Trade Co., Ltd.	727,682,021.08	657,161,033.06
Yunnan Linyun Expressway Co., Ltd.	247,177,689.00	255,443,330.00
Yunnan Ningyong Expressway Co., Ltd.	222,300,612.94	432,286,607.88
Guangxi Hualei New Material Co., Ltd.	65,334,560.78	127,680,092.06
Luoyang Huazhong Aluminum Industry Co., Ltd.	32,384,941.85	7,375,359.81
Loudi Haochuang Development and Construction Co., Ltd.	27,492,200.00	41,665,017.00
Guangxi Huayin Aluminum Industry Co., Ltd.	22,408,414.62	16,635,862.62
Guizhou Tongye Construction Development Co., Ltd.	22,281,772.60	23,863,798.00
Fuzhou Trading Ruimin Trading Co., Ltd.	9,756,860.09	
Shaanxi Provincial Electric Power Dingbian Energy Co., Ltd.	6,999,863.07	6,088,729.21
Taiyuan China National No. 12 Metallurgical Industry Development Co., Ltd.	4,560,278.82	4,560,278.82
Jiangsu Zhongse Ruibili Industrial Co., Ltd.	2,806,649.21	3,846,501.43
Yunnan Simao Shanshui Copper Co., Ltd.	2,640,642.74	88,782.21
Chinalco Guizhou Industrial Service Co., Ltd.	2,587,618.08	
Ningxia Datang International Dam Power Generation Co., Ltd.	2,179,979.75	31,229,637.59
Sichuan Chuannan Rail Transit Operation Co., Ltd.	1,749,913.54	4,192,024.10
Zhuzhou Tianqiao Crane Co., Ltd.	1,687,976.75	
China Aluminum Shituo Intelligent Technology Co., Ltd.	1,363,196.47	2,435,357.50
Ningxia TianJingshenzhou Wind Power Co., Ltd.	745,000.00	2,483,966.00

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Company name	Closing balance	Opening balance
China Construction Aluminum New Materials Henan Co., Ltd.	709,013.65	1,492,094.05
Shanxi Qinlu Taiyue New Material Co., Ltd.	500,000.00	500,000.00
Guangxi Huazhong Building Material Co., Ltd.	301,900.00	
Yunnan Defu Environmental Protection Co., Ltd.	170,515.01	
Henan Huashun Tiancheng Technology Co., Ltd.	112,429.09	
Datong Coal Mine Group Huasheng Wanjie Coal Industry Co., Ltd.	30,000.00	1,539.00
Henan Jinrui Aijie Building Material Co., Ltd.	14,175.23	
Shanxi Huatuo Aluminum Co., Ltd.	6,946.93	25,081.67
Longxi Northwest Aluminum-Gold Bridge Welding Materials Co., Ltd.		224,550.83
Total	**1,405,985,171.30**	**1,619,279,642.84**

(2) Advances to suppliers

Company name	Closing balance	Opening balance
Yunnan Simao Shanshui Copper Co., Ltd.	65,000,000.00	124,766,510.29
Chinalco Zibo International Trade Co., Ltd.	30,670,083.68	77,157,692.25
Shanxi Jiexiu Xinyugou Coal Industry Co., Ltd.	19,988,174.44	24,988,174.44
Guangxi Huayin Aluminum Industry Co., Ltd.	2,725,724.80	1,707,338.71
Zhongji Shanhe Technology Co., Ltd.	2,126,269.60	
Xining Huayue Industrial Service Co., Ltd.	1,965,375.86	
Zhongheng Cooperation Investment Co., Ltd.	630,453.84	
Henan Great Wall Logistics Co., Ltd.	200,413.21	86,542.50
Henan Huashun Tiancheng Technology Co., Ltd.	188,513.16	
Fuzhou Trading Ruimin Trading Co., Ltd.	174,336.39	
Total	**123,669,344.98**	**228,706,258.19**

(3) Account payables

Company name	Closing balance	Opening balance
Chinalco Zibo International Trade Co., Ltd.	561,508,239.81	473,132,444.05
Hong Kong Xinsheng Trading Co., Ltd.	85,242,954.71	

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Company name	Closing balance	Opening balance
Chambishi Copper Smelting Co., Ltd.	19,836,120.65	37,526,784.89
Qujing Zhanyi District Jebsen Logistics Co., Ltd.	11,473,294.99	
Yunnan Simao Shanshui Copper Co., Ltd.	7,336,759.91	
Guangxi Huazhong Building Material Co., Ltd.	4,151,941.22	
China Aluminum Shituo Intelligent Technology Co., Ltd.	3,253,318.74	
Total	**692,802,630.03**	**510,659,228.94**

(4) Advances from customers

Company name	Closing balance	Opening balance
Chinalco Zibo International Trade Co., Ltd.	274,257.99	55,910,139.83
Zhengzhou Qingyan Alloy Technology Co., Ltd.	171,178.76	
Loudi Zhongyu New Material Co., Ltd.	73,600.18	
Shanxi Huatuo Aluminum Co., Ltd.	63,301.30	
Henan Jinrui Aijie Building Material Co., Ltd.	40,010.00	
Baotou Tiancheng Aluminum Industry Co., Ltd.	15,500.55	218,120.77
Total	**637,848.78**	**56,128,260.60**

