THIS CIRCULAR IS IMPORTANT AND REQUIRES YOUR IMMEDIATE ATTENTION

If you are in any doubt as to any aspect of this circular or as to the action to be taken, you should consult a licensed securities dealer or registered institution in securities, bank manager, solicitor, professional accountant or other professional adviser.

If you have sold or transferred all your shares in **CITIC Resources Holdings Limited**, you should at once hand this circular, together with the enclosed form of proxy, to the purchaser(s) or transferee(s) or to the bank, licensed securities dealer or registered institution in securities or other agent through whom the sale or transfer was effected for transmission to the purchaser(s) or transferee(s).

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中信資源控股有限公司
CITIC Resources Holdings Limited

(Incorporated in Bermuda with limited liability)

(Stock Code: 1205)

(1) POSSIBLE MAJOR DISPOSAL IN RELATION TO THE EQUITY INTEREST IN AWC AND (2) POSSIBLE MAJOR ACQUISITION IN RELATION TO THE EQUITY INTEREST IN ALCOA

Capitalised terms used on this cover page shall have the same meanings as those defined in the section headed "Definitions" in this circular, unless the context requires otherwise.

A letter from the Board is set out on page 7 to 29 of this circular.

The Company has obtained an unconditional and irrevocable written approval for the Transaction from a closely allied group of Shareholders who together hold more than 50% of the entire issued share capital of the Company. Accordingly, no general meeting of Shareholders will be convened to approve the Transaction pursuant to Rule 14.44 of the Hong Kong Listing Rules. This circular is being despatched to the Shareholders for information only.

Hong Kong, 17 July 2024

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In this circular, unless the context otherwise requires, the following expressions shall have the following meanings:

"AEST"	Australian Eastern Standard Time
"Alcoa"	Alcoa Corporation, a company incorporated in Delaware and whose shares are listed on the NYSE
"Alcoa Bidder"	AAC Investments Australia 2 Pty Ltd, an Australian proprietary company limited by shares and a wholly-owned indirect subsidiary of Alcoa
"Alcoa Preferred Share"	one non-voting preferred share of Alcoa having the rights and entitlements set out in the certificate of designation at schedule 2 of the Scheme Implementation Deed
"Alcoa Share"	one share of common stock of Alcoa
"Amending Deed"	the deed of amendment and restatement entered into between AWC and Alcoa on 21 May 2024, pursuant to which, among others, AWC and Alcoa agreed to amend the form of Scheme Consideration to be issued to the CITIC Shareholders
"ASIC"	the Australian Securities and Investments Commission
"ASX"	Australian Securities Exchange
"AUD"	Australian dollars, the lawful currency of Australia
"AWAC"	Alcoa World Alumina and Chemicals, a joint venture in the U.S. and which was owned as to 40% by AWC and 60% by Alcoa as at the Latest Practicable Date
"AWC"	Alumina Limited, a company limited by shares, incorporated in Australia and whose shares are listed on the ASX (stock code: AWC)
"AWC February Announcement"	the announcement published by AWC on its website on 26 February 2024 in relation to the Non-binding Proposal
"AWC June Announcement"	the announcement published by AWC on its website on 11 June 2024 in relation to, among other things, the Scheme Booklet and the Scheme Meeting

"AWC March Announcement"	the announcement published by AWC on its website on 12 March 2024 in relation to, among others, the Scheme Implementation Deed
"AWC May Announcement"	the announcement published by AWC on its website on 21 May 2024 in relation to, among others, the Amending Deed
"AWC Scheme of Arrangement"	acquisition of 100% of the ordinary shares on issue in AWC by Alcoa by way of a scheme of arrangement, for scrip consideration of 0.02854 New Alcoa Shares (in the form of New Alcoa CDIs or New Alcoa Preferred Shares) for each AWC Share
"AWC Share"	a fully paid ordinary share in the capital of AWC
"AWC Shareholder"	each person registered in the register of members of AWC as a holder of AWC Shares
"Bestbuy"	Bestbuy Overseas Co., Ltd., a company incorporated in the British Virgin Islands with limited liability, a wholly-owned subsidiary of CITIC Limited
"Board"	the board of Directors
"CA"	CITIC Australia Pty Limited, a company incorporated in the State of Victoria, Australia with limited liability and a wholly-owned subsidiary of CITIC Limited
"CDI" or "New Alcoa CDI"	being a unit of beneficial ownership in a New Alcoa Share registered in the name of CDN or held by CDN in the form of beneficial ownership, to be issued to Scheme Participants as Scheme Consideration under the AWC Scheme of Arrangement
"CDN"	CHESS Depositary Nominees Pty Ltd, a wholly-owned subsidiary of ASX
"CHESS"	the Clearing House Electronic Subregister System operated by ASX Settlement Pty Ltd and ASX Clear Pty Limited
"CITIC Group"	中國中信集團有限公司 (CITIC Group Corporation), a state-owned enterprise under the Ministry of Finance of the PRC, and the controlling shareholder of the Company

"CITIC Limited"	CITIC Limited(中國中信股份有限公司), a company incorporated in Hong Kong with limited liability whose shares are listed on the Main Board of the SEHK (stock code: 267) and a subsidiary of CITIC Group
"CITIC Shareholders"	collectively, Bestbuy, CRA and CA
"CRA"	CITIC Resources Australia Pty Limited, a company incorporated in the State of Victoria, Australia with limited liability and a wholly-owned subsidiary of the Company
"Company"	CITIC Resources Holdings Limited, a company incorporated in Bermuda with limited liability and whose Shares are listed on the Main Board of the SEHK (stock code: 1205)
"connected person"	has the meaning ascribed to it under the Hong Kong Listing Rules
"Corporations Act"	the Corporations Act 2001 (Cth) of Australia
"Court"	Federal Court of Australia (sitting in Melbourne), or another court of competent jurisdiction under the Corporations Act agreed in writing by Alcoa and AWC
"Deed Poll"	the deed poll executed by Alcoa and Alcoa Bidder under which each of Alcoa and Alcoa Bidder covenanted in favour of each Scheme Participant to perform the actions attributed to it under the AWC Scheme of Arrangement and the Scheme Implementation Deed
"Directors"	the directors of the Company
"Effective"	the coming into effect, pursuant to section 411(10) of the Corporations Act, of the order of the Court made under section 411(4)(b) of the Corporations Act in relation to the AWC Scheme of Arrangement, but in any event at no time before an office copy of the order of the Court is lodged with ASIC based on the Scheme Implementation Deed
"Effective Date"	the date on which the AWC Scheme of Arrangement becomes Effective

"End Date"	31 December 2024 (AEST) or such other date as is agreed by Alcoa and AWC
"Group"	the Company and its subsidiaries from time to time
"HKD" or "HK$"	Hong Kong dollars, the lawful currency of Hong Kong
"HKFRS"	Hong Kong Financial Reporting Standards issued by the HKICPA
"HKICPA"	Hong Kong Institute of Certified Public Accountants
"Hong Kong Listing Rules"	the Rules Governing the Listing of Securities on the SEHK, as amended from time to time
"Implementation Date"	the fifth business day following the Scheme Record Date, or such other date after the Scheme Record Date as Alcoa and AWC agree in writing, ordered by the Court or required by ASX, which is currently expected to be Thursday, 1 August 2024 (AEST)
"Independent Third Party(ies)"	any person(s) or company(ies) which, to the best of the Directors' knowledge, information and belief having made all reasonable enquiries, are not connected persons of the Company and are third parties independent of the Company and its connected persons in accordance with the Hong Kong Listing Rules
"Keentech"	Keentech Group Limited, a company incorporated in the British Virgin Islands with limited liability and a wholly-owned subsidiary of CITIC Limited
"Latest Practicable Date"	15 July 2024, being the latest practicable date prior to the printing of this circular for ascertaining certain information in this circular
"New Alcoa Preferred Share"	a fully paid Alcoa Preferred Share to be issued as Scheme Consideration under the AWC Scheme of Arrangement
"New Alcoa Share"	an Alcoa Share to be issued to Scheme Participants as Scheme Consideration under the AWC Scheme of Arrangement (including those issued to CDN in connection with the New Alcoa CDIs)

"Non-binding Proposal"	a non-binding, indicative and conditional proposal from Alcoa to acquire 100% of the ordinary shares on issue in AWC by way of a scheme of arrangement, for scrip consideration of 0.02854 New Alcoa Share for each AWC Share
"NYSE"	New York Stock Exchange
"PRC"	People's Republic of China, which, for the purpose of this circular only, excludes Taiwan, the Hong Kong Special Administrative Region of the People's Republic of China and the Macau Special Administrative Region of the People's Republic of China
"Scheme Booklet"	the explanatory statement providing information about the AWC Scheme of Arrangement and notice of the Scheme Meeting issued by AWC on 11 June 2024
"Scheme Consideration"	the consideration to be provided by Alcoa Bidder (or by Alcoa on behalf of and at the direction of Alcoa Bidder) for the transfer of AWC Shares held by a Scheme Participant to Alcoa Bidder
"Scheme Implementation Deed"	the scheme implementation deed entered into between AWC and Alcoa on 12 March 2024, pursuant to which, among others, AWC and Alcoa agreed to implement the AWC Scheme of Arrangement on the terms and conditions set out thereunder, as amended and restated by the Amending Deed
"Scheme Meeting"	the meeting of holders of fully paid ordinary shares in AWC ordered by the Court to be convened by AWC under section 411(1) of the Corporation Act to vote on the AWC Scheme of Arrangement, which is currently scheduled at 2:00 p.m. on Thursday, 18 July 2024 (AEST)
"Scheme Participant"	each person who is an AWC Shareholder on the Scheme Record Date
"Scheme Record Date"	7.00 p.m. on Thursday, 25 July 2024 (AEST), the second business day following the Effective Date or such other date as AWC and Alcoa agree in writing
"SEHK"	The Stock Exchange of Hong Kong Limited

"SFO"	the Securities and Futures Ordinance (Chapter 571 of the Laws of Hong Kong), as amended from time to time
"Shares"	ordinary shares of HK$0.05 each in the share capital of the Company
"Shareholders"	holders of the Shares
"Transaction"	participation of the Company in the AWC Scheme of Arrangement by transferring the Company's entire equity interest in AWC to Alcoa Bidder in consideration of the Scheme Consideration in accordance with the terms of the AWC Scheme of Arrangement
"United States" or "US" or "U.S."	the United States of America
"US Bank Holding Act"	US Bank Holding Company Act of 1956, as amended, together with the regulations promulgated thereunder
"USD" or "US$"	US dollars, the lawful currency of the United States
"U.S. GAAP"	accounting principles generally accepted in the U.S.
"%"	per cent

中信資源控股有限公司
CITIC Resources Holdings Limited

(Incorporated in Bermuda with limited liability)

(Stock Code: 1205)

Executive Directors:
Mr. Hao Weibao
(Chairman and Chief Executive Officer)
Mr. Wang Xinli

Non-executive Director:
Mr. Chan Kin

Independent Non-executive Directors:
Dr. Fan Ren Da, Anthony
Mr. Look Andrew
Mr. Lu Dequan

Registered Office:
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17 July 2024

To the Shareholders

Dear Sir/Madam,

(1) POSSIBLE MAJOR DISPOSAL IN RELATION TO THE EQUITY INTEREST IN AWC AND (2) POSSIBLE MAJOR ACQUISITION IN RELATION TO THE EQUITY INTEREST IN ALCOA

1. INTRODUCTION

Reference is made to the announcement of the Company dated 26 February 2024 in respect of the AWC Scheme of Arrangement.

The purpose of this circular is to provide you with, among other things, further details of the Transaction and other information required under the Hong Kong Listing Rules.

As the AWC Scheme of Arrangement is still subject to, among others, shareholders' approval from AWC at the Scheme Meeting and approval by the Court, the Transaction and the AWC Scheme of Arrangement may or may not materialise. There is no assurance that the Transaction or the AWC Scheme of Arrangement will take place or as to when they may take place. Shareholders and potential investors in the Company should exercise caution when dealing in the securities of the Company.

2. BACKGROUND OF THE TRANSACTION

As at the Latest Practicable Date, (i) the Company indirectly held 278,900,000 AWC Shares, representing approximately 9.61% equity interest in AWC, through CRA, a wholly-owned subsidiary of the Company; and (ii) CITIC Limited indirectly held a total of 270,059,208 AWC Shares, representing approximately 9.31% equity interest in AWC, through Bestbuy and CA, each a wholly-owned subsidiary of CITIC Limited. The Group's investment in AWC is accounted for as an investment in an associate of the Group.

The Group in turn holds global interests in bauxite mining, alumina refining and selected aluminium smelting operations through AWC's 40% ownership of AWAC, the world's largest alumina producer. As at the Latest Practicable Date, AWAC was owned as to 40% by AWC and 60% by Alcoa.

On 26 February 2024, AWC published the AWC February Announcement, whereby it announced that it has received the Non-binding Proposal from Alcoa to acquire 100% of the ordinary shares on issue in AWC by way of a scheme of arrangement, for scrip consideration of 0.02854 Alcoa Shares for each AWC Share.

It was disclosed in the AWC February Announcement that AWC and Alcoa entered into a transaction process and exclusivity deed dated 26 February 2024, which granted Alcoa a 20 business day period of exclusivity.

On 12 March 2024, AWC further published the AWC March Announcement, whereby it announced that it has entered into the Scheme Implementation Deed with Alcoa in relation to the AWC Scheme of Arrangement.

It was disclosed in the AWC March Announcement that, under the Scheme Implementation Deed, eligible shareholders of AWC will be entitled to receive 0.02854 Alcoa Shares in the form of ASX-listed Alcoa CDIs for each AWC Share held. On implementation of the AWC Scheme of Arrangement, the shareholders of AWC on the Scheme Record Date will own approximately 31.6% (or 31.25% on a fully diluted basis) of the combined group, and existing Alcoa shareholders will own approximately 68.4%.

On 21 May 2024, AWC published the AWC May Announcement, whereby it announced that it had entered into the Amending Deed with Alcoa. The Amending Deed, among others, carved out a special arrangement for the CITIC Shareholders. For details of such special arrangement applicable to the CITIC Shareholders, please refer to the section headed "3. Material Terms and Conditions of the Transaction – I. Material Terms and Conditions of the AWC Scheme of Arrangement – Scheme Consideration – Special Arrangement Applicable to the CITIC Shareholders" below.

On 11 June 2024, AWC published the AWC June Announcement, whereby it attached the Scheme Booklet and announced that such Scheme Booklet had been registered with ASIC.

On 18 June 2024, AWC published an announcement in relation to the despatch of the Scheme Booklet to the shareholders of AWC.

3. MATERIAL TERMS AND CONDITIONS OF THE TRANSACTION

I. Material Terms and Conditions of the AWC Scheme of Arrangement

Set out below is a summary of the material terms and conditions of the AWC Scheme of Arrangement based on the Scheme Booklet:

Scheme Consideration

If the AWC Scheme of Arrangement becomes Effective, Scheme Participants will receive 0.02854 New Alcoa CDIs for each AWC Share held on the Scheme Record Date except for those otherwise provided in the Scheme Booklet.

A CDI is a type of depositary receipt that allows investors to obtain all the economic benefits of owning securities without holding legal title to them, and is used to facilitate companies incorporated outside of Australia listing on the ASX.

New Alcoa CDIs can be transmuted into Alcoa Shares and vice versa at any time following the Implementation Date, by contacting the Alcoa share registry (i.e. the register of Alcoa stockholders maintained by Alcoa or its agent) or Alcoa CDI registry (i.e. Computershare Investor Services Pty Limited), as applicable. Except for differences set out below, a New Alcoa CDI will have rights that are economically equivalent to the rights attaching to a New Alcoa Share.

The principal difference between New Alcoa CDIs and New Alcoa Shares is that a holder of a New Alcoa CDI has an indirect and beneficial interest in the Alcoa Share underlying its Alcoa CDI instead of directly owning the Alcoa Share. This means that a holder of New Alcoa CDIs (i) cannot directly trade the underlying Alcoa Shares and (ii) is a beneficial holder (rather than a registered legal holder) of the underlying Alcoa Shares.

Other differences include the following:

(i) **Exercise of shareholder rights –** As holders of New Alcoa CDIs are not registered shareholders of Alcoa, the rights attaching to Alcoa Shares which underline their Alcoa CDIs must be exercised by CDN. A holder of New Alcoa CDIs may instruct CDN to exercise those rights on their behalf. In contrast, a registered holder of Alcoa Shares can directly exercise the rights attaching to their Alcoa Shares in such manner as they choose.

For example, holders of New Alcoa CDIs will be sent notices of meetings of Alcoa stockholders at the same time as they are sent to Alcoa stockholders. As holders of New Alcoa CDIs are not registered holders of the Alcoa Shares represented by New Alcoa CDIs, they will not be automatically entitled to vote at a meeting of Alcoa stockholders. However, the holder of a New Alcoa CDI can direct CDN to cast votes in a particular manner on their behalf to exercise the votes attaching to the Alcoa Shares represented by the holder's New Alcoa CDIs. If a holder of a New Alcoa CDI wishes to vote at a meeting of Alcoa stockholders in their personal capacity (rather than directing CDN to vote), the holder must first transmute their New Alcoa CDIs into the underlying Alcoa Shares in sufficient time before the record date for the meeting.

(ii) **New Alcoa CDIs will be quoted and trade on ASX and New Alcoa Shares will be quoted and trade on NYSE** – New Alcoa CDIs will be tradeable on ASX only and may only be traded during Australian business hours using Australian brokers in prices quoted in AUD. New Alcoa Shares will be tradeable on NYSE only and will not be quoted or tradeable on ASX. Accordingly, investors who wish to trade Alcoa Shares must first transmute their New Alcoa CDIs into the underlying Alcoa Shares before being able to trade on the open market via the NYSE. Such trades on the NYSE must be undertaken through a broker entitled to trade on NYSE.