(5) Other receivables

Company name	Closing balance	Opening balance
Shanxi Jiexiu Xinyugou Coal Industry Co., Ltd.	1,463,871,177.42	1,060,759,054.55
Guizhou Chinalco Hengtaihe Mining Co., Ltd.	168,954,178.93	168,954,178.93
Datong Coal Mine Group Huasheng Wanjie Coal Industry Co., Ltd.	61,032,705.74	50,163,697.33
Xi'an City Planning Urban and Rural Construction Investment Development Co., Ltd.	53,035,595.14	53,035,595.14
Chinalco Guizhou Industrial Service Co., Ltd.	33,521,665.14	
Taiyuan China National No. 12 Metallurgical Industry Development Co., Ltd.	20,414,897.05	20,414,897.05
Jiexiu Yuye Coal Preparation Co., Ltd.	15,592,199.54	15,592,199.54
Guizhou Guilv Logistics Co., Ltd.	13,096,954.20	
Guangdong Maoming Xinxiang Property Co., Ltd.	7,449,125.92	7,199,125.92

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Company name	Closing balance	Opening balance
Guangxi Hualei New Material Co., Ltd.	5,377,208.20	230,000.00
Longxi Northwest Aluminum Jiuding Powder Co., Ltd.	3,512,256.30	6,594,633.31
Shaanxi Provincial Electric Power Dingbian Energy Co., Ltd.	1,831,980.60	8,024,895.19
Shanxi Gallium Huatianhe Electronic Materials Co., Ltd.	1,358,659.12	1,168,879.12
Guangxi Huayin Aluminum Industry Co., Ltd.	1,215,400.00	190,000.00
Henan Great Wall Logistics Co., Ltd.	3,090,995.04	3,724,707.79
CNPC Chinalco (Beijing) Petrochemical Co., Ltd.	788,340.98	
Henan Jinrui Aijie Building Material Co., Ltd.	427,444.55	
Hangzhou Huanuan Technology Co., Ltd.	391,192.24	
Luoyang Huazhong Aluminum Industry Co., Ltd.	300,000.00	
Jiangsu Zhongse Ruibili Industrial Co., Ltd.	85,000.00	85,000.00
Longxi Northwest Aluminum-Gold Bridge Welding Materials Co., Ltd.	76,457.17	
Zhongji Shanhe Technology Co., Ltd.	57,900.00	3,791,448.29
Shanxi Ganlin Jinlu Medical Investment Co., Ltd.	3,240.00	
China Aluminum South Aluminum (Fujian) Aluminum Structure Technology Development Co., Ltd.	1,238.00	1,238.00
Huozhou Coal and Electricity Group Hejin Xuehugou Coal Industry Co., Ltd.		8,196,588.30
Huozhou Coal and Electricity Group Xingshengyuan Coal Industry Co., Ltd.		200,000.00
Taikang Howen Construction Co., Ltd.		51,357.61
Yunnan Yunchuang Tendering Co., Ltd.		273,600.00
Total	**1,450,175,294.65**	**1,408,651,096.07**

(6) Other payables

Company name	Closing balance	Opening balance
Yunnan Simao Shanshui Copper Co., Ltd.	27,670,000.00	
Huozhou Coal and Electricity Group Xingshengyuan Coal Industry Co., Ltd.	18,000,000.00	18,000,000.00

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Company name	Closing balance	Opening balance
Guangxi Huazheng Aluminum Industry Co., Ltd.	4,616,590.09	475,340.00
China Merchants Properties Co., Ltd.	4,000,000.00	
China Aluminum Shituo Intelligent Technology Co., Ltd.	3,423,187.46	14,550,216.50
Ningxia TianJingshenzhou Wind Power Co., Ltd.	3,096,879.53	3,203,858.53
Guangxi Huazheng Aluminum Industry Co., Ltd.	2,000,000.00	35,000,000.00
China Aluminum Workwear Technology Co., Ltd.	1,800,000.00	
Hangzhou Huanuan Technology Co., Ltd.	1,768,000.00	
Guangxi Huazhong Building Material Co., Ltd.	1,000,000.00	
Mian County Urban and Rural Infrastructure Construction Co., Ltd.	1,000,000.00	1,000,000.00
Guangxi Huayin Aluminum Industry Co., Ltd.	793,942.88	
Zhongji Shanhe Technology Co., Ltd.	235,000.00	235,000.00
Yunnan Kunye Construction Development Co., Ltd.	62,600.00	62,600.00
Zhengzhou Qingyan Alloy Technology Co., Ltd.	28,952.00	28,952.00
Shaanxi Provincial Electric Power Dingbian Energy Co., Ltd.	20,000.00	20,000.00
China Aluminum South Aluminum (Fujian) Aluminum Structure Technology Development Co., Ltd.	18,797.00	188,412.00
Qujing Zhanyi District Jebsen Logistics Co., Ltd.	8,200.50	
Shanxi Huatuo Aluminum Co., Ltd.	1,036.31	50,000.00
Guangxi Hualei New Material Co., Ltd.		9,213.82
Henan Great Wall Logistics Co., Ltd.		20,000.00
Huozhou Coal and Electricity Group Hejin Xuehugou Coal Industry Co., Ltd.		3,994,517.00
Taiyuan China National No. 12 Metallurgical Industry Development Co., Ltd.		57,840.00
Total	**69,543,185.77**	**76,895,949.85**

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Note 12 Notes to important items in the parent company's financial statement

1.1 Accounts Receivable

Items	Closing balance	Opening balance
Interests receivable	38,545,546.26	54,398,539.32
Dividends receivable	63,480,793.10	63,480,793.10
Other receivables	1,361,538,420.66	1,217,009,889.53
Total	**1,463,564,760.02**	**1,334,889,221.95**

1. Interests receivable

Items	Closing balance	Opening balance
Term deposits		
Entrusted loans	38,545,546.26	54,398,539.32
Bond investments		
Others		
Total	**38,545,546.26**	**54,398,539.32**

2. Dividends receivable

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance	Reason for uncollected amounts	Any impairment loss incurred and corresponding basis
Dividends receivable within one year	**1,220,640.20**		**1,220,640.20**			
Including: Chinalco Southwest Aluminum Strip Co., Ltd.	1,220,640.20		1,220,640.20			No
Dividends receivable more than one year	**62,260,152.90**	**1,220,640.20**		**63,480,793.10**		
Including: 1. Beijing National Tune China Aluminum Copper Industry Development Fund (Limited Partnership)	3,222,249.01			3,222,249.01	Financial strain	No
2. Southwest Aluminum (Group) Co., Ltd.	13,820,930.50			13,820,930.50	Financial strain	No

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance	Reason for uncollected amounts	Any impairment loss incurred and corresponding basis
3. Chinalco Ruimin Co., Ltd.	5,996,809.11			5,996,809.11	Financial strain	No
4. Chinalco Southwest Aluminum Strip Co., Ltd.	32,321,416.70	1,220,640.20		33,542,056.90	Financial strain	No
5. Chinalco Luoyang Copper Industry Co., Ltd.	6,898,747.58			6,898,747.58	Financial strain	No
Total	**63,480,793.10**	**1,220,640.20**	**1,220,640.20**	**63,480,793.10**		

3. Other Receivables

Category	Closing balance			
	Carrying amount		Bad debt provision	
	Amount	Proportion (%)	Amount	Proportion (%)
Other receivables that are individually significant and individually assessed for impairment	1,476,354,570.04	96.89	160,422,641.90	10.87
Other receivables that are collectively assessed for impairment as in a group of receivables of shared credit risk characteristics				
Other receivables that are individually not significant but are individually assessed for impairment	47,331,876.49	3.11	1,725,383.97	3.65
Other receivables that are individually assessed for impairment (applicable under new Standards)				
Total	**1,523,686,446.53**	**100.00**	**162,148,025.87**	**10.64**

(Continued)

Category	Opening balance			
	Carrying amount		Bad debt provision	
	Amount	Proportion (%)	Amount	Proportion (%)
Other receivables that are individually significant and individually assessed for impairment	1,332,584,151.67	96.62	160,422,641.90	12.04

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Category	Opening balance			
	Carrying amount		Bad debt provision	
	Amount	Proportion (%)	Amount	Proportion (%)
Other receivables that are individually significant and individually assessed for impairment				
Other receivables that are individually not significant but are individually assessed for impairment	46,573,763.73	3.38	1,725,383.97	3.70
Other receivables that are individually assessed for impairment (applicable under new Standards)				
Total	**1,379,157,915.40**	**100.00**	**162,148,025.87**	**11.76**

(1) Other receivables that are individually significant and individually assessed for impairment at year end

Debtor name	Carrying amount	Bad debt provision	Aging	Proportion (%)	Reason for recognition
Chinalco Asset Holdings	313,090,080.00		2-3 years		Expect to recover
Chinalco Environmental Protection and Energy Conservation Group Co., Ltd	201,662,841.88		1-2 years		Expect to recover
Sunshine Vision Company	195,747,000.00		Over 3 years		Expect to recover
Shanxi Carbon Factory	127,659,610.86	127,659,610.86	Over 5 years	100.00	Expect of uncollectible
Chinalco Shanxi Aluminum Co., Ltd.	96,115,277.00		Over 5 years		Expect to recover
Guizhou Aluminum Factory Co., Ltd.	75,528,455.23		3-5 years		Expect to recover
Northwest Aluminum Co., Ltd.	67,435,630.58		Over 5 years		Expect to recover
Shandong Aluminum Industry Co., Ltd.	50,500,094.32		Over 5 years		Expect to recover
Chinalco Iron Mine Holdings Co., Ltd.	36,957,063.34		Over 5 years		Expect to recover
China Aluminum Huaxi Aluminum Foil Project Team	22,167,360.00		Over 5 years		Expect to recover
Baotou Aluminum (Group) Co., Ltd.	30,451,442.15		2-5 years		Expect to recover