The exchange ratio of 0.02854 New Alcoa Shares (in the form of New Alcoa CDIs) for each AWC Share represents a premium of:

(i) 13.1% to the price of AWC Shares on 23 February 2024 (being the last trading date prior to the AWC February Announcement), based on the closing share prices of Alcoa and AWC on 23 February 2024 and the prevailing AUD/USD foreign exchange rate of 0.656;

(ii) 19.5% to the average exchange ratio over the last 12 months to 23 February 2024, based on the daily closing prices of Alcoa and AWC and the daily prevailing AUD/USD foreign exchange rate over the period;

(iii) 3.6% to the price of AWC Shares as at the Latest Practicable Date, based on the closing share prices of Alcoa and AWC as at the Latest Practicable Date and the prevailing AUD/USD foreign exchange rate of 0.656; and

(iv) 15.5% to the average exchange ratio over the last 12 months to the Latest Practicable Date, based on the daily closing prices of Alcoa and AWC and the daily prevailing AUD/USD foreign exchange rate over the period.

The Scheme Consideration is based on a fixed exchange ratio of 0.02854 New Alcoa Shares (including in the form of New Alcoa CDIs) for each AWC Share. As a result, the implied value of the Scheme Consideration will change over time depending on the prevailing Alcoa Share price and the AUD/USD exchange rate.

Special Arrangement Applicable to the CITIC Shareholders

As at the Latest Practicable Date, the CITIC Shareholders in aggregate legally and beneficially owned 548,959,208 AWC Shares, being approximately 18.92% of the AWC Shares on issue.

Because of its ownership of certain banking assets in the U.S., CITIC Limited is regulated as though it were a U.S. bank holding company and is therefore subject to the US Bank Holding Act. The US Bank Holding Act generally prohibits U.S. bank holding companies and any other company that is subject to the US Bank Holding Act from acquiring direct or indirect ownership or control (as defined under the US Bank Holding Act) of any voting securities (as defined under the US Bank Holding Act) of any company which is not a bank or a bank holding company. However, there is an exemption from the general prohibition against engaging in non-banking activities and making investments in the shares of non-banking companies set forth in section 4(c)(6) of the US Bank Holding Act, which permits U.S. bank holding companies and other companies that are subject to the US Bank Holding Act to own or control 5% or less of the outstanding shares of any class of voting securities of a non-banking company. Therefore, CITIC Limited, on a consolidated basis, is limited to owning or controlling 5% or less of any class of Alcoa's voting securities pursuant to the exemption set forth under section 4(c)(6) of the US Bank Holding Act.

If the CITIC Shareholders were to receive New Alcoa CDIs in respect of their entire aggregate shareholding in AWC, it would hold an interest of approximately 6% in Alcoa's common stock, in breach of the US Bank Holding Act.

To the extent that the New Alcoa CDIs that the CITIC Shareholders would receive as Scheme Consideration (less any AWC Shares held by any CITIC Shareholder that are sold via the sale facility to fund payment of any applicable withholding amount) would result in CITIC Shareholders beneficially owing, in aggregate, in excess of 4.5% of the outstanding shares of Alcoa common stock (including the shares underlying the New Alcoa CDIs) upon implementation of the AWC Scheme of Arrangement, the Scheme Consideration representing the beneficial ownership in excess of 4.5% will instead be issued as New Alcoa Preferred Shares to Bestbuy.

The economic rights of the New Alcoa Preferred Shares are generally equivalent to the economic rights of the New Alcoa CDIs, except that the New Alcoa Preferred Shares will:

(i) have a liquidation preference of US$0.0001 for each New Alcoa Preferred Share;

(ii) convert into Alcoa Shares on a 1:1 basis upon transfer to a party that is not an affiliate of the CITIC Group, subject to anti-dilution provisions and other customary adjustments; and

(iii) have no voting rights except as required by applicable law or in relation to a change in the existing rights of New Alcoa Preferred Shares.

As at the Latest Practicable Date, the Group owned 278,900,000 AWC Shares, representing approximately 9.61% equity interest in AWC. It is expected that immediately upon completion of the Transaction, the Group will cease to own any AWC Shares and will in return receive 7,959,806 New Alcoa CDIs, representing approximately 3.03% equity interest in Alcoa.

In connection with the Group receiving New Alcoa CDIs and Bestbuy receiving New Alcoa Preferred Shares as Scheme Consideration, the Company would like to point out the following key differences between these two types of securities:–

(i) while the New Alcoa Preferred Shares do not have voting rights except as required by applicable law or in relation to a change in the existing rights of New Alcoa Preferred Shares, the holder of a New Alcoa CDI can direct CDN to cast votes in a particular manner on their behalf. Further, upon transmuting the Alcoa CDIs into underlying Alcoa Shares before the record date for a Alcoa stockholders' meeting, holder of such Alcoa Shares can vote at such meeting of Alcoa stockholders; and

(ii) there is additional liquidity risk associated with the New Alcoa Preferred Shares in that while New Alcoa CDIs will be quoted and can be traded on ASX, there will be no public market for the trading of New Alcoa Preferred Shares.

Taking into account the above factors, the Directors consider that it is in the interest of the Company and the Shareholders as a whole for the Group to receive the New Alcoa CDIs as Scheme Consideration.

Key Conditions and Terms

As disclosed in the AWC March Announcement, key conditions for implementation of the AWC Scheme of Arrangement include:

(i) AWC shareholder approval in respect of the AWC Scheme of Arrangement;

(ii) Alcoa stockholder approval authorising the issuance of New Alcoa Shares as Scheme Consideration under the AWC Scheme of Arrangement;

(iii) regulatory approvals and confirmations from the Australian Foreign Investment Review Board, the Australian Competition and Consumer Commission, and the Brazilian Administrative Council for Economic Defense;

(iv) approval of the Court;

(v) the independent expert appointed by AWC concluding (and continuing to conclude) that the AWC Scheme of Arrangement is in the best interests of shareholders of AWC;

(vi) receipt of confirmation of a class ruling from the Australian Taxation Office for scrip-for-scrip roll over relief; and

(vii) other customary conditions.

As at the Latest Practicable Date, it was disclosed in the Scheme Booklet that (i) the Australian Competition and Consumer Commission had indicated it did not intend to conduct a public review of the AWC Scheme of Arrangement; (ii) the Brazilian Administrative Council for Economic Defense had certified that the applicable term for intervention or "call-back" of the application had elapsed and that consequently its decision published in the official gazette of Brazil to approve the application was final; (iii) the application for the class ruling has been lodged with the Australian Taxation Office; and (iv) the independent expert appointed by AWC has concluded that the AWC Scheme of Arrangement is in the best interests of shareholders of AWC in the absence of a superior proposal. On 14 June 2024, AWC announced that it had been notified by Alcoa that Alcoa Bidder has received Australian Foreign Investment Review Board approval in relation to the AWC Scheme of Arrangement. On 17 July 2024, AWC further announced that it noted Alcoa stockholders have approved the issuance of New Alcoa Shares to shareholders of AWC as contemplated by the Scheme Implementation Deed.

If the AWC Scheme of Arrangement becomes Effective (following shareholder and Court approval and the satisfaction of all other conditions), Alcoa will acquire 100% of the shares in AWC and shareholders of AWC will receive the Scheme Consideration in exchange for their AWC Shares. If, on the other hand, the AWC Scheme of Arrangement does not become Effective (for example, if shareholder approval or Court approval is not obtained or a condition is not satisfied), AWC will continue as a standalone entity and the shareholders of AWC will retain their AWC Shares.

AWC shareholder approval in relation to the AWC Scheme of Arrangement

As set out in the paragraph headed "Key Conditions and Terms" above, the AWC Scheme of Arrangement is subject to, among others, approval of the shareholders of AWC. In this connection, the AWC Scheme of Arrangement must be approved by:

(i) unless the Court orders otherwise, a majority in number (i.e. more than 50%) of the shareholders of AWC present and voting at the Scheme Meeting; and

(ii) at least 75% of the total number of votes cast by the shareholders of AWC on the resolution in relation to the AWC Scheme of Arrangement.

Based on the Scheme Booklet, (i) the Scheme Meeting is scheduled on Thursday, 18 July 2024 (AEST); and (ii) the Court hearing for approval of the AWC Scheme of Arrangement is scheduled on Monday, 22 July 2024 (AEST).

Effective Date and Implementation Date

Subject to the paragraph below, the AWC Scheme of Arrangement will become Effective pursuant to section 411(10) of the Corporations Act on and from the Effective Date.

Without limiting any rights or obligations under the Scheme Implementation Deed, the AWC Scheme of Arrangement will lapse and be of no further force or effect if: (a) the Effective Date does not occur on or before the End Date; or (b) the Scheme Implementation Deed or the Deed Poll is terminated in accordance with its terms, unless Alcoa and AWC otherwise agree in writing (and, if required, as approved by the Court).

According to the Scheme Booklet, if the AWC Scheme of Arrangement is approved at the Scheme Meeting and approved by the Court, it is expected that (i) the AWC Scheme of Arrangement will take effect and the trading of AWC Shares on ASX will be suspended on Tuesday, 23 July 2024 (AEST); and (ii) the AWC Scheme of Arrangement will be implemented on Thursday, 1 August 2024 (AEST).

II. Other Conditions for the Transaction

As far as the Group is concerned, the Transaction is subject to (i) approval from the Ministry of Finance of the PRC under the applicable PRC laws and regulations; and (ii) Shareholders' approval under the Hong Kong Listing Rules.

As at the date of this circular, the approval from the Ministry of Finance of the PRC for the Transaction had been obtained. Filing with the National Development and Reform Commission of the PRC in respect of the Transaction is expected to be made before the implementation of the Transaction.

To the best of the Directors' knowledge, information and belief, having made all reasonable enquiries, no Shareholder has any material interest in the Transaction. Thus, if the Company were to convene a general meeting to approve the Transaction, no Shareholder should be required to abstain from voting on the resolutions in relation to the Transaction.

In lieu of holding a general meeting in respect of the Transaction, the Company has obtained an unconditional and irrevocable written Shareholders' approval for the Transaction from CA and Keentech (each a wholly-owned subsidiary of CITIC Limited and together a closely allied group of Shareholders which held 750,413,793 Shares and 3,895,083,904 Shares or approximately 9.55% and 49.57% of the total issued share capital of the Company, respectively, as at the date of the written approval by CA and Keentech and the Latest Practicable Date).

4. INFORMATION ON THE COMPANY

The Company is an investment holding company mainly engaged in the exploration and sale of natural resources. Along with subsidiaries, the Company operates its business through four segments. The aluminium smelting segment is engaged in the operation of the Portland aluminium smelter which sources alumina and produces aluminium ingots in Australia. The crude oil segment is engaged in the operation of oilfields and the sale of crude oil in Indonesia and the PRC. The import and export of commodities segment is engaged in the trading of crude oil around the world and trading of alumina in Australia. The coal segment is engaged in the operation of coal mines and the sale of coal in Australia.

5. INFORMATION ON AWC

AWC is a company incorporated in Australia whose shares have been listed on the ASX from 4 December 2002. AWC is primarily focused on investing in long-life, low cost bauxite and alumina assets. AWC's principal activity relates to its 40% interest in the series of operating entities forming AWAC. AWAC is a joint venture with a portfolio of assets in Australia, Brazil, Spain, Saudi Arabia and Guinea, including globally leading bauxite mines and alumina refineries. AWAC also has a 55% interest in the Portland aluminium smelter in Victoria, Australia.

Financial information of AWC

The following tables summarise the financial information of AWC and its subsidiaries and also illustrate the reconciliation to the carrying amount of the Group's investment in AWC in the financial statements of the Group:

	As at 31 December		
	2021	**2022**	**2023**
	HK$'000	*HK$'000*	*HK$'000*
	(audited)	(audited)	(audited)
Net assets	30,099,785	28,968,861	18,948,740
Reconciliation to the Group's investment in an associate:			
Proportion of ownership	9.6117%	9.6117%	9.6117%
Proportionate share of net assets and carrying amount	2,893,101	2,784,400	1,821,296
Market value of the Group's investment *(Note)*	2,943,876	2,240,160	1,517,880

	For the year ended 31 December		
	2021	**2022**	**2023**
	HK$'000	*HK$'000*	*HK$'000*
	(audited)	(audited)	(audited)
Revenue	–	5,460	3,900
(Loss)/profit before income tax for the year	1,463,280	811,200	(1,170,780)
Income tax expense	–	–	–
(Loss)/profit after income tax for the year	1,463,280	811,200	(1,170,780)
Other comprehensive income/(loss) for the year	(421,200)	(295,620)	263,640
Dividend received by the Group	137,051	152,279	–

Note: The market value of the Group's investment in AWC as at 31 December 2021, 2022 and 2023 is based on the closing share prices of AWC Share as at 31 December 2021, 2022 and 2023, respectively.

6. INFORMATION ON ALCOA AND ALCOA BIDDER

Alcoa

Alcoa is a Delaware corporation listed on the NYSE from 1 November 2016 following its separation from its former parent company, Alcoa Inc. (which then became known as "Arconic Inc.", now known as "Howmet Aerospace Inc."). Alcoa is active in all aspects of the upstream aluminium industry with bauxite mining, alumina refining, and aluminium smelting and casting. Alcoa has direct and indirect ownership of assets in 27 locations across nine countries on six continents.

Alcoa's operations comprise two reportable business segments: alumina and aluminum. The alumina segment primarily consists of a series of affiliated operating entities held in AWAC. The aluminum segment currently consists of Alcoa's worldwide smelting and cast house system and a portfolio of energy assets in Brazil, Canada and the U.S..

Financial information of Alcoa

Set out below is a summary of the consolidated financial information of Alcoa for the three years ended 31 December 2023 and three months ended 31 March 2024, prepared in accordance with the U.S. GAAP:

	For the year ended 31 December			For the three months ended 31 March
	2021	**2022**	**2023**	**2024**
	US$ (million) (audited)	*US$ (million)* (audited)	*US$ (million)* (audited)	*US$ (million)* (unaudited)
Revenue	12,152	12,451	10,551	2,599
Net Profit/(Loss) before tax	1,199	702	(584)	(325)
Net Profit/(Loss) after tax	570	38	(773)	(307)

	As at 31 December			As at 31 March
	2021	**2022**	**2023**	**2024**
	US$ (million) (audited)	*US$ (million)* (audited)	*US$ (million)* (audited)	*US$ (million)* (unaudited)
Net assets	6,284	6,589	5,845	5,534

Please refer to Appendix II to this circular for further financial information of Alcoa.

Alcoa Bidder

Alcoa Bidder is an Australian proprietary company limited by shares and is a wholly-owned indirect subsidiary of Alcoa. Prior to the AWC Scheme of Arrangement, it has not and will not conduct any business and does not currently own any assets or have any liabilities. If the AWC Scheme of Arrangement is implemented, Alcoa Bidder will directly hold all the AWC Shares.

To the best of the knowledge, information and belief of the Directors, having made all reasonable enquiries, each of Alcoa and Alcoa Bidder is an Independent Third Party.

7. FINANCIAL EFFECTS OF THE TRANSACTION ON THE GROUP

Immediately upon completion of the Transaction, the Group will cease to have any AWC Shares and it is expected that the Group will hold a total of 7,959,806 New Alcoa CDIs, representing approximately 3.03% equity interest in Alcoa. Alcoa will not become a subsidiary of the Company and the financial results of Alcoa will not be consolidated into the financial statements of the Company.

It is expected that an unaudited net gain before tax of approximately HK$300,553,000 will be recorded as a result of the disposal of the equity interest in AWC, being the difference between the consideration for the disposal of the AWC Shares of HK$2,439,999,000 which is assumed to be the market price of the Alcoa Shares as at the Latest Practicable Date and (i) the audited carrying amount of the AWC Shares of HK$1,821,296,000 as at 31 December 2023 in the consolidated financial statements of the Group, (ii) the reclassification of pre-tax other comprehensive income to profit of loss of HK$313,744,000 and (iii) the estimated transaction costs of HK$4,407,000. The corresponding tax impact of the Transaction is HK$91,488,000. The Group's interest in Alcoa is expected to be classified as a financial asset through other comprehensive income and the subsequent measurement of which will be solely based on the movement of Alcoa's share price.

If the consideration for the disposal of the AWC Shares was assumed to be the market price of the Alcoa Shares as at 31 December 2023 of HK$2,110,941,000, it is expected that an unaudited net loss before tax of approximately HK$28,506,000, being the consideration net off with (i) the derecognition of the investment in an associate of HK$1,821,296,000, (ii) the reclassification of pre-tax other comprehensive income to profit or loss of HK$313,744,000 and (iii) the estimated transaction costs of HK$4,407,000 would be recorded. The corresponding tax impact of the Transaction is HK$7,230,000.

Effect on assets and liabilities

It is expected that the total assets of the Group would increase from approximately HK$11,624,391,000 to HK$12,067,047,000 and the total liabilities of the Group would increase from approximately HK$3,782,968,000 to HK$3,796,939,000 if the Transaction had completed on the Latest Practicable Date. The net assets of the Group would accordingly increase from approximately HK7,841,423,000 to HK$8,270,108,000.

Based on the unaudited pro forma financial information as set out in Appendix III to this circular, it is expected that the total assets of the Group would increase from approximately HK$11,624,391,000 to HK$11,822,736,000 and the total liabilities of the Group would remain the same if the Transaction had completed on 31 December 2023. The net assets of the Group would accordingly increase from approximately HK$7,841,423,000 to HK$8,039,768,000.

Save as disclosed above, there will be no immediate material effect on the earnings and assets and liabilities of the Group associated with the Transaction.