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Debtor name	Carrying amount	Bad debt provision	Aging	Proportion (%)	Reason for recognition
Science City (Guangzhou) Investment Group Co., Ltd.	30,000,000.00		Within 1 year		Expect to recover
Guangzhou Smelter Co., Ltd.	27,885,534.63		Within 1 year		Expect to recover
Ministry of Finance of the People's Republic of China	113,938,312.41		Within 1 year		Expect to recover
Chinalco Chengdu Aluminum Co., Ltd.	16,163,031.04	16,163,031.04	Over 5 years	100.00	Expect of uncollectible
Southwest Aluminum (Group) Co., Ltd.	12,467,907.79		1 -4 years		Expect to recover
China Color Gemdale Resources Technology Co., Ltd.	9,600,000.00	9,600,000.00	Over 5 years	100.00	Expect of uncollectible
Aluminum Corporation of China	8,333,301.47		Within 1 year		Expect to recover
Kellogg Management Consulting Company	7,678,389.87		3-4 years		Expect to recover
Chinalco Materials Application Research Institute Co., Ltd	7,084,699.13		2-3 years		Expect to recover
Jiangxi Rare Earth Hi-Tech Co., Ltd.	7,000,000.00	7,000,000.00	Over 5 years	100.00	Expect of uncollectible
Yunnan Copper Industry (Group) Co., Ltd.	6,580,952.71		3-5 years		Expect to recover
Chinalco Rare Earth Corporation Limited	6,408,446.63		Within 3 years		Expect to recover
Pingguo Aluminum Co., Ltd.	5,899,139.00		Over 5 years		Expect to recover
Total	**1,476,354,570.04**	**160,422,641.90**			

(2) Other receivables that are individually not significant but are individually assessed for impairment at year end

Debtor name	Carrying amount	Allowance for Bad debts	Aging	Proportion (%)	Reason for recognition
Chinalco Sapa Special Aluminum (Chongqing) Co., Ltd.	4,737,449.96		3-4 years		Expect to recover
Chongqing Southwest Aluminum Minsheng Industrial Co., Ltd.	2,398,978.99		Over 5 years		Expect to recover

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Debtor name	Carrying amount	Allowance for Bad debts	Aging	Proportion (%)	Reason for recognition
Reserve fund	2,223,670.64		Within 1 year Over 4 years		Expect to recover
Chinalco Henan Aluminum Co., Ltd.	2,220,860.99		Over 5 years		Expect to recover
Yongji Huasheng Employment Service Co., Ltd.	2,120,810.17		Over 5 years		Expect to recover
Northeast Light Alloy Co., Ltd.	1,853,552.17		Within 1 year 1-4 years		Expect to recover
Fushun Titanium Industry Co., Ltd.	1,725,383.97	1,725,383.97	Over 5 years	100.00	Expect of uncollectible
China Aluminum Information Technology Co., Ltd.	1,641,444.59		Within 1 year		Expect to recover
Chinalco Luoyang Copper Industry Co., Ltd.	1,607,277.77		Over 5 years		Expect to recover
Lanzhou Liancheng Aluminum Industry Co., Ltd.	1,573,094.14		Over 5 years		Expect to recover
China Copper (Shanghai) Copper Industry Co., Ltd.	1,365,557.00		Over 5 years		Expect to recover
Henan Zhongzhou Aluminum Factory Co., Ltd.	1,326,837.52		Over 5 years		Expect to recover
Shanghai Nonferrous Metals (Group) Co., Ltd.	1,300,000.00		Over 5 years		Expect to recover
State-owned Assets Supervision and Administration Commission Recruitment Office	1,233,553.98		Over 5 years		Expect to recover
China Copper Co., Ltd.	1,033,483.86		Within 1 year		Expect to recover
China Copper Mineral Resources Co., Ltd.	1,024,300.00		Over 5 years		Expect to recover
Zhengzhou Light Metal Research Institute Co., Ltd.	1,015,368.14		3-4 years Over 5 years		Expect to recover
Chinalco Intelligent Technology Development Corporation Limited	909,902.62		Within 1 year 1-2 years		Expect to recover
Chinalco Ruimin Co., Ltd.	857,776.97		Within 1 year 1-5 years		Expect to recover

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Debtor name	Carrying amount	Allowance for Bad debts	Aging	Proportion (%)	Reason for recognition
Beijing China Aluminum United Property Management Co., Ltd.	766,394.17		2-3 years		Expect to recover
Baotou Aluminum (Group) Co., Ltd. Trade Union Committee	400,000.00		3-4 years		Expect to recover
Lanzhou Aluminum Factory Co., Ltd.	357,966.15		Over 5 years		Expect to recover
China Aluminum International Trading Co., Ltd.	302,093.36		Over 5 years		Expect to recover
China United Network Communications Co., Ltd. Beijing Branch	298,223.56		3-4 years		Expect to recover
China United Network Communications Co., Ltd. Luoyang Branch	249,000.00		3-4 years		Expect to recover
China Nonferrous Metal Materials Luoyang Company	197,360.00		3-4 years		Expect to recover
Datang Software Technology Co., Ltd.	183,000.00		3-4 years		Expect to recover
Aluminum Corporation of China Liancheng Branch	169,872.59		3-5 years		Expect to recover
Aluminum Corporation of China Guangxi Branch	165,951.83		3-4 years Over 5 years		Expect to recover
Nonferrous metal industry talent center	150,000.00		3-4 years		Expect to recover
Shenyang Aluminum Magnesium Design and Research Institute Co., Ltd.	134,910.14		3-4 years Over 5 years		Expect to recover
Changsha Nonferrous Metallurgy Design and Research Institute Co., Ltd.	117,572.43		3-4 years Over 5 years		Expect to recover
Aluminum Corporation of China Hong Kong Co., Ltd.	103,381.59		Over 5 years		Expect to recover
Shanxi Huaxing Aluminum Industry Co., Ltd.	93,060.13		3-4 years		Expect to recover
Chinalco Finance Company Limited	90,574.71		Over 5 years		Expect to recover