Shareholders should note that the financial effects are shown for reference only and the actual amount of gain or loss as a result of the Transaction will be determined based on Alcoa's share price on completion date of the Transaction and the Group's share of net asset value of AWC on that date and eventually be recognised in the consolidated financial statements of the Company. Additionally, the price for disposal of the AWC Shares and the price for acquisition of the New Alcoa CDIs used in preparing unaudited pro forma financial information of the Group upon completion of the Transaction are based on the closing market prices of AWC Shares and Alcoa Shares as well as the AUD/USD and USD/HKD exchange rates as at 31 December 2023, which may be different from those on the Implementation Date.

8. REASONS FOR AND BENEFITS OF THE TRANSACTION

As set out in the section headed "3. Material Terms and Conditions of the Transaction – I. Material Terms and Conditions of the AWC Scheme of Arrangement – Scheme Consideration" above, the Scheme Consideration represents a premium to the trading prices of AWC Shares prior to the announcement of the AWC Scheme of Arrangement and as at the Latest Practicable Date. As set out in the section headed "7. Financial Effects of the Transaction on the Group" and on the assumption as stated therein, the Group expects to recognise an unaudited net gain before tax of approximately HK$300,553,000 as a result of the disposal of the equity interest in AWC where the consideration for such disposal is assumed to be the market price of the Alcoa Shares as at the Latest Practicable Date.

In addition, Alcoa has agreed to establish a foreign exempt listing on the ASX, which would enable shareholders of AWC to trade shares of Alcoa common stock via CDIs on the ASX, in the same way they would normally trade ASX-listed AWC Shares. Holders of Alcoa CDIs can direct CDN to exercise the rights attaching to Alcoa Shares which underline their Alcoa CDIs on their behalf, including the right to vote at a meeting of Alcoa stockholders. After implementation of the Transaction, shareholders of AWC will have the flexibility to convert their holdings from New Alcoa CDIs into holdings of NYSE-listed Alcoa Shares, and vice versa on an ongoing basis. Compared with ASX-listed AWC Shares, NYSE-listed Alcoa Shares are currently expected to have more liquidity.

As at the Latest Practicable Date, the Group held global interests through AWC's 40% ownership of AWAC, the world's largest alumina producer, and AWAC was owned as to 40% by AWC and 60% by Alcoa. The Transaction will consolidate the ownership of the AWAC joint venture into a more efficient structure, which will facilitate more efficient funding for AWAC, thereby reducing the need for future capital contributions from the original shareholders of AWC. It will also incentivise Alcoa to strategically plan for AWAC's long-term growth.

The Group will also gain exposure to a leading global pure play aluminium company with a geographically diversified and integrated portfolio across bauxite, alumina and aluminium through the Transaction, which aligns with the Group's investing strategy in the aluminium sector.

The Directors have also taken into account the recommendation of the independent non-executive directors and managing director and chief executive officer of AWC for the shareholders of AWC to vote in favour of the AWC Scheme of Arrangement as set out in the Scheme Booklet.

In light of the above, the Directors consider that the terms of the Transaction are fair and reasonable, on normal commercial terms and are in the interests of the Company and the Shareholders as a whole.

9. HONG KONG LISTING RULES IMPLICATIONS

As the highest applicable percentage ratio calculated with reference to the average closing price of the Shares for the five business days immediately preceding the date of this circular and the closing price of AWC Shares as at the date immediately preceding the date of this circular pursuant to Chapter 14 of the Hong Kong Listing Rules in respect of the disposal of AWC Shares contemplated under the Transaction exceeds 25% but is less than 75%, such disposal of AWC Shares, if materialised, will constitute a major disposal of the Company and is therefore subject to the reporting, announcement and shareholders' approval requirements under Chapter 14 of the Hong Kong Listing Rules.

As the highest applicable percentage ratio calculated with reference to the average closing price of the Shares for the five business days immediately preceding the date of this circular and the closing price of Alcoa Shares as at the date immediately preceding the date of this circular pursuant to Chapter 14 of the Hong Kong Listing Rules in respect of the acquisition of the New Alcoa CDIs contemplated under the Transaction exceeds 25% but is less than 100%, such acquisition of the New Alcoa CDIs, if materialised, will constitute a major acquisition of the Company and is therefore subject to the reporting, announcement and shareholders' approval requirements under Chapter 14 of the Hong Kong Listing Rules.

10. WAIVER FROM STRICT COMPLIANCE WITH RULE 14.67(6)(a)(i) AND RULE 14.67(7) OF THE HONG KONG LISTING RULES

Accountant's Report

Pursuant to Rule 14.67(6)(a)(i) of the Hong Kong Listing Rules, the Company is required to include in this circular an accountants' report on Alcoa prepared using accounting policies which should be materially consistent with those adopted by the Company. Such accountants' report must include the financial information of Alcoa for each of the three financial years ended 31 December 2023 plus a stub period which ends no earlier than 31 January 2024.

The Company has applied for and the SEHK has granted a waiver from strict compliance with the requirements of Rule 14.67(6)(a)(i) of the Hong Kong Listing Rules on the following grounds:

(1) Alcoa will not become a subsidiary of the Company

(i) Rule 14.67(6)(a)(i) of the Hong Kong Listing Rules provides that where a company proposed to be acquired by a listed issuer has not or will not become a subsidiary of the listed issuer, the SEHK may be prepared to relax the requirement under Rule 14.67(6)(a)(i).

(ii) As at the Latest Practicable Date, the Company had a 9.6117% equity interest in AWC. Other subsidiaries of CITIC Limited, a controlling shareholder of the Company, have a total of 9.3070% equity interest in AWC. AWC is currently treated as an investment in an associate of the Group based on (i) the significant influence it is deemed to have, when combining its equity interest with that of CITIC Limited under acting-in-concert arrangement in relation to AWC; and (ii) the representation (i.e. one board seat) on the board of directors of AWC.

(iii) Upon completion of the Transaction and taking into account the new shares of Alcoa to be issued as part of the AWC Scheme of Arrangement, (i) the Company itself is expected to have approximately 3.03% equity interest in Alcoa; and (ii) the Company, together with CITIC Limited, are expected to have approximately 5.97% equity interest in Alcoa. It is expected that the Company's interest in Alcoa will be classified as a financial asset through profit or loss or financial asset through other comprehensive income, the subsequent measurement of which will be solely based on the movement of share price of Alcoa. Therefore, Alcoa will not become a subsidiary of the Company and the financial results of Alcoa will not be consolidated into the financial statements of the Company following the completion of the Transaction.

(2) Alcoa is listed on NYSE and the financial information of Alcoa is published on a regular basis

(i) The shares of Alcoa have been listed on NYSE since 2016 and it is subject to supervision by NYSE and the Securities and Exchange Commission of the United States.

(ii) In accordance with the regulatory requirements applicable to a company listed on NYSE, Alcoa has been publishing its financial information on a regular basis to enable investors to assess its activities and financial position. Such financial information of Alcoa is available to the general public (including shareholders and potential investors of the Company) on the website of Alcoa (https://www.alcoa.com/global/en/home/).

(3) Strict compliance with the requirements of accountants' report is impractical and unduly burdensome

(i) Strict compliance with Rule 14.67(6)(a)(i) of the Hong Kong Listing Rules will mean that the Company has to prepare an accountants' report covering the financial information of Alcoa for each of the three financial years ended 31 December 2023 plus a stub period which ends no earlier than 31 January 2024 prepared using accounting policies materially consistent with those adopted by the Company.

(ii) Given that the Company currently has no shareholding in, and does not exercise any degree of control over Alcoa, the Company is not in a position to gain access to confidential non-public information, including the accounting records or other information, of Alcoa to facilitate the auditor to be engaged by the Company to report on financial statements of Alcoa. Alcoa, as a publicly listed company on NYSE, is not obliged to disclose any financial information which has not been published in accordance with applicable regulatory requirements and rules of NYSE. Strict compliance with the accountants' report requirements by the Company would be impractical.

(iii) Further, Alcoa's financial statements are prepared in accordance with U.S. GAAP. The Company's financial statements are prepared in according with HKFRS. Given that Alcoa and the Company have adopted different financial reporting standards, it is practically difficult and unduly burdensome for the Company to convert Alcoa's financial statements from U.S. GAAP to HKFRS and prepare financial statements of Alcoa in conformity with HKFRS for each of the three financial years ended 31 December 2023 plus a stub period which ends no earlier than 31 January 2024. The Company's auditor would then need to carry out audit procedures in accordance with the HKICPA on such financial information of Alcoa and prepare an accountants' report accordingly. It would involve substantial amount of additional time, resources and expenses and therefore cause a significant delay in the issue of this circular.

(iv) In addition, in light of the alternative disclosures made in this circular (see Paragraph (4) below), the inclusion of an accountants' report in accordance with Rule 14.67(6)(a)(i) of the Hong Kong Listing Rules is unlikely to put the shareholders of the Company in a substantially better position to assess Alcoa's performance and financial position.

(4) Alternative disclosures will provide relevant, meaningful and reliable information on Alcoa's financial position

(i) Instead of including an accountants' report on Alcoa's financial information as required under Rule 14.67(6)(a)(i) of the Hong Kong Listing Rules, the following alternative disclosures are made in Appendix II to this circular:

(a) The published audited financial information on Alcoa for each of the three financial years ended 31 December 2023 as stated in the annual reports of Alcoa for the corresponding financial years, which had been prepared in accordance with U.S. GAAP and the unaudited financial information of Alcoa for the first quarter of 2024 (the "**Alcoa Financial Reports**").

The financial information on Alcoa for each of the three financial years ended 31 December 2023 were audited by PricewaterhouseCoopers LLP ("**PwC LLP**"), in accordance with the standards of Public Company Accounting Oversight Board (United States) ("**PCAOB**"). PwC LLP is a firm with international name and reputation and registered with the PCAOB. There are no audit qualifications in the auditor's reports of Alcoa for the relevant financial years.

The Company also noted that Alcoa's latest audited financial statements were made up to 31 December 2023, which ended more than six months before the expected dispatch date of this circular in July 2024. However, given that the consideration of the Transaction was determined with reference to the prevailing market prices of AWC's shares and Alcoa's shares as quoted on the ASX and NYSE respectively instead of being based on the assets value of Alcoa, the Company does not consider that the updated financial statements of Alcoa which were made up to a date which ended not more than six months before the issue of this circular is essential to enable the shareholders of the Company to make a properly informed assessment of the fairness and reasonableness of the Transaction.

Furthermore, notwithstanding the differences between U.S. GAAP, being the accounting standard adopted by Alcoa, and HKFRS, being the accounting standard adopted by the Company, based on the reasons set out below, a reconciliation statement needs not be included in this circular:

(A) Immediately upon completion of the Transaction:

- as set out under Paragraph (1)(iii) above, Alcoa will not become a subsidiary of the Company and the financial results of Alcoa will not be consolidated into the financial statements of the Company;

- unlike the case set out in the HKEX Listing Decision (HKEX-LD74-2), the Company's interest in Alcoa will not be treated as an investment in an associate and will not be accounted for using the equity method of accounting; and

- the Company's interest in Alcoa will be classified as a financial asset and will be measured at fair value through profit or loss or other comprehensive income. All subsequent gains or losses resulting from the increase or decrease of fair value of the interest in Alcoa by the Company which is solely based on the movement of share price of Alcoa will be presented in profit or loss or other comprehensive income.

As such, the financial information of Alcoa will not have any direct bearing on the financial information of the Company and would not be material for the shareholders of the Company to assess the impact of the Transaction on the Group.

(B) In performing the reconciliation, the auditor engaged by the Company would conduct its work in accordance with the Hong Kong Standard on Assurance Engagements 3000 "Assurance Engagements Other Than Audits or Reviews of Historical Financial Information" issued by the HKICPA on the reconciliation information. The relevant work preliminarily involves:

- comparing the unadjusted financial information under U.S. GAAP with the audited or reviewed financial statements of Alcoa;

- comparing the accounting policies of Alcoa with the accounting policies of the Group;

- reviewing the adjustments, if any, made by the directors of the Company in arriving at Alcoa's unaudited adjusted financial information under the Company's accounting policies and evidence supporting the adjustments; and

- checking the arithmetic accuracy of the computation of Alcoa's unaudited adjusted financial information under the Company's accounting policies.

To the best information and knowledge of the directors of the Company, the shareholders' meeting of AWC for approval of the AWC Scheme of Arrangement is tentatively scheduled to take place by around mid-July 2024. Further, according to Alcoa's public announcement, the AWC Scheme of Arrangement is expected to be completed in the third quarter of 2024, subject to the satisfaction of customary conditions as well as approval by both shareholders of AWC and Alcoa and receipt of required regulatory approvals. In order for the Company to exercise its voting rights in such shareholders' meeting of AWC, it is necessary for the Company to obtain prior shareholders' approval and the clearance of this circular from the SEHK in accordance with the Company's own regulatory compliance obligations under the Hong Kong Listing Rules. Accordingly, it would be difficult for the Company, AWC and Alcoa, each of which is a listed company on a stock exchange and subject to respective regulatory and compliance requirements, to coordinate the timetable of the AWC Scheme of Arrangement to specifically cater for the time to be required by the Company and its auditor to prepare the reconciliation statement for inclusion in this circular.

In light of the above, and given that the timetable of the AWC Scheme of Arrangement would not be within the reasonable control of the Company, the prolonged process for the reconciliation work will create uncertainty and practical difficulties for the Company to determine whether it is in the position to exercise its voting rights to participate in the AWC Scheme of Arrangement within the timeline as designated by AWC and Alcoa.

In light of the foregoing, the Company considers that the benefits of the reconciliation work would be limited for reasons as set out in Paragraph (4)(i)(a)(A) above, and therefore would not justify the considerable amount of additional time, resources and expenses involved and the potential delay to the Company's participation in the AWC Scheme of Arrangement as explained in Paragraph (4)(i)(a)(B) above.

(b) the (i) Letter from the Chairman of the Board, Letter from the President and CEO, Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations from the annual report of Alcoa for each of the financial year ended 31 December 2023; (ii) Letter to Stakeholders and Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations from the annual report of Alcoa for each of the two financial years ended 31 December 2022; and (iii) the paragraphs headed "Financial Results and Highlights", "First Quarter 2024 Results", "Key Actions" and "2024 Outlook" from the quarterly report of Alcoa for the three months ended 31 March 2024 (the "**Alcoa Management Discussion**"); and

(c) the reasons for and details of the waiver sought in respect of the requirements under Rule 14.67(6)(a)(i) of the Hong Kong Listing Rules.

(ii) It is noted that, save for those matters referred to in the section headed "Management Discussion and Analysis" below, the Alcoa Management Discussion, together with the Alcoa Financial Reports, substantially cover all the matters set out in paragraph 32 of Appendix D2 to the Hong Kong Listing Rules in so far as they are applicable.

(iii) After considering the above factors, the Company considers that it is practical and appropriate to make the aforesaid alternative disclosures in this circular based on publicly available financial information of Alcoa and the Alcoa Financial Reports, together with the Alcoa Management Discussion, would provide relevant, meaningful and reliable information on the financial position of Alcoa for the relevant financial periods.

Management Discussion and Analysis

Pursuant to Rule 14.67(7) of the Hong Kong Listing Rules, the Company is also required to include in this circular a discussion and analysis of results of Alcoa covering all those matters set out in paragraph 32 of Appendix D2 to the Hong Kong Listing Rules for the period reported in the required accountants' report. In particular, under paragraphs 32(2)(a), (2)(c), (3), (4), (4A), (5) and (10) of Appendix D2 to the Hong Kong Listing Rules, such matters include:

(a) funding and treasury policies and objectives in terms of the manner in which treasury activities are controlled;

(b) the extent to which borrowings are at fixed interest rate;

(c) the state of the group's order book (where applicable) and prospects for new business including new products and services introduced or announced;

(d) significant investments held, their performance during the financial year and their future prospects;

(e) a breakdown of its significant investments (including any investment in an investee company with a value of 5 per cent. or more of the issuer's total assets as at the year end date):

(i) details of each investment, including the name and principal businesses of the underlying company, the number and percentage of shares held and the investment costs;

(ii) the fair value of each investment as at the year end date and its size relative to the issuer's total assets;

(iii) the performance of each investment during the year, including any realised and unrealised gain or loss and any dividends received; and

(iv) a discussion of the issuer's investment strategy for these significant investments;

(f) details of material acquisitions and disposals of subsidiaries, associates and joint ventures in the course of the financial year; and

(g) gearing ratio.

The Company has applied to the SEHK and the SEHK has granted waivers from strict compliance with Rule 14.67(7) based on the ground that, none of those matters set out above have been disclosed in the published financial reports of Alcoa and Alcoa, as a publicly listed company on NYSE, is not obliged to disclose any of these matters which has not been published in accordance applicable regulatory requirements and rules of NYSE. Since the information covering the matters under paragraphs 32(2)(a), (2)(c), (3), (4), (4A), (5) and (10) of Appendix D2 to the Hong Kong Listing Rules in relation to Alcoa is non-public information and since the Company is unable to obtain access to such non-public information for the reasons set out under Paragraph (3)(ii) above, it would be impracticable for the Company to prepare the relevant management discussion and analysis on these matters.

11. ADDITIONAL INFORMATION

Your attention is drawn to the additional information as set out in the appendixes to this circular.