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Debtor name	Carrying amount	Allowance for Bad debts	Aging	Proportion (%)	Reason for recognition
Shandong Huayu Alloy Material Co., Ltd.	86,180.74		3-4 years Over 5 years		Expect to recover
Chinalco Shanxi New Materials Co., Ltd.	65,117.28		2-3 years		Expect to recover
"8.5 Project" Construction Headquarters of Chalco Qinghai Branch	65,117.28		3-4 years		Expect to recover
Chalco Qinghai Branch	52,588.15		Over 5 years		Expect to recover
Aluminum Corporation of China Shanxi Branch	52,254.36		3-4 years		Expect to recover
Lanzhou Branch of Aluminum Corporation of China Co., Ltd.	51,285.48		3-4 years		Expect to recover
Beijing Xinghua Certified Public Accountants (Special General Partnership)	50,000.00		3-4 years		Expect to recover
Chinalco Zhongzhou Aluminum Co., Ltd.	48,379.40		Over 5 years		Expect to recover
Guiyang Aluminum Magnesium Design and Research Institute Co., Ltd.	48,379.40		Over 5 years		Expect to recover
Guizhou Huajin Aluminum Industry Co., Ltd.	48,379.35		Over 5 years		Expect to recover
China Aluminum International Engineering Corporation Limited.	47,381.16		Over 5 years		Expect to recover
Chinalco Ningxia Energy Group Co., Ltd.	45,519.24		Over 5 years		Expect to recover
Chinalco Shenyang Nonferrous Metal Processing Co., Ltd.	40,000.00		3-4 years		Expect to recover
China Nonferrous Metals Changsha Investigation and Design Research Institute Co., Ltd.	34,840.12		Over 5 years		Expect to recover
China National Twelfth Metallurgical Construction Co., Ltd.	34,840.12		Over 5 years		Expect to recover
Chinalco Capital Holdings Limited	32,982.59		3-4 years		Expect to recover

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Debtor name	Carrying amount	Allowance for Bad debts	Aging	Proportion (%)	Reason for recognition
China Aluminum Logistics Group Co., Ltd.	32,982.59		3-4 years		Expect to recover
Chinalco Rio Tinto Exploration Co., Ltd.	26,990.00		Over 5 years		Expect to recover
Chinalco High-end Manufacturing Co., Ltd.	9,442.00		Within 1 year		Expect to recover
Zunyi Aluminum Industry Co., Ltd.	8,615.36		4-5 years		Expect to recover
Shenzhen Zhuoyou Data Technology Co., Ltd.	2,850.00		Over 5 years		Expect to recover
Others	10,499,087.73		2-3 years Over 4 years		Expect to recover
Total	**47,331,876.49**	**1,725,383.97**			

(3) Top five debtors according to closing balances

Debtor name	Nature of other receivables	Carrying amount	Aging	Proportion of total other receivables (%)	Bad debt provision
Chinalco Asset Holdings	Intercourse funds	313,090,080.00	2-3 years	20.55	
Chinalco Environmental Protection and Energy Conservation Group Co., Ltd	Intercourse funds	201,662,841.88	1-2 years	13.24	
Sunshine Vision Company	Intercourse funds	195,747,000.00	Within 3 years	12.85	
Shanxi Carbon Factory	Intercourse funds	127,659,610.86	Over 5 years	8.38	127,659,610.86
Chinalco Shanxi Aluminum Co., Ltd.	Intercourse funds	96,115,277.00	Over 5 years	6.31	
Total		**934,274,809.74**		**61.33**	**127,659,610.86**

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

1.2 Long-term Equity Investments

1. Long-term Equity Investments

Items	Opening balance	Increase in current year	Decrease in current year	Closing balance
Investments in subsidiaries	181,950,096,264.96	10,717,784,605.63	10,781,121,554.82	181,886,759,315.77
Investments in joint ventures				
Investments in associates	1,258,672,995.89	17,476,741.46	158,755,145.98	1,117,394,591.37
Subtotal	183,208,769,260.85	10,735,261,347.09	10,939,876,700.80	183,004,153,907.14
Less: Impairment loss for long-term equity investments	1.00			1.00
Total	**183,208,769,259.85**	**10,735,261,347.09**	**10,939,876,700.80**	**183,004,153,906.14**

2. Details of long-term equity investments

Investee	Cost of investments	Opening balance	Increase in investments	Decrease in investments	Investment gain or loss recognized under equity method	Adjustment in other comprehensive income
Total	**101,322,165,523.58**	**183,208,769,260.85**	**10,717,784,605.63**	**10,910,478,707.51**	**17,319,039.52**	
1. Subsidiaries	**100,075,868,550.20**	**181,950,096,264.96**	**10,717,784,605.63**	**10,781,121,554.82**		
Aluminum Corporation of China Overseas Holdings Limited	500,712,716.50	1,824,312,716.50				
China Copper Co., Ltd.	101,633,728.63	29,991,781,465.98	19,522,550.34			
Chinalco Rare Earth Corporation Limited	213,800,098.42	213,800,098.42	2,680,000.00			
Chongqing Southwest Aluminum Minsheng Industrial Co., Ltd.	2,256,650.00	9,487,913.00		9,487,913.00		