Yours faithfully,
For and on behalf of the Board
CITIC Resources Holdings Limited
Hao Weibao
Chairman

1. FINANCIAL INFORMATION OF THE GROUP

Details of the financial information of the Group for each of the three financial years ended 31 December 2021, 2022 and 2023 are disclosed in the following documents which have been published on the websites of the SEHK (http://www.hkexnews.hk) and the Company (http://resources.citic/):

(a) Annual report of the Company for the year ended 31 December 2023 published on 25 April 2024 (pages 62 to 156) https://www1.hkexnews.hk/listedco/listconews/sehk/2024/0425/2024042500518.pdf

(b) Annual report of the Company for the year ended 31 December 2022 published on 27 April 2023 (pages 58 to 156) https://www1.hkexnews.hk/listedco/listconews/sehk/2023/0427/2023042700633.pdf

(c) Annual report of the Company for the year ended 31 December 2021 published on 21 April 2022 (pages 55 to 156) https://www1.hkexnews.hk/listedco/listconews/sehk/2022/0421/2022042100455.pdf

2. INDEBTEDNESS

As at 31 May 2024, being the latest practicable date for the purpose of this statement of indebtedness prior to the printing of this circular, the bank and other borrowings and lease liabilities of the Group are as follows:

	HK$'000
Bank borrowings	
– unsecured and unguaranteed	150,000
Other borrowings	
– unsecured and unguaranteed	1,208,355
Lease liabilities	28,546
	1,386,901

As at 31 May 2024, the Group had the following contingent liabilities:

(i) In April 2020, Weihai City Commercial Bank Co., Ltd. ("**Weihai**") commenced three claims (the "**Claims**") in the Shandong High People's Court against, amongst others, a wholly-owned subsidiary of the Company, CA Commodity Trading Pty Ltd ("**CACT**"). The Claims relate to three letters of credit amounting to US$31,742,190 including the claims for interests and fee of US$3,342,190 issued in favour of CACT as payment for the sale by CACT to Qingdao Decheng Minerals Co., Ltd. of certain quantity of aluminium stored at bonded warehouses at Qingdao Port, China in 2014. Weihai arranged for the issuance of the letter of credits as payment on behalf of Decheng and it has subsequently disputed the authenticity of the warehouse receipts for the aluminium stored at the bonded warehouses at Qingdao Port.

In December 2020, the Shandong High People's Court ruled that CACT is not liable for Weihai's losses as there was no evidence of any intention to commit fraud on the part of CACT (the "**First Instance Judgement**"). Weihai subsequently submitted an appeal to the Supreme Court of the People's Republic of China ("**SPC**"), appealing against the decision of the Shandong High People's Court.

In December 2022, the SPC held that the Shandong High People's Court did not clearly ascertain the facts of the Claims based on the evidence made available; the SPC has therefore ordered that the First Instance Judgement be rescinded and the cases be remanded to the Shandong High People's Court for a retrial.

A hearing was held at the Shandong Court on 10 January 2024 and CACT submitted to the court all requisite evidence for the purpose of fact finding of the case. The Shandong Court will issue its finding after consideration of all evidence, which is likely to take place in the later part of the year 2024.

CACT maintains the view that the Claims are without merit and groundless and will continue to defend the Claims accordingly.

For details, please refer to the announcements of the Company dated 1 September 2020, 7 January 2021, 21 May 2021 and 27 February 2023.

Save as aforesaid and apart from normal trade payables in the ordinary course of business, as at 31 May 2024, the Group did not have any other debt securities issued and outstanding, or authorised or otherwise created but unissued, loans or term loans (secured, unsecured, guaranteed or otherwise), other borrowings or indebtedness in the nature of borrowings including bank overdrafts and liabilities under acceptances (other than normal trade bills), acceptance credits, debentures, mortgages, charges, hire purchase commitments, guarantees or other material contingent liabilities.

3. WORKING CAPITAL

The Directors are of the opinion that, taking into account the Group's existing available financial resources, including internally generated funds, available borrowing facilities and cash on hand, the Group, after considering the effects of the Transaction, has sufficient working capital for the Group's requirements for at least 12 months from the date of this circular, in the absence of unforeseeable circumstances. As at the date of this circular, the Company has obtained the relevant letter as required under rule 14.66(12) of the Hong Kong Listing Rules.

4. BUSINESS REVIEW AND FINANCIAL AND TRADING PROSPECTS

Business Review

Operating environment and results

2023 was an extraordinary year. China withdrew its pandemic control policies and the global economy gradually stepped out of the impact of COVID-19 during the year. The outbreaks of various international social and political disputes and military conflicts, the intensified geopolitical conflicts and the continuous interest rate hikes in the United States added more uncertainties. The global supply chain and the industry chain were still looking for balance during the vulnerable period. The global economic recession was expected to have a negative impact on the demand side. OPEC continued to reduce its production to support oil prices, and commodity prices fell back to a stable range. The average prices of international oil, aluminium and coal from January to December 2023 were US$82.7 per barrel, representing a year-on-year decrease of approximately 18.0%, US$2,359.6 per tonne, representing a year-on-year decrease of approximately 17.4%, and US$216.3 per tonne, representing a year-on-year decrease of approximately 24.5%, respectively. The Group's resource and energy businesses were affected to different degrees and the sales were under continuous pressure.

With the ever-changing external environment, the Group targeted at high-quality developments of the Company, which focused on the three core tasks of "resolving risks, improving quality and efficiency, and optimising management", kept improving the mechanism to enhance the operation performance and kept reforming and empowering to facilitate the exploration of potential opportunities, thereby ensuring the safety and stability of production and operation. During the year, the Group recorded a revenue of approximately HK$3,825.6 million, representing a year-on-year decrease of approximately 34.8%, and net profit attributable to the ordinary shareholders of the Company of approximately HK$551.8 million, representing a year-on-year decrease of approximately 58.7%. As of 31 December 2023, the Group had total assets of approximately HK$11.6 billion and net assets attributable to the ordinary shareholders of the Company of approximately HK$7.8 billion. The gearing ratio and interest-bearing debt ratio decreased to approximately 32.5% and 15.4% respectively. The net asset yield was approximately 7.9%. The Company proposed a final dividend of HK2.50 cents (2022: HK6.00 cents) per ordinary share for the year ended 31 December 2023.

Oil and gas business

During the year, although the Group's oil and gas business experienced the impact of the ongoing tension arising from the Russian-Ukrainian conflict and the inflation in countries with such resources, all the Company staff worked together and overcame difficulties of all kinds. In order to unleash the development potential and achieve the goal of safe and environmentally friendly production, the Company implemented a number of proactive measures to increase reserves for production activities, improve safety management systems and promote the application of new processes and technologies. The Group's oil and gas business remained stable as a result. In 2023, the Group's oil and gas business recorded an operation output of approximately 17.1 million barrels and a working interest output of approximately 9.2 million barrels, representing a year-on-year decrease of approximately 5.0% and approximately 5.0%, respectively. However, due to the significant decrease in average selling price of crude oil sold by the Group year-on-year, the oil and gas business achieved an annual revenue of approximately HK$1,474.2 million, representing a year-on-year decrease of approximately 20.5%, and contributed a net profit attributable to the ordinary shareholders of the Company of approximately HK$685.1 million, representing a year-on-year increase of approximately 12.0%.

Specifically, the KBM oil field experienced a decline in production and an increase in costs due to the massive power supply failure and rationing in Kazakhstan and the increase in the remuneration of employees and service providers initiated by the government during the year. Every effort was made to reconcile the impact of power supply failure and rationing by implementing a recovery plan and adopting the approach of integrated decision-making to improve the efficiency of well operations, and also continue to carry out production stabilisation and adjustment measures to ensure the productivity of crude oil as much as possible. During the year, the KBM oil field's working interest output was approximately 6.9 million barrels, achieving a share of profit attributable to ordinary shareholders of the Company of approximately HK$398.4 million, representing a year-on-year increase of approximately 24.5%. While steadily promoting the implementation of the development and adjustment plan, the Yuedong oil field applied new technologies and processes to gradually commence the production of new wells, and achieved a working interest output of approximately 2.1 million barrels, and a net profit attributable to ordinary shareholders of the Company of approximately HK$644.5 million accordingly, representing a year-on-year increase of approximately 8.6%. The Seram oil field in Indonesia actively promoted the Lofin-2 gas trials and reduced comprehensive costs through refined management. During the year, the working interest output was approximately 149,000 barrels, and a net profit attributable to ordinary shareholders of the Company of approximately HK$40.6 million accordingly, representing a year-on-year increase of approximately 121.9%.

Non-oil-and-gas businesses

In 2023, the Group took the lead to handle the subsequent issues concerning the termination of the steel trading business at the end of last year. Due to the difficulties experienced in the operation of Portland Aluminium Smelter ("**PAS**"), Coppabella Moorvale coal mines joint venture ("**CMJV**") and other joint venture projects, the sales of aluminium ingots and coal were hindered to a certain extent. The Group and the non-oil-and-gas business team actively promoted the participation in the management and shareholder affairs of the above joint venture projects, facilitated the optimisation mode of project operations, improved production capacity and reduced costs. During the year, the Group's non-oil-and-gas business recorded a net loss attributable to the ordinary shareholders of the Company of approximately HK$261.2 million, representing a year-on-year decrease of approximately 137.0%, mainly due to the significant loss suffered from the impairment caused by the fallen price of shares in AWC.

The following is a description of activities in each of the Group's non-oil-and-gas business during the year, with a comparison of their results against those in last year.

Aluminium Smelting

In 2023, affected by various factors such as the strong US dollar brought about by interest rate hikes and the slowdown of the global economy, the international aluminium price was under pressure. During the year, the sales volume of aluminium smelting of the Group's PAS was approximately 67,000 tonnes, representing a year-on-year increase of approximately 9.8%. However, the average selling price from January to December 2023 was approximately US$2,359.6 per tonne, representing a year-on-year decrease of approximately 17.4%. The gross profit margin of the aluminium business decreased, and the net profit attributable to the ordinary shareholders of the Company was approximately HK$142.2 million, representing a year-to-year decrease of approximately 13.7%. In addition, as a result of the extension of the term of the Australian Power Hedging Agreement which had long-term benefits to the operation of PAS, a reversal of impairment charge of approximately HK$293.1 million (2022: HK$31.2 million) has been made during the year.

Bauxite Mining and Alumina Refining

Due to the decline in alumina prices and the increase in costs of AWC, the Group's share of profit of AWC under the equity method decreased significantly as compared to last year, and no dividend payment was made by AWC during the year. In addition, with the drop of share prices of AWC, the Company made a provision of approximately HK$844.7 million for its investment in AWC.

Coal

In 2023, coal prices dropped due to the strong US dollar brought about by interest rate hikes and the decline in coal demand. The average realised selling price of coal by CMJV was approximately US$216.3 per metric tonne, representing a year-on-year decrease of approximately 24.5%. In terms of production, due to the rising costs of taxes, energy and labour, the cost of coal production recorded from January to December 2023 was approximately US$155.9 per tonne, representing an increase of approximately 4.9% year-on-year. The Group's coal business achieved a net profit attributable to the ordinary shareholders of the Company of approximately HK$270.4 million, representing a year-on-year decrease of approximately 40.5%. Despite that, overall, the gross profit of the Group's coal business still remained at a historically high level. The management of the Company had performed a recoverable value assessment for the mining assets and various exploration of coal mines and recorded a reversal of impairment charge of approximately HK$60.8 million and HK$41.1 million respectively (2022: Nil).

Import and Export Trading

In 2023, the Group took the lead to handle the subsequent issues concerning the termination of the steel trading business at the end of last year, collected all trade receivables and tax refunds and settled its outstanding liabilities for the steel operations during the year.

Notwithstanding the cessation of its import and distribution of the steel products, management is in advanced negotiations with external parties to develop new trading product lines. During the year, the Company has established a trading and marketing team which focuses on crude oil trading.

Outlook

2024 will continue to be a year full of opportunities and challenges. The Group will continue to adhere to the bottom-line mindset, strengthen the investigation on safety risks, address potential risks in compliance with laws and regulations and strengthen the integrated management of risk control, compliance and internal control. The Group will also continue to promote the application of new technologies and processes, optimise the production processes, refine management measures and strive to deliver a steady increase in productivity. The Group will try its best to establish a management system in line with its business characteristics so as to improve its operating efficiency and achieve a continuous enhancement in corporate value. Meanwhile, the Group will also endeavour to explore the business pattern of new energy and new materials and identify new development directions, thus bringing higher returns to shareholders. Regarding the oil and gas business, by formulating proposals for oilfield exploration and development and daily work plans in a reasonable manner, the Group will implement in-depth quality and efficiency improvement works to continuously strengthen the performance of refined management, seek breakthroughs in multiple directions and enhance the value of assets. In terms of the non-oil-and-gas business, the Group will strengthen the management of project operations and exercise shareholders' rights in accordance with laws and regulations. The Group will facilitate in-depth cooperation with project partners provided that the best interests of the Group can be assured.

In 2023, the Group started to establish a new trading system, and completed the construction of the trading platform, the approval of counterparty admission and the application for financing facilities for trading. In 2024, with the aim of revenue maximisation, the Group will strengthen strategic research, promote the mining and trading of oil and natural gas, as well as the development and trading of mineral products with aluminium as the core, and will also actively explore development opportunities for new energy. Relying on the "investment + trading" dual drivers, the management of the Group expects that it will gradually be transformed into a comprehensive listed company with the dual driver of "energy and mineral product investment and commodity trading".

This appendix contains the audited consolidated financial statements and the discussion and analysis of the results of Alcoa for the three financial years ended 31 December 2023, 2022 and 2021, and the unaudited consolidated financial statements and the discussion and analysis of the results of Alcoa for the three months ended 31 March 2024, which were prepared in accordance with U.S. GAAP and are extracted from the respective annual reports of Alcoa for the three financial years ended 31 December 2023, 2022 and 2021 and the quarterly report of Alcoa for the three months ended 31 March 2024.

Alcoa is a company listed on the NYSE. Accordingly, it is obliged to comply with the NYSE listing rules in respect of the continuous disclosure regime as it relates to its financial information. These financial statements of Alcoa are publicly available on the website of Alcoa (www.alcoa.com/global/en/home/).

Please note that these financial statements were originally prepared and issued by Alcoa in English only. The Chinese translation contained in the Chinese version of this circular is provided by the Company for information purposes only. In case of inconsistencies between the two versions, the English version shall prevail.

The Directors also wish to emphasise that the extracts reproduced in this Appendix II are not prepared for incorporation into this circular and the Group has not participated in their preparation. The Directors, therefore, do not express any view as to their truth, accuracy or completeness. Alcoa was not involved in the preparation of the extracts used in this Appendix II. Shareholders and potential investors of the Company should exercise caution when considering the information contained in this appendix.

A1. CONSOLIDATED FINANCIAL STATEMENTS OF ALCOA FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2021

ALCOA CORPORATION AND SUBSIDIARIES
STATEMENT OF CONSOLIDATED OPERATIONS

(in millions, except per-share amounts)

For the year ended December 31,	**2021**	**2020**	**2019**
Sales (E)	$ 12,152	$ 9,286	$ 10,433
Cost of goods sold (exclusive of expenses below)	9,153	7,969	8,537
Selling, general administrative, and other expenses	227	206	280
Research and development expenses	31	27	27
Provision for depreciation, depletion, and amortization	664	653	713
Restructuring and other charges, net (D)	1,128	104	1,031
Interest expense (U)	195	146	121
Other (income) expenses, net (U)	(445)	8	162
Total costs and expenses	10,953	9,113	10,871
Income (loss) before income taxes	1,199	173	(438)
Provision for income taxes (Q)	629	187	415
Net income (loss)	570	(14)	(853)
Less: Net income attributable to non-controlling interest	141	156	272
Net income (loss) attributable to Alcoa Corporation	429	(170)	(1,125)
Earnings per share attributable to Alcoa Corporation common shareholders (F):			
Basic	$ 2.30	$ (0.91)	$ (6.07)
Diluted	$ 2.26	$ (0.91)	$ (6.07)

The accompanying notes are an integral part of the consolidated financial statements.

ALCOA CORPORATION AND SUBSIDIARIES
STATEMENT OF CONSOLIDATED COMPREHENSIVE INCOME
(in millions)

	Alcoa Corporation			Non-controlling interest			Total		
For the year ended December 31,	**2021**	**2020**	**2019**	**2021**	**2020**	**2019**	**2021**	**2020**	**2019**
Net income (loss)	$ 429	$ (170)	$ (1,125)	$ 141	$ 156	$ 272	$ 570	$ (14)	$ (853)
Other comprehensive income (loss), net of tax (G):									
Change in unrecognized net actuarial loss and prior service cost/benefit related to pension and other postretirement benefits	1,654	(254)	1	54	(11)	(10)	1,708	(265)	(9)
Foreign currency translation adjustments	(229)	(225)	(89)	(93)	(10)	(24)	(322)	(235)	(113)
Net change in unrecognized gains/ losses on cash flow hedges	(388)	(176)	(321)	–	(21)	(11)	(388)	(197)	(332)
Total Other comprehensive income (loss), net of tax	1,037	(655)	(409)	(39)	(42)	(45)	998	(697)	(454)
Comprehensive income (loss)	$ 1,466	$ (825)	$ (1,534)	$ 102	$ 114	$ 227	$ 1,568	$ (711)	$ (1,307)

The accompanying notes are an integral part of the consolidated financial statements.

ALCOA CORPORATION AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEET
(in millions)

December 31,		**2021**		**2020**
Assets				
Current assets:				
Cash and cash equivalents (P)	$	1,814	$	1,607
Receivables from customers		757		471
Other receivables		127		85
Inventories (J)		1,956		1,398
Fair value of derivative instruments (P)		14		21
Assets held for sale (C)		–		648
Prepaid expenses and other current assets		358		290
Total current assets		5,026		4,520
Properties, plants, and equipment, net (K)		6,623		7,190
Investments (H)		1,199		1,051
Deferred income taxes (Q)		506		655
Fair value of derivative instruments (P)		7		–
Other non-current assets (U)		1,664		1,444
Total Assets	$	15,025	$	14,860
Liabilities				
Current liabilities:				
Accounts payable, trade	$	1,674	$	1,403
Accrued compensation and retirement costs		383		395
Taxes, including income taxes		374		91
Fair value of derivative instruments (P)		274		103
Liabilities held for sale (C)		–		242
Other current liabilities		517		525
Long-term debt due within one year (M & P)		1		2

December 31,	2021	2020
Total current liabilities	3,223	2,761
Long-term debt, less amount due within one year (M & P)	1,726	2,463
Accrued pension benefits (O)	417	1,492
Accrued other postretirement benefits (O)	650	744
Asset retirement obligations (R)	622	625
Environmental remediation (S)	265	293
Fair value of derivative instruments (P)	1,048	742
Non-current income taxes (Q)	191	209
Other non-current liabilities and deferred credits (U)	599	515
Total liabilities	8,741	9,844
Contingencies and commitments (S)		
Equity		
Alcoa Corporation shareholders' equity:		
Common stock (N)	2	2
Additional capital	9,577	9,663
Accumulated deficit	(315)	(725)
Accumulated other comprehensive loss (G)	(4,592)	(5,629)
Total Alcoa Corporation shareholders' equity	4,672	3,311
Non-controlling interest (A)	1,612	1,705
Total equity	6,284	5,016
Total Liabilities and Equity	$ 15,025	$ 14,860

The accompanying notes are an integral part of the consolidated financial statements.

ALCOA CORPORATION AND SUBSIDIARIES
STATEMENT OF CONSOLIDATED CASH FLOWS
(in millions)

For the year ended December 31,	2021	2020	2019
Cash from Operations			
Net income (loss)	$ 570	$ (14)	$ (853)
Adjustments to reconcile net income (loss) to cash from operations:			
Depreciation, depletion, and amortization	664	653	713
Deferred income taxes (Q)	147	(26)	15
Equity earnings, net of dividends (H)	(138)	20	21
Restructuring and other charges, net (D)	1,128	104	1,031
Net gain from investing activities – asset sales (U)	(354)	(173)	(3)
Net periodic pension benefit cost (O)	47	138	119
Stock-based compensation (N)	39	25	30
Provision for bad debt expense	1	2	21
Premium paid on early redemption of debt	43	–	–
Other	24	32	30
Changes in assets and liabilities, excluding effects of divestitures and foreign currency translation adjustments:			
(Increase) decrease in receivables	(414)	16	283
(Increase) decrease in inventories (J)	(639)	122	137
(Increase) decrease in prepaid expenses and other current assets	(41)	17	27
Increase (decrease) in accounts payable, trade	354	25	(153)
(Decrease) in accrued expenses	(38)	(153)	(175)
Increase (decrease) in taxes, including income taxes	301	119	(330)
Pension contributions (O)	(579)	(343)	(173)
(Increase) in non-current assets	(160)	(82)	(24)
(Decrease) in non-current liabilities	(35)	(88)	(30)
Cash provided from operations	920	394	686

For the year ended December 31,	2021	2020	2019
Financing Activities			
Additions to debt (original maturities greater than three months) (M)	495	739	–
Payments on debt (original maturities greater than three months) (M)	(1,294)	(1)	(7)
Proceeds from the exercise of employee stock options (N)	25	1	2
Repurchase of common stock (N)	(150)	–	–
Dividends paid on Alcoa common stock (N)	(19)	–	–
Financial contributions for the divestiture of businesses (C)	(17)	(38)	(12)
Contributions from non-controlling interest (A)	21	24	51
Distributions to non-controlling interest	(215)	(207)	(472)
Other	(4)	(4)	(6)
Cash (used for) provided from financing activities	(1,158)	514	(444)
Investing Activities			
Capital expenditures	(390)	(353)	(379)
Proceeds from the sale of assets and businesses (C)	966	198	23
Additions to investments (H)	(11)	(12)	(112)
Cash provided from (used for) investing activities	565	(167)	(468)
Effect of exchange rate changes on cash and cash equivalents and restricted cash	(13)	(14)	(7)
Net change in cash and cash equivalents and restricted cash	314	727	(233)
Cash and cash equivalents and restricted cash at beginning of year	1,610	883	1,116
Cash and cash equivalents and restricted cash at end of year	$ 1,924	$ 1,610	$ 883

The accompanying notes are an integral part of the consolidated financial statements.

ALCOA CORPORATION AND SUBSIDIARIES STATEMENT OF CHANGES IN CONSOLIDATED EQUITY

(in millions)

	Alcoa Corporation shareholders					
	Common stock	Additional capital	Retained earnings (deficit)	Accumulated other comprehensive loss	Non-controlling interest	Total equity
Balance at December 31, 2018	$ 2	$ 9,611	$ 570	$ (4,565)	$ 1,970	$ 7,588
Net (loss) income	–	–	(1,125)	–	272	(853)
Other comprehensive loss (G)	–	–	–	(409)	(45)	(454)
Stock-based compensation (N)	–	30	–	–	–	30
Common stock issued:						
Compensation plans (N)	–	2	–	–	–	2
Contributions	–	–	–	–	51	51
Distributions	–	–	–	–	(472)	(472)
Other	–	(4)	–	–	(2)	(6)
Balance at December 31, 2019	2	9,639	(555)	(4,974)	1,774	5,886
Net (loss) income	–	–	(170)	–	156	(14)
Other comprehensive loss (G)	–	–	–	(655)	(42)	(697)
Stock-based compensation (N)	–	25	–	–	–	25
Common stock issued:						
Compensation plans (N)	–	1	–	–	–	1
Contributions	–	–	–	–	24	24
Distributions	–	–	–	–	(207)	(207)
Other	–	(2)	–	–	–	(2)
Balance at December 31, 2020	2	9,663	(725)	(5,629)	1,705	5,016
Net income	–	–	429	–	141	570
Other comprehensive loss (G)	–	–	–	1,037	(39)	998
Stock-based compensation (N)	–	39	–	–	–	39
Common stock issued:						
Compensation plans (N)	–	25	–	–	–	25
Repurchase of common stock (N)	–	(150)	–	–	–	(150)
Dividends paid on						
Alcoa common stock (N)	–	–	(19)	–	–	(19)
Contributions	–	–	–	–	21	21
Distributions	–	–	–	–	(215)	(215)
Other	–	–	–	–	(1)	(1)
Balance at December 31, 2021	$ 2	$ 9,577	$ (315)	$ (4,592)	$ 1,612	$ 6,284

The accompanying notes are an integral part of the consolidated financial statements.

ALCOA CORPORATION AND SUBSIDIARIES
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
(dollars in millions, except per-share amounts; metric tons in thousands (kmt))

A. BASIS OF PRESENTATION

Alcoa Corporation (or the Company) is a vertically integrated aluminum company comprised of bauxite mining, alumina refining, aluminum production (smelting and casting), and energy generation. Through direct and indirect ownership, the Company has 28 operating locations in nine countries around the world, situated primarily in Australia, Brazil, Canada, Iceland, Norway, Spain, and the United States.

References in these Notes to "ParentCo" refer to Alcoa Inc., a Pennsylvania corporation, and its consolidated subsidiaries through October 31, 2016, at which time it was renamed Arconic Inc. (Arconic) and since has been subsequently renamed Howmet Aerospace Inc.

Separation Transaction. On November 1, 2016 (the Separation Date), ParentCo separated into two standalone, publicly-traded companies, Alcoa Corporation and ParentCo, effective at 12:01 a.m. Eastern Time (the Separation Transaction). Regular-way trading of Alcoa Corporation's common stock began with the opening of the New York Stock Exchange on November 1, 2016 under the ticker symbol "AA." The Company's common stock has a par value of $0.01 per share.

In connection with the Separation Transaction, Alcoa Corporation and ParentCo entered into certain agreements to implement the legal and structural separation between the two companies, govern the relationship between the Company and ParentCo after the completion of the Separation Transaction, and allocate between Alcoa Corporation and ParentCo various assets, liabilities, and obligations.

Basis of Presentation. The Consolidated Financial Statements of Alcoa Corporation are prepared in conformity with accounting principles generally accepted in the United States of America (GAAP). In accordance with GAAP, certain situations require management to make estimates based on judgments and assumptions, which may affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements. They also may affect the reported amounts of revenues and expenses during the reporting periods. Management uses historical experience and all available information to make these estimates. Management regularly evaluates the judgments and assumptions used in its estimates, and results could differ from those estimates upon future events and their effects or new information.

Principles of Consolidation. The Consolidated Financial Statements of the Company include the accounts of Alcoa Corporation and companies in which Alcoa Corporation has a controlling interest, including those that comprise the Alcoa World Alumina & Chemicals (AWAC) joint venture (see below). Intercompany transactions have been eliminated. The equity method of accounting is used for investments in affiliates and other joint ventures over which the Company has significant influence but does not have effective control. Investments in affiliates in which Alcoa Corporation cannot exercise significant influence are accounted for using the cost method.

AWAC is an unincorporated global joint venture between Alcoa Corporation and Alumina Limited and consists of several affiliated operating entities, which own, have an interest in, or operate the bauxite mines and alumina refineries within the Company's Bauxite and Alumina segments (except for the Poços de Caldas mine and refinery, portions of the São Luís refinery and investment in Mineração Rio do Norte S.A., all in Brazil) and a portion (55%) of the Portland smelter (Australia) within the Company's Aluminum segment. Alcoa Corporation owns 60% and Alumina Limited owns 40% of these individual entities, which are consolidated by the Company for financial reporting purposes and include Alcoa of Australia Limited (AofA), Alcoa World Alumina LLC (AWA), Alcoa World Alumina Brasil Ltda. (AWAB), and Alúmina Española, S.A. (Española). Alumina Limited's interest in the equity of such entities is reflected as Non-controlling interest on the accompanying Consolidated Balance Sheet.

Management evaluates whether an Alcoa Corporation entity or interest is a variable interest entity and whether the Company is the primary beneficiary. Consolidation is required if both of these criteria are met. Alcoa Corporation does not have any variable interest entities requiring consolidation.

Related Party Transactions. Alcoa Corporation buys products from and sells products to various related companies, consisting of entities in which the Company retains a 50% or less equity interest, at negotiated prices between the two parties. These transactions were not material to the financial position or results of operations of Alcoa Corporation for all periods presented.

B. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Cash Equivalents. Cash equivalents are highly liquid investments purchased with an original maturity of three months or less.

Restricted Cash. Restricted cash is included with Cash and cash equivalents when reconciling the Cash and cash equivalents and restricted cash at beginning of year and Cash and cash equivalents and restricted cash at end of year on the accompanying Statement of Consolidated Cash Flows (see Note U for a reconciliation Cash and cash equivalents and restricted cash).

Inventory Valuation. Inventories are carried at the lower of cost or net realizable value, with the cost of inventories principally determined under the average cost method.

Properties, Plants, and Equipment. Properties, plants, and equipment are recorded at cost. Interest related to the construction of qualifying assets is capitalized as part of the construction costs. Depreciation is recorded principally on the straight-line method over the estimated useful lives of the assets. Depreciation is recorded on temporarily idled facilities until such time management approves a permanent closure. The following table details the weighted average useful lives of structures and machinery and equipment by type of operation (numbers in years):

	Structures	Machinery and equipment
Bauxite mining	33	17
Alumina refining	28	29
Aluminum smelting and casting	37	23
Energy generation	33	24

Repairs and maintenance are charged to expense as incurred while costs for significant improvements that add productive capacity or that extend the useful life are capitalized. Gains or losses from the sale of assets are generally recorded in Other (income) expenses, net.

Properties, plants, and equipment are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of such assets (asset group) may not be recoverable. Recoverability of assets is determined by comparing the estimated undiscounted net cash flows of the operations related to the assets (asset group) to their carrying amount. An impairment loss would be recognized when the carrying amount of the assets (asset group) exceeds the fair value. The amount of the impairment loss to be recorded is calculated as the excess of the carrying value of the assets (asset group) over their fair value, with fair value determined using the best information available, which generally is a discounted cash flow (DCF) model. The determination of what constitutes an asset group, the associated estimated undiscounted net cash flows, and the estimated useful lives of assets also require significant judgments.

Assets held for sale. Upon determining that a long-lived asset or disposal group meets the criteria to be classified as held for sale, the Company ceases depreciation and reports long-lived assets and/or the assets and liabilities of the disposal group, if material, in the line items Assets held for sale and Liabilities held for sale, respectively, in the Consolidated Balance Sheet. Current or non-current classification is determined based on the planned use of the proceeds and timing of transaction. The Company will measure a long-lived asset or disposal group that is classified as held for sale at the lower of its carrying value or fair value less any costs to sell. Any loss resulting from this measurement is recognized in the period in which the fair value less any costs to sell is less than the carrying value of a long-lived asset or disposal group. Conversely, gains are not recognized on the sale of a long-lived asset or disposal group until the date of sale (see Note C).

Leases. The Company determines whether an arrangement is a lease at the inception of the arrangement based on the terms and conditions in the contract. A contract contains a lease if there is an identified asset which the Company has the right to control. Both operating and financing lease right-of-use (ROU) assets are included in Properties, plants, and equipment with the corresponding operating lease liabilities included within Other current liabilities and Other non-current liabilities and deferred credits, while financing lease liabilities are included in Long-term debt due within one year and Long-term debt, less amount due within one year on the Consolidated Balance Sheet.

Operating lease ROU assets and liabilities are recognized at the commencement date based on the present value of lease payments over the lease term. The Company uses its incremental borrowing rate at the commencement date in determining the present value of lease payments unless a rate is implicit in the lease. Lease terms include options to extend the lease when it is reasonably certain that those options will be exercised. Leases with an initial term of 12 months or less, including anticipated renewals, are not recorded on the balance sheet.

The Company made a policy election not to record any non-lease components of a lease agreement in the lease liability. Variable lease payments are not presented as part of the ROU asset or liability recorded at the inception of a contract. Lease expense for operating lease payments is recognized on a straight-line basis over the lease term. For finance leases, interest expense is recognized on the lease liability and the ROU asset is amortized over the lease term.

Equity Investments. Alcoa invests in a number of privately-held companies, primarily through joint ventures and consortia, which are accounted for using the equity method. The equity method is applied in situations where the Company has the ability to exercise significant influence, but not control, over the investee. Management reviews equity investments for impairment whenever certain indicators are present suggesting that the carrying value of an investment is not recoverable.

Deferred Mining Costs. Alcoa recognizes deferred mining costs during the development stage of a mine life cycle. Such costs include the construction of access and haul roads, detailed drilling and geological analysis to further define the grade and quality of the known bauxite, and overburden removal costs. These costs relate to sections of the related mines where the Company is currently extracting bauxite or preparing for production in the near term. These sections are outlined and planned incrementally and generally are mined over periods ranging from one to five years, depending on mine specifics. The amount of geological drilling and testing necessary to determine the economic viability of the bauxite deposit being mined is such that the reserves are considered to be proven, and the mining costs are amortized based on this level of reserves. Deferred mining costs are included in Other non-current assets on the accompanying Consolidated Balance Sheet.

Goodwill and Other Intangible Assets. Goodwill is not amortized but is reviewed for impairment annually (in the fourth quarter) or more frequently if indicators of impairment exist or if a decision is made to sell or exit a business.

Goodwill is allocated among and evaluated for impairment at the reporting unit level, which is defined as an operating segment or one level below an operating segment. The Company has four reporting units, of which two are included in the Aluminum segment (smelting/casting and energy generation). The remaining two reporting units are the Bauxite and Alumina segments. Of these four reporting units, only Bauxite and Alumina contain goodwill (see Note L).

Goodwill is tested for impairment by assessing qualitative factors to determine whether it is more likely than not (greater than 50%) that the fair value of the reporting unit is less than its carrying amount or performing a quantitative assessment using a discounted cash flow model. If the qualitative assessment indicates a possible impairment, then a quantitative impairment test is performed to determine the fair value of the reporting unit using a discounted cash flow method. Otherwise, no further analysis is required.

Under the quantitative assessment, the evaluation of impairment involves comparing the current fair value of each reporting unit to its carrying value, including goodwill. In the event the estimated fair value of a reporting unit is less than the carrying value, an impairment loss equal to the excess of the reporting unit's carrying value over its fair value not to exceed the total amount of goodwill applicable to that reporting unit would be recognized.

Alcoa's policy for its annual review of goodwill is to perform the quantitative impairment test for each of its two reporting units that contain goodwill at least once during every three-year period.

Intangible assets with finite useful lives are amortized generally on a straight-line basis over the periods benefited. The following table details the weighted average useful lives of software and other intangible assets by type of operation (numbers in years):

	Software	**Other intangible assets**
Bauxite mining	3	–
Alumina refining	6	3
Aluminum smelting and casting	3	40
Energy generation	3	29

Asset Retirement Obligations. Alcoa recognizes asset retirement obligations (AROs) related to legal obligations associated with the standard operation of bauxite mines, alumina refineries, and aluminum smelters. These AROs consist primarily of costs associated with mine reclamation, closure of bauxite residue areas, spent pot lining and regulated waste materials disposal, and landfill closure. Additionally, costs are recorded as AROs upon management's decision to permanently close and demolish certain structures and for any significant lease restoration obligations. The fair values of these AROs are recorded on a discounted basis at the time the obligation is incurred and accreted over time for the change in present value; related accretion is recorded as a component of Cost of goods sold. Additionally, the Company capitalizes asset retirement costs by increasing the carrying amount of the related long-lived assets and depreciating these assets over their remaining useful life. Certain conditional asset retirement obligations related to alumina refineries, aluminum smelters, and energy generation facilities have not been recorded in the Consolidated Financial Statements due to uncertainties surrounding the ultimate settlement date. The fair value of these asset retirement obligations will be recorded when a reasonable estimate of the ultimate settlement date can be made. Subsequent adjustments to estimates of previously established AROs for current operations are capitalized by increasing the carrying amount of the related long-lived assets and depreciating these assets over their remaining useful life. Adjustments to estimates of AROs for closed locations are charged to Restructuring and other charges, net on the accompanying Statement of Consolidated Operations.