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Investee	Cost of investments	Opening balance	Increase in investments	Decrease in investments	Investment gain or loss recognized under equity method	Adjustment in other comprehensive income
Northwest Aluminum Co., Ltd.	1,007,933,099.48	1,417,731,290.19	1,333,597.90	1,419,064,888.09		
Chinalco Capital Holdings Limited	630,625,270.82	3,650,569,059.79				
Chinalco Sapa Special Aluminum (Chongqing) Co., Ltd.	127,788,142.38	79,016,206.86	157,191,326.39	236,207,533.25		
Chinalco Finance Company Limited	1,500,000,000.00	3,409,550,000.00				
Chinalco Asset Management Co., Ltd.	483,723,039.20	3,120,816,383.20	98,321,930.93	325,535.08		
Chinalco Shenyang Nonferrous Metal Processing Co., Ltd.	586,659,700.00	714,797,733.00	20,000,000.00			
Chinalco Southwest Aluminum Cold Rolling Strip Co., Ltd.	529,201,245.64	531,942,575.64	12,833.75	531,955,409.39		
Chinalco Materials Application Research Institute Co., Ltd	29,650,000.00	181,329,088.00	31,965,000.00			
Chinalco Guangzhou Nonferrous Metal Application Research Institute Co., Ltd	3,300,000.00	11,853,000.00				

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Investee	Cost of investments	Opening balance	Increase in investments	Decrease in investments	Investment gain or loss recognized under equity method	Adjustment in other comprehensive income
China Aluminum Foil Co., Ltd.	20,000,000.00	312,696,622.01	294,690.24	312,991,312.25		
Eastern Vision Company	43,141,800,000.00	92,270,825,000.00				
Chinalco Henan Luoyang Aluminum Processing Co., Ltd.	311,131,370.84	311,131,370.84		311,131,370.84		
Chinalco Henan Luoyang Aluminum Foil Co., Ltd.	141,030,358.91	141,030,358.91		141,030,358.91		
China Aluminum International Engineering Corporation Limited.	347,082,945.00	347,743,524.00		782,031.00		
Chinalco Henan Aluminum Co., Ltd.	718,922.68	13,937,805.68				
Baotou Aluminum (Group) Co., Ltd.	798,303,216.23	924,069,772.23				
Northeast Light Alloy Co., Ltd.	1,230,329,529.82	2,752,268,916.82	58,930,000.00	2,811,198,916.82		
Chinalco Southwest Aluminum Strip Co., Ltd.	440,308,583.39	441,777,700.39	30,866.10	441,808,566.49		
Chinalco Tendering Co., Ltd	11,000,000.00	11,000,000.00				
Southwest Aluminum	1,665,795,030.81	3,387,521,046.53	79,565,107.20	3,467,086,153.73		

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Investee	Cost of investments	Opening balance	Increase in investments	Decrease in investments	Investment gain or loss recognized under equity method	Adjustment in other comprehensive income
(Group) Co., Ltd.						
Chinalco Ruimin Co., Ltd.	1,515,506,399.44	1,080,765,545.45		1,080,765,545.45		
Chinalco Metals Trading Company Limited	100,000,000.00	100,000,000.00				
Sunshine Vision Company	20,706,730,000.00	20,706,730,000.00				
Aluminum Corporation of China	7,807,802,435.63	8,118,395,687.44	106,020.48			
Beijing Silver Aluminum Rongfa Fund Partnership (Limited Partnership)	1,966,000,000.00	1,966,000,000.00				
Chinalco Science and Technology Research Institute Co., Ltd	2,117,372,245.68	2,117,372,245.68				
Chinalco Environmental Protection and Energy Conservation Group Co., Ltd	57,407,117.88	57,407,117.88				
Guangzhou Smelter Co., Ltd.	17,286,020.52	17,286,020.52		17,286,020.52		
Chinalco Environmental Protection and Energy Conservation Group Co., Ltd	665,150,000.00	665,150,000.00				
Chinalco Overseas	50,000,000.00	50,000,000.00				

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Investee	Cost of investments	Opening balance	Increase in investments	Decrease in investments	Investment gain or loss recognized under equity method	Adjustment in other comprehensive income
Development Co., Ltd						
Chinalco Innovation Development Investment Co., Ltd	500,000,000.00	500,000,000.00				
Chinalco Intelligent Technology Development Corporation Limited	500,000,000.00	500,000,000.00				
Pingguo Aluminum Co., Ltd.	497,830,682.30		497,830,682.30			
Chinalco High-end Manufacturing Co., Ltd.	9,750,000,000.00		9,750,000,000.00			
2. Associates	**1,246,296,973.38**	**1,258,672,995.89**		**129,357,152.69**	**17,319,039.52**	
China Construction Aluminum New Materials Co., Ltd.	200,000,000.00	218,844,465.76			-6,274,275.10	
Beijing International Mining Rights Exchange Co., Ltd.	10,000,000.00	2,341,087.55			-957,507.70	
Beijing Zhongan Kechuang Technology Development Co., Ltd.	30,000,000.00	34,158,960.64			534,860.51	
Guizhou Chinalco Aluminum Co., Ltd.	137,296,973.38	129,357,152.69		129,357,152.69		