Environmental Matters. Environmental related expenditures for current operations are expensed as a component of Cost of goods sold or capitalized, as appropriate. Expenditures relating to existing conditions caused by past operations, generally for closed locations which will not contribute to future revenues, are charged to Restructuring and other charges, net. Liabilities are recorded when remediation costs are probable and can be reasonably estimated. In instances where the Company has ongoing monitoring and maintenance responsibilities, it is Alcoa's policy to maintain a reserve equal to five years of expected costs. The liability is continuously reviewed and adjusted to reflect current remediation progress, rate and pricing changes, actual volumes of material requiring management, changes to the original assumptions regarding how the site was to be remediated, and other factors that may be relevant, including changes in technology or regulations. The estimates may also include costs related to other potentially responsible parties to the extent that Alcoa has reason to believe such parties will not fully pay their proportionate share.

Litigation Matters. For asserted claims and assessments, liabilities are recorded when an unfavorable outcome of a matter is deemed to be probable and the loss is reasonably estimable. With respect to unasserted claims or assessments, liabilities are recorded when the probability that an assertion will be made is likely, an unfavorable outcome of the matter is deemed to be probable, and the loss is reasonably estimable. Legal matters are reviewed on a continuous basis to determine if there has been a change in management's judgment regarding the likelihood of an unfavorable outcome or the estimate of a potential loss. Legal costs, which are primarily for general litigation, environmental compliance, tax disputes, and general corporate matters, are expensed as incurred.

Revenue Recognition. The Company recognizes revenue when it satisfies a performance obligation(s) in accordance with the provisions of a customer order or contract. This is achieved when control of the product has been transferred to the customer, which is generally determined when title, ownership, and risk of loss pass to the customer, all of which occurs upon shipment or delivery of the product. The shipping terms vary across all businesses and depend on the product, the country of origin, and the type of transportation. Accordingly, the sale of Alcoa's products to its customers represent single performance obligations for which revenue is recognized at a point in time. Revenue is based on the consideration the Company expects to receive in exchange for its products. Returns and other adjustments have not been material. Based on the foregoing, no significant judgment is required to determine when control of a product has been transferred to a customer.

The Company considers shipping and handling activities as costs to fulfill the promise to transfer the related products. As a result, customer payments of shipping and handling costs are recorded as a component of revenue. Taxes collected (e.g., sales, use, value-added, excise) from its customers related to the sale of its products are remitted to governmental authorities and excluded from revenue.

Cost of goods sold. The Company includes the following in Cost of goods sold: operating costs of our three segments, excluding depreciation, depletion, and amortization, but including all production related costs: raw materials consumed; purchases of metal for consumption or trade; conversion costs, such as labor, materials, and utilities; equity earnings of certain investments integral to the Company's supply chain; and plant administrative expenses. Also included in Cost of goods sold are: costs related to the Transformation function, which focuses on the management of expenses and obligations of previously closed operations; pension and other postretirement benefit service cost for employees maintaining closed locations; and other costs not included in the operating costs of the segments.

Selling, general administrative, and other expenses. The Company includes the costs of corporate-wide functional support in Selling, general administrative, and other expenses. Such costs include: executive; sales; marketing; strategy; operations administration; finance; information technology; legal; human resources; and government affairs and communications.

Stock-Based Compensation. Compensation expense for employee equity grants is recognized using the non-substantive vesting period approach, in which the expense is recognized ratably over the requisite service period based on the grant date fair value. The fair value of stock options is estimated on the date of grant using a lattice pricing model. The fair value of performance stock units containing a market condition is valued using a Monte Carlo valuation model. Determining the fair value at the grant date requires judgment, including estimates for the average risk-free interest rate, dividend yield, volatility, annual forfeiture rate, and exercise behavior. These assumptions may differ significantly between grant dates because of changes in the actual results of these inputs that occur over time.

Refer to Note N for more information regarding stock-based compensation.

Pension and Other Postretirement Benefits. Alcoa sponsors several defined benefit pension plans, and health care and life insurance postretirement benefit plans. The Company recognizes on a plan-by-plan basis the net funded status of these pension and postretirement benefit plans as either an asset or a liability on its Consolidated Balance Sheet. The net funded status represents the difference between the fair value of each plan's assets and the benefit obligation of the respective plan. The benefit obligation represents the present value of the estimated future benefits the Company currently expects to pay to plan participants based on past service. Unrecognized gains and losses related to the plans are deferred in Accumulated other comprehensive loss on the Consolidated Balance Sheet until amortized into net income.

The plan assets and benefit obligations are measured at the end of each year or more frequently, upon the occurrence of certain events such as a significant plan amendment, settlement, or curtailment. For interim plan remeasurements, it is the Company's policy to record the related accounting impacts within the same quarter as the triggering event.

The amounts Alcoa records are measured using actuarial methodologies and incorporate significant assumptions, as described in Part II Item 7 of this Form 10-K in Critical Accounting Policies and Estimates. A change in one or a combination of these assumptions, or the effects of actual results differing from assumptions, could have a material impact on Alcoa's projected benefit obligation. These changes or differences are recorded in Accumulated other comprehensive loss and are amortized into net income as a component of the net periodic benefit cost (income) over the average future working lifetime or average remaining life expectancy, as appropriate, of the plan's participants.

One-time accounting impacts, such as curtailment and settlement charges (gains), are recognized immediately and are reclassified from Accumulated other comprehensive loss to Restructuring and other charges, net on the accompanying Statement of Consolidated Operations.

Refer to Note O for more information regarding pension and other postretirement benefits including accounting impacts of current year actions.

Derivatives and Hedging. Derivatives are held for purposes other than trading and are part of a formally documented risk management program.

Alcoa accounts for hedges of firm customer commitments for aluminum as fair value hedges. The fair values of the derivatives and changes in the fair values of the underlying hedged items are reported as assets and liabilities in the Consolidated Balance Sheet. Changes in the fair values of these derivatives and underlying hedged items generally offset and are recorded each period in Sales, consistent with the underlying hedged item.

The Company accounts for hedges of foreign currency exposures and certain forecasted transactions as cash flow hedges. The fair values of the derivatives are recorded as assets and liabilities in the Consolidated Balance Sheet. The changes in the fair values of these derivatives are recorded in Other comprehensive income (loss) and are reclassified to Sales, Cost of goods sold, or Other (income) expenses, net in the period in which earnings are impacted by the hedged items or in the period that the transaction no longer qualifies as a cash flow hedge. These contracts cover the same periods as known or expected exposures, generally not exceeding five years.

If no hedging relationship is designated, the derivative is marked to market through Other (income) expenses, net.

Cash flows from derivatives are recognized in the Statement of Consolidated Cash Flows in a manner consistent with the underlying transactions.

Income Taxes. The provision for income taxes is determined using the asset and liability approach of accounting for income taxes. Under this approach, the provision for income taxes represents income taxes paid or payable (or received or receivable) for the current year plus the change in deferred taxes during the year. Deferred taxes represent the future tax consequences expected to occur when the reported amounts of assets and liabilities are recovered or paid, result from differences between the financial and tax bases of Alcoa's assets and liabilities and are adjusted for changes in tax rates and tax laws when enacted.

Valuation allowances are recorded to reduce deferred tax assets when it is more likely than not (greater than 50%) that a tax benefit will not be realized. In evaluating the need for a valuation allowance, management applies judgement in assessing all available positive and negative evidence and considers all potential sources of taxable income. Deferred tax assets for which no valuation allowance is recorded may not be realized upon changes in facts and circumstances, resulting in a future charge to establish a valuation allowance. Existing valuation allowances are re-examined under the same standards of positive and negative evidence. If it is determined that it is more likely than not that a deferred tax asset will be realized, the appropriate amount of the valuation allowance, if any, is released. Deferred tax assets and liabilities are also re-measured to reflect changes in underlying tax rates due to law changes and the granting and lapse of tax holidays.

Tax benefits related to uncertain tax positions taken or expected to be taken on a tax return are recorded when such benefits meet a more likely than not threshold. Otherwise, these tax benefits are recorded when a tax position has been effectively settled, which means that the statute of limitation has expired or the appropriate taxing authority has completed their examination even though the statute of limitations remains open. Interest and penalties related to uncertain tax positions are recognized as part of the provision for income taxes and are accrued in the period that such interest and penalties would be applicable under relevant tax law until such time that the related tax benefits are recognized.

Foreign Currency. The local currency is the functional currency for Alcoa's significant operations outside the United States, except for certain operations in Canada and Iceland, and a holding and trading company in the Netherlands, where the U.S. dollar is used as the functional currency. The determination of the functional currency for Alcoa's operations is made based on the appropriate economic and management indicators. Where local currency is the functional currency, assets and liabilities are translated into U.S. dollars using year-end exchange rates and income and expenses are translated using the average exchange rates for the reporting period. Unrealized foreign currency translation gains and losses are deferred in Accumulated other comprehensive loss on the Consolidated Balance Sheet.

Recently Adopted Accounting Guidance. On January 1, 2021, the Company adopted ASU 2019-12, Income Taxes (Topic 740); the adoption did not have a material impact on the Company's Consolidated Financial Statements.

Recently Issued Accounting Guidance. In March 2020 and January 2021, the FASB issued ASU No. 2020-04 and ASU No. 2021-01, respectively. Together, the ASUs provide temporary optional expedients and exceptions to the U.S. GAAP guidance on contract modifications and hedge accounting to ease the financial reporting burdens related to the expected market transition from the London Interbank Offered Rate (LIBOR) and other interbank offered rates to alternative reference rates. The Company is working to transition from LIBOR to alternative reference rates. Management has identified a total company inventory of affected financial instruments and contracts, has taken action to transition certain legacy contracts linked to LIBOR to alternative reference rates, and intends to utilize alternative reference rates for new contracts after 2021. The transition from LIBOR will not have a material impact to Alcoa.

C. DIVESTITURES AND HELD FOR SALE

Divestitures.

Rockdale Site

During the fourth quarter of 2021, the Company completed the sale of land and industrial assets at the previously closed Rockdale smelter site in the state of Texas in a transaction valued at $240. Upon closing of the transaction, the Company received $230 in cash and recorded a net gain of $202 in Other (income) expenses, net (pre- and after-tax; see Note U) on the Statement of Consolidated Operations.

Eastalco Site

During the second quarter of 2021, the Company completed the sale of land at the previously closed Eastalco smelter site in the state of Maryland in a transaction valued at $100. Upon closing of the transaction, the Company received $94 in cash and recorded a gain of $90 in Other (income) expenses, net ($90 pre- and $89 after-tax; see Note U) on the Statement of Consolidated Operations.

Gum Springs Waste Treatment Business

During the first quarter of 2020, the Company sold Elemental Environmental Solutions LLC (EES), a wholly-owned Alcoa subsidiary that operated the waste processing facility in Gum Springs, Arkansas, to a global environmental firm in a transaction valued at $250. Related to this transaction, the Company received $200 in cash and recorded a gain of $181 (pre- and after-tax; see Note U). Further, an additional $50 is held in escrow to be paid to Alcoa if certain post-closing conditions are satisfied, which would result in additional gain being recorded.

Avilés and La Coruña Aluminum Facilities

In February 2019, the smelters at Avilés and La Coruña (Spain) were curtailed and in July 2019, Alcoa completed the divestiture of the Avilés and La Coruña aluminum facilities to PARTER Capital Group AG (PARTER) in a sale process endorsed by the Spanish government and supported by the workers' representatives. In 2020, PARTER sold its majority stake in the facilities to an unrelated party. The Company had no knowledge of the subsequent transaction prior to its announcement and has filed a lawsuit claiming that the sale was in breach of the sale agreement between Alcoa and PARTER.

Charges related to the divestiture, curtailment, and employee dismissal process totaled $253 for the year ended December 31, 2019.

Related to the curtailment and employee dismissal process, the Company recorded Restructuring and other charges, net for asset impairments ($80), severance and employee related costs ($20), and contract termination costs ($8); Cost of goods sold primarily for the write down of remaining inventories to their net realizable value ($16); and, Selling, general administrative, and other expenses for miscellaneous charges ($2).

Related to the divestiture, the Company recorded Restructuring and other charges, net, of $127, resulting from financial contributions of up to $95 to the divested entities per the agreement and a net charge of $32 to meet a working capital commitment and write-off the remaining net book value of the facilities' net assets. See Note D for additional detail.

Ma'aden Rolling Company

In December 2009, Alcoa invested in a joint venture related to the ownership and operation of an integrated aluminum complex (bauxite mine, alumina refinery, aluminum smelter, and rolling mill) in Saudi Arabia. The joint venture is owned 74.9% by the Saudi Arabian Mining Company (Ma'aden) and 25.1% by Alcoa, and originally consisted of three separate companies as follows: the Ma'aden Bauxite and Alumina Company (MBAC; the bauxite mine and alumina refinery), the Ma'aden Aluminium Company (MAC; the aluminum smelter and casthouse), and the Ma'aden Rolling Company (MRC; the rolling mill).

In June 2019, Alcoa and Ma'aden amended the joint venture agreement that governs the operations of each of the three companies that comprise the joint venture. The amendment, among other items, transferred Alcoa's 25.1% interest in MRC to Ma'aden and, as a result, Alcoa has no further direct or indirect equity interest in MRC. Prior to the amendment, both partners contributed $100 to MRC to meet current cash requirements. As a result of the divestiture, Alcoa recorded Restructuring and other charges, net of $319 for the write-off of the investment in MRC ($161), the cash contributions described above ($100), the write-off of the Company's share of MRC's delinquent payables due to MAC ($59) that were forgiven as part of this transaction, partially offset by a gain resulting from the write-off of the fair value of debt guarantee ($1). See Note D for additional detail.

Held for Sale.

Warrick Rolling Mill

In November 2020, Alcoa entered into an agreement to sell its rolling mill located at Warrick Operations (Warrick Rolling Mill), an integrated aluminum manufacturing site near Evansville, Indiana (Warrick Operations), to Kaiser Aluminum Corporation (Kaiser).

In March 2021, Alcoa completed the sale for total consideration of approximately $670, which included the assumption of $69 in other postretirement benefit liabilities. The Company recorded a net gain of $30 in Other (income) expenses, net (pre- and after-tax, see Note U) on the Statement of Consolidated Operations. Upon closure, the Company recorded estimated liabilities for future site separation commitments and remaining transaction costs associated with the sales agreement. At December 31, 2021, the remaining reserve was approximately $70, over half of the expected cash outlay is to be spent within the next 12 months, with the remainder to be spent through 2023.

In connection with the transaction, Alcoa and Kaiser entered into a market-based metal supply agreement and a ground lease agreement for the Warrick Rolling Mill property, which Alcoa continues to own. Approximately 1,150 employees at the Warrick Rolling Mill, which includes the casthouse, hot mill, cold mills, and coating and slitting lines, became employees of Kaiser as a result of the transaction. Alcoa continues to own and operate the site's 269,000 metric ton per year aluminum smelter and the power plant, which together employ approximately 670 people. The remaining Warrick Operations results are included within the Aluminum segment.

At December 31, 2020, the Company had assets and liabilities held for sale of $648 and $242, respectively, related to the transaction, which consisted of the following:

	December 31, 2020
Assets	
Receivables from customers	$ 86
Other receivables	6
Inventories	164
Total current assets	256
Properties, plants, and equipment	1,423
Accumulated depreciation	(1,031)
Properties, plants, and equipment, net	392
Total Assets held for sale	$ 648
Liabilities	
Accounts payable, trade	$ 121
Accrued compensation and retirement costs	5
Other current liabilities	25
Total current liabilities	151
Accrued other postretirement benefits	83
Other non-current liabilities	8
Total Liabilities held for sale	$ 242

D. RESTRUCTURING AND OTHER CHARGES, NET

Restructuring and other charges, net were comprised of the following:

	2021	2020	2019
Settlements and/or curtailments related to retirement benefits (O)	$ 977	$ 58	$ 119
Severance and employee termination costs	1	16	51
Asset impairments	75	2	225
Asset retirement obligations (R)	23	2	75
Environmental remediation (S)	15	1	69
Loss on divestitures	–	–	446
Other	82	36	52
Reversals of previously recorded layoff and other costs	(45)	(11)	(6)
Restructuring and other charges, net	$ 1,128	$ 104	$ 1,031

Severance and employee termination costs were recorded based on approved detailed action plans submitted by the operating locations that specified positions to be eliminated, benefits to be paid under existing severance plans, union contracts or statutory requirements, and the expected timetable for completion of the plans.

2021 Actions. In 2021 Alcoa Corporation recorded Restructuring and other charges, net, of $1,128 which were comprised of the following components:

- Non-cash settlement charges related to pension and certain other postretirement benefits (see Note O):
  - $858 related to the purchase of group annuity contracts to transfer approximately $1,500 of pension obligations and assets associated with defined benefit pension plans for approximately 14,000 United States retirees and beneficiaries, as well as lump sum settlements;
  - $63 related to the purchase of a group annuity contract to transfer approximately $55 of pension obligations and assets associated with a Suriname pension plan for approximately 800 retirees and beneficiaries;
  - $47 related to certain defined benefit pension benefits;
  - Net $9 related to the settlement and curtailment of certain other postretirement benefits resulting from the sale of the Warrick Rolling Mill;

- Charges related to portfolio actions taken as part of the Company's ongoing strategic review (see details below):
  - $80 related to the closure of the previously curtailed aluminum smelter facility in Wenatchee (Washington);
  - $62 related to the agreement reached with the workers at the San Ciprián (Spain) aluminum smelter to curtail smelting capacity;
  - $27 related to the closure of the previously curtailed anode facility in Lake Charles (Louisiana);
- Other charges:
  - $13 for additional take-or-pay contract costs related to the curtailed Wenatchee (Washington) and Intalco (Washington) smelters;
  - $11 to record additional environmental and asset retirement related reserves (see Note R and Note S);
  - $3 for several other insignificant items;
- Reversals:
  - $6 for a take-or-pay energy-related obligation at the Alumar smelter no longer required due to the announced restart;
  - $17 related to the divestiture of the Avilés and La Coruña entities (see below); and,
  - $22 due to lower costs for demolition and remediation related to previously established reserves (see Note R and Note S).

In December 2021, the Company announced the two-year curtailment of 228 kmt of smelting capacity at the San Ciprián (Spain) aluminum smelter. The temporary curtailment, which began at the end of January 2022, is the result of an agreement reached with the workers at the site to suspend production due to exorbitant energy prices in Spain. Under the terms of the agreement, the Company is responsible for certain employee and contractual obligations during the curtailment period. As a result, the Company recorded charges of $62 in the fourth quarter of 2021 in Restructuring and other charges, net on the Statement of Consolidated Operations. Additionally, in connection with the agreement, the Company committed to restart the smelter beginning in January of 2024 and has restricted cash of $103 to be made available in the future to cover $68 in capital improvements at the site and $35 in smelter restart costs. Restricted cash is included in Other non-current assets on the Consolidated Balance Sheet (see Note U). The San Ciprián smelter will continue to incur operating costs for the casthouse as well as resources to maintain and improve the smelter for restart.

During the fourth quarter of 2021, as part of the Company's ongoing strategic portfolio review, the Company announced the permanent closure of the Wenatchee (Washington) aluminum smelter. The smelter has been fully curtailed since 2015. Charges related to the closure totaled $90 in the fourth quarter of 2021 and included a charge of $10 for the write down of remaining inventories to net realizable value recorded in Cost of goods sold on the Statement of Consolidated Operations and a charge of $80 recorded in Restructuring and other charges, net on the Statement of Consolidated Operations. The restructuring charges were comprised of: $30 to write-off the remaining net book value of various assets; $23 of asset impairments; $21 to establish reserves related to environmental and demolition obligations; $5 related to take-or-pay contractual obligations; and $1 of severance and employee termination costs from the separation of approximately 10 employees. Cash outlays related to demolition and environmental related activities are expected to be spread over approximately 5 years.

During the third quarter of 2021, as part of the Company's ongoing strategic portfolio review, the Company announced the decision to permanently close the previously curtailed anode facility in Lake Charles (Louisiana). The anode facility within the Lake Charles site has been fully curtailed since 2015. The Company recorded charges of $27 in the third quarter of 2021, which were recorded in Restructuring and other charges, net on the Statement of Consolidated Operations, comprised of asset impairments of $22 and cash-based charges for closure and asset retirement obligations of $5. Cash outlays related to demolition and environmental related activities are expected within the next year. The Company's petroleum coke calciner located at the same site in Lake Charles will remain in operation, unaffected by the closure of the anode facility.

2020 Actions. In 2020, Alcoa Corporation recorded Restructuring and other charges, net, of $104 which were comprised of the following components: $59 related to settlements and curtailments of certain pension and other postretirement benefits (see Note O); $28 (net) for costs related to the curtailment of the Intalco (Washington) smelter; $20 for additional contract costs related to the curtailed Wenatchee (Washington) smelter; and several other insignificant items.

In April 2020, as part of the Company's portfolio review, Alcoa Corporation announced the curtailment of the remaining 230 kmt of uncompetitive smelting capacity at the Intalco (Washington) smelter amid declining market conditions. The full curtailment, which included 49 kmt of earlier-curtailed capacity, was completed during the third quarter of 2020. The $28 net restructuring charge recorded during 2020 was comprised of $13 for severance and employee termination costs from the separation of approximately 685 employees, $16 for contract termination costs, and a net curtailment gain of $1 related to the U.S. hourly defined benefit pension and retiree life plans (see Note O). At December 31, 2020, the separation of employees and related severance and employee termination cost payments associated with this program were essentially complete with approximately $11 of payments made against the severance and employee termination cost reserve. Payments related to the contract termination costs were $5 during 2020. Additional contract termination costs related to take-or-pay agreements may recur during the curtailment period.

2019 Actions. In 2019, Alcoa Corporation recorded Restructuring and other charges, net, of $1,031 which were comprised of the following components: $319 related to the divestiture of Alcoa Corporation's interest in the Ma'aden Rolling Company (see below); $274 for exits costs related to a decision to permanently close and demolish the Point Comfort alumina refinery (see below); $235 for costs related to the smelter curtailment and subsequent divestiture of the Avilés and La Coruña aluminum facilities in Spain (see below); $119 related to the settlement and/or curtailment of certain pension and other postretirement benefits; $37 for employee termination and severance costs related to the implementation of the new operating model (see below); $9 for closure costs related to a coal mine; and $38 for net charges related to various other items.

In December 2019, Alcoa Corporation announced the permanent closure of the Point Comfort (Texas) alumina refinery. Restructuring charges recorded in 2019 related to the closure included asset impairments of $129, asset retirement obligations of $72, environmental remediation costs of $69, and severance costs of $4 for the layoff of approximately 40 employees. Additionally, a charge of $2 for the write down of remaining inventories to their net realizable value was recorded in Cost of goods sold on the accompanying Statement of Consolidated Operations. Changes in the severance reserve during 2020 included a reduction from cash payments of $2 and a reversal of $1 resulting from changes in employee severance benefit elections. At December 31, 2020, the separations associated with this program were essentially complete.

In September 2019, Alcoa Corporation announced the implementation of a new operating model that resulted in a leaner, more integrated, operator-centric organization. Effective November 1, 2019, the new operating model eliminated the business unit structure, consolidated sales, procurement, and other commercial capabilities at an enterprise level, and streamlined the Executive Team. The new structure reduced overhead with the intention of promoting operational and commercial excellence and increasing connectivity between the Company's plants and leadership. As a result of the new operating model, Alcoa Corporation recorded a charge of $37 related to employee termination and severance costs for approximately 260 employees company-wide. A Severance and employee termination cost reserve of $27 remained at December 31, 2019. In addition to the employees separated under the program, the Company eliminated 60 positions as open roles or retirements were not replaced. At December 31, 2020, the separations associated with this program were essentially complete and related cash payments of $25 were made during 2020.

In January 2019, Alcoa Corporation reached an agreement with the workers' representatives at the Avilés and La Coruña (Spain) aluminum facilities as part of the collective dismissal process announced in October 2018 and curtailed the smelters at these two locations, with a combined remaining operating capacity of 124 kmt, in February 2019. In July 2019, Alcoa completed the divestiture of the Avilés and La Coruña aluminum facilities to PARTER (see Note C).

Restructuring and other charges, net, related to the curtailment and collective dismissal process of the Spanish facilities included asset impairments of $80, severance and employee-related costs of $20, and contract termination costs of $8. Additional charges included $16 recorded in Cost of goods sold, primarily for the write down of remaining inventories to their net realizable value, and $2 in miscellaneous charges recorded in Selling, general administrative, and other expenses on the accompanying Statement of Consolidated Operations.

Restructuring and other charges, net related to the divestiture of the Avilés and La Coruña entities totaled $127 for the year ended December 31, 2019, for financial contributions of up to $95 to the divested entities per the agreement, a net charge of $32 to meet a working capital commitment and write-off the remaining net book value of the entities' assets. For the year ended December 31, 2019, net cash outflows related to the transaction were $47. During 2020, financial contributions of $38 were made to the divested entities with a restructuring reserve of $30 remaining at December 31, 2020. During 2021, further financial contributions of $13 were made to the divested entities and the Company reversed the remaining reserve of $17, in accordance with the terms of the agreement, as the period for which the divested entities could incur qualifying capital expenditures had lapsed. Financial contributions made to the divested entities have been classified as Cash used for financing activities on the Company's Statement of Consolidated Cash Flows.

In December 2009, Alcoa Corporation invested in a joint venture related to the ownership and operation of an integrated aluminum complex (bauxite mine, alumina refinery, aluminum smelter, and rolling mill) in Saudi Arabia. The joint venture is owned 74.9% by Ma'aden and 25.1% by Alcoa Corporation, and originally consisted of three separate companies as follows: MBAC, MAC, and MRC. Alcoa Corporation accounts for its investment in the joint venture under the equity method as one integrated investment asset, consistent with the terms of the joint venture agreement.

In June 2019, Alcoa Corporation and Ma'aden amended the joint venture agreement that governs the operations of each of the three companies that comprise the joint venture. Under the terms of the amended agreement:

- Alcoa Corporation made a contribution to MRC in the amount of $100, along with Ma'aden's earlier capital contribution of $100, to meet current MRC cash requirements, including paying certain amounts owed by MRC to MAC and Alcoa Corporation;

- Alcoa Corporation and Ma'aden consented to the write-off of $235 of MRC's delinquent payables to MAC;

- Alcoa Corporation transferred its 25.1% interest in MRC to Ma'aden and, as a result, has no further direct or indirect equity interest in MRC;

- Alcoa Corporation is released from all future MRC obligations, including Alcoa Corporation's sponsor support of $296 of MRC debt (see Note S) and its share of any future MRC cash requirements; and,

- Alcoa Corporation and Ma'aden further defined MBAC and MAC shareholder rights, including the timing and determination of the amount of dividend payments of excess cash to the joint venture partners following required distributions to the commercial lenders of MBAC and MAC; among other matters.

The amendment also defines October 1, 2021 as the date after which Alcoa Corporation is permitted to sell all of its shares in both MBAC and MAC collectively, for which Ma'aden has a right of first refusal. The agreement further outlines that Alcoa Corporation's call option and Ma'aden's put option, relating to additional interests in the joint venture, are exercisable for a period of six-months after October 1, 2021. To date, neither partner has exercised their respective put or call options.

The parties maintain their commercial relationship and as part of the agreement, Alcoa Corporation provided sales, logistics, and customer technical services support for MRC products for the North American can sheet market through December 2020. The Company will retain its 25.1% minority interest in MBAC and MAC, and Ma'aden will continue to own a 74.9% interest.

The $319 restructuring charge resulting from the MRC divestiture included the write-off of Alcoa Corporation's investment in MRC of $161, the cash contributions described above of $100, and the write-off of Alcoa Corporation's share of MRC's delinquent payables due to MAC of $59 that were forgiven as part of this transaction, which were partially offset by a gain of $1 from the write-off of the fair value of debt guarantee.

Alcoa Corporation does not include Restructuring and other charges, net in the results of its reportable segments. The impact of allocating such charges to segment results would have been as follows:

	2021	2020	2019
Bauxite	$ –	$ 1	$ 5
Alumina	1	5	272
Aluminum	184	53	611
Segment total	185	59	888
Corporate	943	45	143
Total Restructuring and other charges, net	$ 1,128	$ 104	$ 1,031

Activity and reserve balances for restructuring charges were as follows:

	Severance and employee termination costs	Other costs	Total
Balances at December 31, 2018	$ 5	$ 42	$ 47
Restructuring charges, net	51	161	212
Cash payments	(19)	(99)	(118)
Reversals and other	(2)	(2)	(4)
Balances at December 31, 2019	35	102	137
Restructuring charges, net	16	36	52
Cash payments	(41)	(79)	(120)
Reversals and other	(4)	(2)	(6)
Balances at December 31, 2020	6	57	63
Restructuring charges, net	1	80	81
Cash payments	(4)	(25)	(29)
Reversals and other	–	(22)	(22)
Balances at December 31, 2021	$ 3	$ 90	$ 93

The activity and reserve balances include only Restructuring and other charges, net that impact the reserves for Severance and employee termination costs and Other costs. Restructuring and other charges, net that affected other liability accounts such as environmental obligations (see Note S), asset retirement obligations (see Note R), and pension and other postretirement reserves (see Note O) are excluded from the above activity and balances. Reversals and other include reversals of previously recorded liabilities and foreign currency translation impacts.

The current portion of the reserve balance is reflected in Other current liabilities on the Consolidated Balance Sheet and the non-current portion of the reserve balance is reflect in Other non-current liabilities and deferred credits on the Consolidated Balance Sheet. The non-current portion of the reserve was $43 and $1 at December 31, 2021 and 2020, respectively.

E. SEGMENT AND RELATED INFORMATION

Segment Information

Alcoa Corporation is a producer of bauxite, alumina, and aluminum products. The Company has three operating and reportable segments, which are organized by product on a global basis: Bauxite, Alumina, and Aluminum. Segment performance under Alcoa Corporation's management reporting system is evaluated based on a number of factors; however, the primary measure of performance is the Adjusted EBITDA (Earnings before interest, taxes, depreciation, and amortization) of each segment. The Company calculates Segment Adjusted EBITDA as Total sales (third-party and intersegment) minus the following items: Cost of goods sold; Selling, general administrative, and other expenses; and Research and development expenses. Alcoa Corporation believes that the presentation of Adjusted EBITDA is useful to investors because such measure provides both additional information about the operating performance of Alcoa Corporation and insight on the ability of Alcoa Corporation to meet its financial obligations. The presentation of Adjusted EBITDA is not intended to be a substitute for, and should not be considered in isolation from, the financial measures reported in accordance with GAAP. Alcoa Corporation's Adjusted EBITDA may not be comparable to similarly titled measures of other companies. The chief operating decision maker function regularly reviews the financial information, including Sales and Adjusted EBITDA, of these three operating segments to assess performance and allocate resources.

Segment assets include, among others, customer receivables (third-party and intersegment), inventories, properties, plants, and equipment, and equity investments. The accounting policies of the segments are the same as those described in the Summary of Significant Accounting Policies (see Note B). Transactions among segments are established based on negotiation among the parties. Differences between segment totals and Alcoa Corporation's consolidated totals for line items not reconciled are in Corporate.

The following are detailed descriptions of Alcoa Corporation's reportable segments:

Bauxite. This segment represents the Company's global bauxite mining operations. A portion of this segment's production represents the offtake from equity method investments in Brazil and Guinea, as well as AWAC's share of bauxite production related to an equity investment in Saudi Arabia. The bauxite mined by this segment is sold primarily to internal customers within the Alumina segment; a portion of the bauxite is sold to external customers. Bauxite mined by this segment and used internally is transferred to the Alumina segment at negotiated terms that are intended to approximate market prices; sales to third-parties are conducted on a contract basis. Generally, this segment's sales are transacted in U.S. dollars while costs and expenses are transacted in the local currency of the respective operations, which are the Australian dollar and the Brazilian real. Most of the operations that comprise the Bauxite segment are part of AWAC (see Principles of Consolidation in Note A).

Alumina. This segment represents the Company's worldwide refining system, which processes bauxite into alumina. The alumina produced by this segment is sold primarily to internal and external aluminum smelter customers; a portion of the alumina is sold to external customers who process it into industrial chemical products. Approximately two-thirds of Alumina's production is sold under supply contracts to third parties worldwide, while the remainder is used internally by the Aluminum segment. Alumina produced by this segment and used internally is transferred to the Aluminum segment at prevailing market prices. A portion of this segment's third-party sales are completed through the use of alumina traders. Generally, this segment's sales are transacted in U.S. dollars while costs and expenses are transacted in the local currency of the respective operations, which are the Australian dollar, the Brazilian real, and the euro. Most of the operations that comprise the Alumina segment are part of AWAC (see Principles of Consolidation in Note A). This segment also includes AWAC's 25.1% ownership interest in a mining and refining joint venture company in Saudi Arabia (see Note H).

Aluminum. This segment consists of the Company's (i) worldwide smelting and casthouse system, which processes alumina into primary aluminum, and (ii) portfolio of energy assets in Brazil, Canada, and the United States.

Aluminum's combined smelting and casting operations produce primary aluminum products, nearly all of which are sold to external customers and traders. The smelting operations produce molten primary aluminum, which is then formed by the casting operations into either common alloy ingot (e.g., t-bar, sow, standard ingot) or into value-add ingot products (e.g., foundry, billet, rod, and slab). A variety of external customers purchase the primary aluminum products for use in fabrication operations, which produce products primarily for the transportation, building and construction, packaging, wire, and other industrial markets. Results from the sale of aluminum powder and scrap are also included in this segment, as well as the impacts of embedded aluminum derivatives (see Note P) related to energy supply contracts.

The energy assets supply power to external customers in Brazil and the United States, as well as internal customers in the Aluminum segment (Canadian smelters and Warrick (Indiana) smelter) and, to a lesser extent, the Alumina segment (Brazilian refineries).

On March 31, 2021, Alcoa completed the sale of its rolling mill located at Warrick Operations (Warrick Rolling Mill) an integrated aluminum manufacturing site near Evansville, Indiana (Warrick Operations), to Kaiser Aluminum Corporation (Kaiser) (see Note C). Results from the Warrick Rolling Mill are included in this segment through the first quarter of 2021. Alcoa continues to own and operate the site's 269,000 metric ton per year aluminum smelter and the power plant, which together employ approximately 670 people. Results from the remaining Warrick Operations site continue to be included within this segment.

Generally, this segment's aluminum sales are transacted in U.S. dollars while costs and expenses of this segment are transacted in the local currency of the respective operations, which are the U.S. dollar, the euro, the Norwegian krone, the Icelandic króna, the Canadian dollar, the Brazilian real, and the Australian dollar.

This segment also includes Alcoa Corporation's 25.1% ownership interest in both a smelting (through full year 2021) and rolling mill (through the second quarter of 2019) joint venture company in Saudi Arabia (see Note H).