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Investee	Cost of investments	Opening balance	Increase in investments	Decrease in investments	Investment gain or loss recognized under equity method	Adjustment in other comprehensive income
Beijing Yin Aluminum Ronghai Fund Partnership (Limited Partnership)	350,000,000.00	350,000,000.00			11,546.53	
Beijing Guotiao China Aluminum Copper Industry Development Fund (Limited Partnership)	500,000,000.00	500,000,000.00			22,935,496.76	
Beijing Guolv Investment Management Co., Ltd.	5,000,000.00	5,501,420.91			255,921.57	
China Aluminum (Beijing) Fund Management Co., Ltd.	14,000,000.00	18,469,908.34			812,996.95	

(Continued)

Investee	Other changes in equity	Cash dividends declared and profits to be distributed	Impairment loss	Others	Closing balance	Closing balance of impairment loss
Total	**157,701.94**	**29,397,993.29**			**183,004,153,907.14**	**1.00**
1. Subsidiaries					**181,886,759,315.77**	**1.00**
Aluminum Corporation of China Overseas Holdings Limited					1,824,312,716.50	
China Copper Co., Ltd.					30,011,304,016.32	
Chinalco Rare Earth Corporation Limited					216,480,098.42	
Chongqing Southwest Aluminum Minsheng Industrial Co., Ltd.						
Northwest Aluminum Co., Ltd.						

Investee	Other changes in equity	Cash dividends declared and profits to be distributed	Impairment loss	Others	Closing balance	Closing balance of impairment loss
Chinalco Capital Holdings Limited					3,650,569,059.79	
Chinalco Sapa Special Aluminum (Chongqing) Co., Ltd.						
Chinalco Finance Company Limited					3,409,550,000.00	
Chinalco Asset Management Co., Ltd.					3,218,812,779.05	
Chinalco Shenyang Nonferrous Metal Processing Co., Ltd.					734,797,733.00	
Chinalco Southwest Aluminum Cold Rolling Strip Co., Ltd.						
Chinalco Materials Application Research Institute Co., Ltd					213,294,088.00	
Chinalco Guangzhou Nonferrous Metal Application Research Institute Co., Ltd					11,853,000.00	
China Aluminum Foil Co., Ltd.						
Oriental Prospect Pte. Ltd.					92,270,825,000.00	
Chinalco Henan Luoyang Aluminum Processing Co., Ltd.						
Chinalco Henan Luoyang Aluminum Foil Co., Ltd.						
China Aluminum International Engineering Corporation Limited.					346,961,493.00	
Chinalco Henan Aluminum Co., Ltd.					13,937,805.68	1.00
Baotou Aluminum (Group) Co., Ltd.					924,069,772.23	
Northeast Light Alloy Co., Ltd.						
Chinalco Southwest Aluminum Strip Co., Ltd.						

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Investee	Other changes in equity	Cash dividends declared and profits to be distributed	Impairment loss	Others	Closing balance	Closing balance of impairment loss
Chinalco Tendering Co., Ltd					11,000,000.00	
Southwest Aluminum (Group) Co., Ltd.						
Chinalco Ruimin Co., Ltd.						
Chinalco Metals Trading Company Limited					100,000,000.00	
Shining Prospect Pte. Ltd.					20,706,730,000.00	
Aluminum Corporation of China					8,118,501,707.92	
Beijing Silver Aluminum Rongfa Fund Partnership (Limited Partnership)					1,966,000,000.00	
Chinalco Science and Technology Research Institute Co., Ltd					2,117,372,245.68	
Chinalco Environmental Protection and Energy Conservation Group Co., Ltd					57,407,117.88	
Guangzhou Smelter Co., Ltd.						
Chinalco Environmental Protection and Energy Conservation Group Co., Ltd					665,150,000.00	
Chinalco Overseas Development Co., Ltd					50,000,000.00	
Chinalco Innovation Development Investment Co., Ltd					500,000,000.00	
Chinalco Intelligent Technology Development Corporation Limited					500,000,000.00	
Pingguo Aluminum Co., Ltd.					497,830,682.30	
Chinalco High-end Manufacturing Co., Ltd.					9,750,000,000.00	
2. Associates	**157,701.94**	**29,397,993.29**			**1,117,394,591.37**	

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Investee	Other changes in equity	Cash dividends declared and profits to be distributed	Impairment loss	Others	Closing balance	Closing balance of impairment loss
China Construction Aluminum New Materials Co., Ltd.	157,701.94				212,727,892.60	
Beijing International Mining Rights Exchange Co., Ltd.					1,383,579.85	
Beijing Zhongan Kechuang Technology Development Co., Ltd.					34,693,821.15	
Guizhou Chinalco Aluminum Co., Ltd.						
Beijing Yin Aluminum Ronghai Fund Partnership (Limited Partnership)					350,011,546.53	
Beijing Guotiao China Aluminum Copper Industry Development Fund (Limited Partnership)		29,397,993.29			493,537,503.47	
Beijing Guolv Investment Management Co., Ltd.					5,757,342.48	
China Aluminum (Beijing) Fund Management Co., Ltd.					19,282,905.29	

1.3 Operating Revenue and Operating Costs

Items	Current year		Prior year	
	Revenue	Costs	Revenue	Costs
Subtotal of other business	227,599,546.13		369,684,248.34	
Logistics			1,911,792.42	
Income from gurantees	227,599,546.13		272,822,455.56	
Total	**227,599,546.13**		**369,684,248.34**	

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

1.4 Investment income

Sources of investment income	Current year	Prior year
Income from long-term equity investments under equity method	17,319,039.52	33,041,999.91
Income from disposal of long-term equity investments	-465,935,271.27	364,589,059.79
Income from available-for-sale financial assets	24,243,049.38	46,399,981.60
Others	1,806,456,985.85	619,255,016.63
Total	**1,382,083,803.48**	**1,063,286,057.93**

1.5 Parent company cash flow statement

1. Supplementary information of cash flow statement

Items	Current year	Prior year
1. To reconcile net profit to cash flows from operating activities:		
Net profit	-452,701,586.91	-2,814,792,238.57
Add: Asset Impairment losses		65,135,127.74
Depreciations of fixed assets, oil and gas assets, and bearer biological assets	1,135,689.82	1,240,829.03
Amortizations of intangible assets	819,212.20	5,222,577.69
Amortizations of long-term prepaid expenses		
Losses on disposal of fixed assets, intangible assets and other long-term assets (gain expressed with “-”)	33,378.17	
Losses on disposal of fixed assets (gain expressed with “-”)	-2,078.00	
Losses on changes in fair value (gain expressed with “-”)		
Financial expenses (gain expressed with “-”)	3,674,221,042.54	4,035,208,301.22
Investment losses (gain expressed with “-”)	-1,382,083,803.48	-1,063,286,057.93
Decrease in deferred tax assets (increase expressed with “-”)		
Increase in deferred tax liabilities (decrease expressed with “-”)		
Decrease in inventories (increase expressed with “-”)		
Decrease in operating receivables (increase expressed with “-”)	-128,563,519.97	62,000,848.35
Increase in operating payables (decrease expressed with “-”)	1,016,185,693.47	216,359,699.26
Others		121,184,360.52

(Unless otherwise specified, the notes to the financial statements are all presented in RMB)

Items	Current year	Prior year
Net cash flows from operating activities	**2,729,044,027.84**	**628,273,447.31**
2. Significant investing and financing activities that do not involve cash receipts and payments		
Debts converted to capital		
Convertible debts due within one year		
Fixed assets acquired in under finance leases		
3.Net changes in cash and cash equivalents		
Closing balance of cash	10,067,723,796.87	11,178,190,991.10
Less: Opening balance of cash	11,178,190,991.10	19,864,991,645.47
Add: Closing balance of cash equivalents		
Less: Opening balance of cash equivalents		
Net increase in cash and cash equivalents	-1,110,467,194.23	-8,686,800,654.37

2. Cash and cash equivalents

Items	Current year	Prior year
Cash	10,067,723,796.87	11,178,190,991.10
Including: Cash on hand	91,980.24	56,533.47
Bank deposits that are available for payment at any time	10,032,117,271.15	11,142,692,389.96
Other monetary fund that are available for payment at any time	35,514,545.48	35,442,067.67
Demand deposits in central bank that are available for payment at any time		
Deposits in banks and other financial institutions		
Loans to banks and other financial institutions		
Cash equivalents		
Including: Bond investments due within three months		
Closing balance of cash and cash equivalents	**10,067,723,796.87**	**11,178,190,991.10**

Note 13 Other information required for disclosure according to related accounting standards

On 1 February 2008, the Group acquired 12% of Rio Tinto Group's (Rio Tinto Group) shares for USD 14.136 billion through its subsidiary, Sunshine Vision, in the secondary market of the UK securities, of which 110 million shares were purchased through the block trading market, swaps purchased 0.09 million shares, for a total of approximately 119 million shares. In June 2009, in accordance with Rio Tinto's allotment requirements, Sunshine Vision purchased 63 million shares at a price of 14 pounds per share for a total of 1.458 billion US dollars. After the placement, Sunshine Vision held 183 million shares of Rio Tinto, and the shareholding ratio remains constant hereafter.

As of 31 December 2020, Sunshine Vision, a subsidiary of Chinalco Group, holds 183 million shares of Rio Tinto Group, with a book value equivalent to RMB 101.753 billion. On 31 December 2020, the closing price of Rio Tinto's shares was 54.70 pounds per share. Based on this calculation, the market value of Rio Tinto's shares held by Sunshine Vision was RMB 88.773 billion, a decrease of RMB 12.98 billion compared with book value. As of 31 December 2020, Sunshine Vision is the single largest shareholder of Rio Tinto, its investment in Rio Tinto's stock is not a short-term holding. Therefore, the investment in Rio Tinto's stock in available-for-sale financial assets is measured at historical cost.

Note 14 Approval of financial statements

The financial statements have been approved by the board of directors on 28 April 2021.

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