The operating results, capital expenditures, and assets of Alcoa Corporation's reportable segments were as follows:

	Bauxite	Alumina	Aluminum	Total
2021				
Sales:				
Third-party sales	$ 236	$ 3,139	$ 8,766	$ 12,141
Intersegment sales	711	1,586	18	2,315
Total sales	$ 947	$ 4,725	$ 8,784	$ 14,456
Segment Adjusted EBITDA	$ 172	$ 1,002	$ 1,879	$ 3,053
Supplemental information:				
Depreciation, depletion, and amortization	$ 153	$ 198	$ 289	$ 640
Equity income	–	4	116	120
2020				
Sales:				
Third-party sales	$ 272	$ 2,627	$ 6,365	$ 9,264
Intersegment sales	941	1,268	12	2,221
Total sales	$ 1,213	$ 3,895	$ 6,377	$ 11,485
Segment Adjusted EBITDA	$ 495	$ 497	$ 325	$ 1,317
Supplemental information:				
Depreciation, depletion, and amortization	$ 135	$ 172	$ 322	$ 629
Equity loss	–	(23)	(7)	(30)
2019				
Sales:				
Third-party sales	$ 297	$ 3,250	$ 6,803	$ 10,350
Intersegment sales	979	1,561	17	2,557
Total sales	$ 1,276	$ 4,811	$ 6,820	$ 12,907
Segment Adjusted EBITDA	$ 504	$ 1,097	$ 25	$ 1,626
Supplemental information:				
Depreciation, depletion, and amortization	$ 120	$ 214	$ 346	$ 680
Equity income (loss)	–	6	(49)	(43)

	Bauxite	Alumina	Aluminum	Total
2021				
Assets:				
Capital expenditures	$ 95	$ 178	$ 107	$ 380
Equity investments	234	270	678	1,182
Total assets	1,430	4,385	6,251	12,066
2020				
Assets:				
Capital expenditures	$ 127	$ 103	$ 111	$ 341
Equity investments	222	264	546	1,032
Total assets	1,468	4,333	6,214	12,015

The following tables reconcile certain segment information to consolidated totals:

	2021	2020	2019
Sales:			
Total segment sales	$ 14,456	$ 11,485	$ 12,907
Elimination of intersegment sales	(2,315)	(2,221)	(2,557)
Other	11	22	83
Consolidated sales	$ 12,152	$ 9,286	$ 10,433

	2021	2020	2019
Net income (loss) attributable to Alcoa Corporation:			
Total Segment Adjusted EBITDA	$ 3,053	$ 1,317	$ 1,626
Unallocated amounts:			
Transformation[(1)]	(44)	(45)	(7)
Intersegment eliminations	(101)	(8)	150
Corporate expenses[(2)]	(129)	(102)	(101)
Provision for depreciation, depletion, and amortization	(664)	(653)	(713)
Restructuring and other charges, net (D)	(1,128)	(104)	(1,031)
Interest expense (U)	(195)	(146)	(121)
Other income (expenses), net (U)	445	(8)	(162)
Other[(3)]	(38)	(78)	(79)
Consolidated income (loss) before income taxes	1,199	173	(438)
Provision for income taxes (Q)	(629)	(187)	(415)
Net income attributable to non-controlling interest	(141)	(156)	(272)
Consolidated net income (loss) attributable to Alcoa Corporation	$ 429	$ (170)	$ (1,125)

(1) Transformation includes, among other items, the Adjusted EBITDA of previously closed operations.

(2) Corporate expenses are composed of general administrative and other expenses of operating the corporate headquarters and other global administrative facilities, as well as research and development expenses of the corporate technical center.

(3) Other includes certain items that impact Cost of goods sold and other expenses on Alcoa Corporation's Statement of Consolidated Operations that are not included in the Adjusted EBITDA of the reportable segments.

December 31,	**2021**	**2020**
Assets:		
Total segment assets	$ 12,066	$ 12,015
Elimination of intersegment receivables	(261)	(193)
Unallocated amounts:		
Cash and cash equivalents	1,814	1,607
Corporate fixed assets, net	374	453
Corporate goodwill	140	141
Deferred income taxes	506	655
Pension assets	164	–
Other	222	182
Consolidated assets	$ 15,025	$ 14,860

Product Information

Alcoa Corporation has four product divisions and one divested product division as follows:

Bauxite – Bauxite is a reddish clay rock that is mined from the surface of the earth's terrain. This ore is the basic raw material used to produce alumina and is the primary source of aluminum.

Alumina – Alumina is an oxide that is extracted from bauxite and is the basic raw material used to produce primary aluminum. This product can also be consumed for non-metallurgical purposes, such as industrial chemical products.

Primary aluminum – Primary aluminum is metal in the form of a common alloy ingot or a value-add ingot (e.g., foundry, billet, rod, and slab). These products are sold primarily to customers, that produce products for the transportation, building and construction, packaging, wire, and other industrial markets, and traders.

Energy – Energy is the generation of electricity, which is sold in the wholesale market to traders, large industrial consumers, distribution companies, and other generation companies.

Flat-rolled aluminum – Flat-rolled aluminum is metal in the form of sheet, which is sold primarily to customers that produce beverage and food cans, including body, tab, and end stock. As noted above, the Company sold the Warrick Rolling Mill in the first quarter of 2021 which represented the Company's only Flat-rolled aluminum asset. The results of the Warrick Rolling Mill are included in this product division through the first quarter of 2021.

The following table represents the general commercial profile of the Company's Bauxite, Alumina, and Primary aluminum product divisions (see text below table for Energy):

Product division	Pricing components	Shipping terms[3]	Payment terms[4]
Bauxite	Negotiated	FOB/CIF	LC Sight
Alumina:			
Smelter-grade	API[1]/spot/fixed	FOB/CIF	LC Sight/CAD/Net 30 days
Non-metallurgical	Negotiated	FOB/CIF	Net 30 days
Primary aluminum:			
Common alloy ingot	LME + Regional premium[2]	DAP/CIF	Net 30 to 45 days/CAD
Value-add ingot	LME + Regional premium + Product premium[2]	DAP/CIF	Net 30 to 45 days

(1) API (Alumina Price Index) is a pricing mechanism that is calculated by the Company based on the weighted average of a prior month's daily spot prices published by the following three indices: CRU Metallurgical Grade Alumina Price, Platts Metals Daily Alumina PAX Price, and FastMarkets Metal Bulletin Non-Ferrous Metals Alumina Index.

(2) LME (London Metal Exchange) is a globally recognized exchange for commodity trading, including aluminum. The LME pricing component represents the underlying base metal component, based on quoted prices for aluminum on the exchange. The regional premium represents the incremental price over the base LME component that is associated with the physical delivery of metal to a particular region (e.g., the Midwest premium for metal sold in the United States). The product premium represents the incremental price for receiving physical metal in a particular shape or alloy.

(3) CIF (cost, insurance, and freight) means that the Company pays for these items until the product reaches the buyer's designated destination point related to transportation by vessel. DAP (delivered at place) means the same as CIF related to all methods of transportation. FOB (free on board) means that the Company pays for costs, insurance, and freight until the product reaches the seller's designated shipping point.

(4) The net number of days means that the customer is required to remit payment to the Company for the invoice amount within the designated number of days. LC Sight is a letter of credit that is payable immediately (usually within five to ten business days) after a seller meets the requirements of the letter of credit (i.e. shipping documents that evidence the seller performed its obligations as agreed to with a buyer). CAD (cash against documents) is a payment arrangement in which a seller instructs a bank to provide shipping and title documents to the buyer at the time the buyer pays in full the accompanying bill of exchange.

For the Company's Energy product division, sales of electricity are based on current market prices. Electricity is provided to customers on demand through a national or regional power grid; the customer simultaneously receives and consumes the electricity. Payment terms are generally within 10 days related to the previous 30 days of electricity consumption.

The following table details Alcoa Corporation's Third-party sales by product division:

	2021	2020	2019
Sales:			
Primary aluminum	$ 8,420	$ 5,190	$ 5,426
Alumina	3,125	2,624	3,246
Flat-rolled aluminum(1)	320	1,115	1,220
Energy	286	141	290
Bauxite	207	238	276
Other(2)	(206)	(22)	(25)
	$ 12,152	$ 9,286	$ 10,433

(1) Flat-rolled aluminum represented sales of the Warrick Rolling Mill through the sale of the facility on March 31, 2021 (see Note C).

(2) Other includes realized gains and losses related to embedded derivative instruments designated as cash flow hedges of forward sales of aluminum (see Note P).

Geographic Area Information

Geographic information for Third-party sales was as follows (based upon the country where the point of sale originated):

	2021	2020	2019
Sales:			
United States[1]	$ 5,290	$ 4,246	$ 4,606
Netherlands[2]	2,644	–	–
Australia	2,092	1,884	2,249
Spain[3]	1,465	2,766	3,077
Brazil	610	346	428
Canada	11	31	5
Other	40	13	68
	$ 12,152	$ 9,286	$ 10,433

(1) Sales of a portion of the alumina from refineries in Australia and Brazil and most of the aluminum from smelters in Canada occurred in the United States. Additionally, sales of aluminum off-take related to an interest in the Saudi Arabia joint venture (see Note H) occurred in the United States beginning at the end of the third quarter of 2021.

(2) Sales of the aluminum produced from smelters in Iceland and Norway occurred in the Netherlands beginning at the end of the first quarter of 2021.

(3) Sales of the aluminum produced from smelters in Iceland and Norway occurred in Spain through most of the first quarter of 2021 and in the Netherlands thereafter. Sales of aluminum off-take related to an interest in the Saudi Arabia joint venture (see Note H), occurred in Spain through most of the third quarter of 2021 and in the United States thereafter.

Geographic information for long-lived assets was as follows (based upon the physical location of the assets):

December 31,	2021	2020
Long-lived assets:		
Australia	$ 2,091	$ 2,282
Brazil	1,118	1,215
Iceland	1,048	1,102
Canada	958	1,002
United States	874	1,009
Norway	338	357
Spain	193	218
Other	3	5
	$ 6,623	$ 7,190

F. EARNINGS PER SHARE

Basic earnings per share (EPS) amounts are computed by dividing Net income (loss) attributable to Alcoa Corporation by the average number of common shares outstanding. Diluted EPS amounts assume the issuance of common stock for all potentially dilutive share equivalents outstanding.

The share information used to compute basic and diluted EPS attributable to Alcoa Corporation common shareholders was as follows (shares in millions):

	2021	2020	2019
Average shares outstanding – basic	186	186	185
Effect of dilutive securities:			
Stock options	–	–	–
Stock units	4	–	–
Average shares outstanding – diluted	190	186	185

Options to purchase less than two hundred thousand shares of common stock outstanding as of December 31, 2021 at a weighted average exercise price of $38.67 per share were not included in the computation of diluted EPS because the exercise prices of these options were greater than the annual average market price of Alcoa Corporation's common stock.

In 2020, basic average shares outstanding and diluted average shares outstanding were the same because the effect of potential shares of common stock was anti-dilutive. Had Alcoa generated net income in 2020, one million common share equivalents related to five million outstanding stock units and stock options combined would have been included in diluted average shares outstanding for the respective period. Options to purchase two million shares of common stock outstanding at December 31, 2020 had a weighted average exercise price of $26.85 per share which was greater than the annual average market price per share of Alcoa Corporation's common stock.

In 2019, basic average shares outstanding and diluted average shares outstanding were the same because the effect of potential shares of common stock was anti-dilutive. Had Alcoa generated net income in 2019, one million common share equivalents related to four million outstanding stock units and stock options combined would have been included in diluted average shares outstanding for the respective period. Options to purchase two million shares of common stock outstanding at December 31, 2019 had a weighted average exercise price of $32.66 per share which was greater than the annual average market price per share of Alcoa Corporation's common stock.

G. ACCUMULATED OTHER COMPREHENSIVE LOSS

The following table details the activity of the three components that comprise Accumulated other comprehensive loss for both Alcoa Corporation's shareholders and non-controlling interest:

	Alcoa Corporation			Non-controlling interest		
	2021	2020	2019	2021	2020	2019
Pension and other postretirement benefits (O)						
Balance at beginning of period	$ (2,536)	$ (2,282)	$ (2,283)	$ (67)	$ (56)	$ (46)
Other comprehensive income (loss):						
Unrecognized net actuarial gain (loss) and prior service cost/benefit	550	(545)	(309)	30	(19)	(14)
Tax (expense) benefit	(37)	31	28	(6)	3	–
Total Other comprehensive income (loss) before reclassifications, net of tax	513	(514)	(281)	24	(16)	(14)
Amortization of net actuarial loss and prior service cost/benefit[1]	1,144	269	299	30	6	5
Tax expense[2]	(3)	(9)	(17)	–	(1)	(1)
Total amount reclassified from Accumulated other comprehensive loss, net of tax[6]	1,141	260	282	30	5	4
Total Other comprehensive income (loss)	1,654	(254)	1	54	(11)	(10)
Balance at end of period	$ (882)	$ (2,536)	$ (2,282)	$ (13)	$ (67)	$ (56)
Foreign currency translation						
Balance at beginning of period	$ (2,385)	$ (2,160)	$ (2,071)	$ (844)	$ (834)	$ (810)
Other comprehensive loss	(229)	(225)	(89)	(93)	(10)	(24)
Balance at end of period	$ (2,614)	$ (2,385)	$ (2,160)	$ (937)	$ (844)	$ (834)
Cash flow hedges (P)						
Balance at beginning of period	$ (708)	$ (532)	$ (211)	$ (1)	$ 20	$ 31
Other comprehensive loss:						
Net change from periodic revaluations	(782)	(345)	(437)	(2)	(36)	20
Tax benefit (expense)	140	74	83	1	10	(6)
Total Other comprehensive (loss) income before reclassifications, net of tax	(642)	(271)	(354)	(1)	(26)	14

	Alcoa Corporation			Non-controlling interest		
	2021	2020	2019	2021	2020	2019
Net amount reclassified to earnings:						
Aluminum contracts[3]	288	66	44	–	–	–
Financial contracts[4]	2	15	(43)	1	6	(35)
Foreign exchange contracts[3]	(3)	20	18	–	–	–
Interest rate contracts[5]	8	5	4	1	–	–
Sub-total	295	106	23	2	6	(35)
Tax (expense) benefit[2]	(41)	(11)	10	(1)	(1)	10
Total amount reclassified from Accumulated other comprehensive loss, net of tax[6]	254	95	33	1	5	(25)
Total Other comprehensive loss	(388)	(176)	(321)	–	(21)	(11)
Balance at end of period	$ (1,096)	$ (708)	$ (532)	$ (1)	$ (1)	$ 20
Total Accumulated other comprehensive loss	$ (4,592)	$ (5,629)	$ (4,974)	$ (951)	$ (912)	$ (870)

(1) These amounts were included in the computation of net periodic benefit cost for pension and other postretirement benefits. The amounts related to settlements and/or curtailments of certain pension and other postretirement benefits for Alcoa Corporation include $952, $55, and $116 for the years ended December 31, 2021, 2020, and 2019, respectively. The amounts related to settlements and/or curtailments of certain pension and other postretirement benefits for Non-controlling interest include $25, $3, and $3 for the years ended December 31, 2021, 2020, and 2019, respectively (see Note O).

(2) These amounts were reported in Provision for income taxes on the accompanying Statement of Consolidated Operations.

(3) These amounts were reported in Sales on the accompanying Statement of Consolidated Operations.

(4) These amounts were reported in Cost of goods sold on the accompanying Statement of Consolidated Operations.

(5) These amounts were included in Other (income) expenses, net on the accompanying Statement of Consolidated Operations.

(6) A positive amount indicates a corresponding charge to earnings and a negative amount indicates a corresponding benefit to earnings.

H. INVESTMENTS

December 31,	2021	2020
Equity investments	$ 1,189	$ 1,041
Other investments	10	10
	$ 1,199	$ 1,051

Equity Investments. The following table summarizes information of Alcoa Corporation's equity investments as of December 31, 2021 and 2020. In 2021, 2020, and 2019, Alcoa Corporation received $50, $44, and $39, respectively, in dividends from these equity investments. Each of the investees either owns the facility listed or has an ownership interest in an entity that owns the facility listed:

Investee	Country	Nature of investment	Income Statement Location of Equity Earnings	Ownership interest
Ma'aden Aluminum Company	Saudi Arabia	Aluminum smelter and casthouse	Other (income) expenses, net	25.1%
Ma'aden Bauxite and Alumina Company	Saudi Arabia	Bauxite mine and alumina refinery	Other (income) expenses, net	25.1%
Halco Mining, Inc.	Guinea	Bauxite mine	Cost of goods sold	45%
Energética Barra Grande S.A.	Brazil	Hydroelectric generation facility	Cost of goods sold	42.18%
Pechiney Reynolds Quebec, Inc.	Canada	Aluminum smelter	Cost of goods sold	50%
Consorcio Serra do Facão	Brazil	Hydroelectric generation facility	Cost of goods sold	34.97%
Mineração Rio do Norte S.A.	Brazil	Bauxite mine	Cost of goods sold	18.2%
Manicouagan Power Limited Partnership	Canada	Hydroelectric generation facility	Cost of goods sold	40%
ELYSIS™ Limited Partnership	Canada	Aluminum smelting technology	Other (income) expenses, net	48.235%

Saudi Arabia Joint Venture – Alcoa Corporation and Ma'aden have a 30-year (from December 2009) joint venture shareholders agreement (automatic extension for an additional 20 years, unless the parties agree otherwise or unless earlier terminated) setting forth the terms for the development, construction, ownership, and operation of an integrated aluminum complex in Saudi Arabia. The project developed by the joint venture consists of a bauxite mine from the Al Ba'itha bauxite deposit in the northern part of Saudi Arabia, an alumina refinery, a primary aluminum smelter, and an aluminum rolling mill.

The joint venture is owned 74.9% by Ma'aden and 25.1% by Alcoa Corporation and originally consisted of three separate companies as follows: the bauxite mine and alumina refinery (MBAC), the smelter (MAC), and the rolling mill (MRC). In June 2019, Alcoa Corporation and Ma'aden amended the joint venture agreement that governs the operations of each of the three companies that comprise the joint venture. Under the terms of the agreement, Alcoa Corporation transferred its 25.1% interest in MRC to Ma'aden and, as a result, has no further direct or indirect equity interest in MRC. Refer to Note D for additional information related to the agreement amendment.

A number of Alcoa Corporation employees perform various types of services for the smelting and mining and refining companies as part of the operation of the fully integrated aluminum complex. At December 31, 2021 and 2020, the Company had an aggregate outstanding receivable of $2 and $5, respectively, from the smelting, rolling mill, and mining and refining companies for labor and other employee-related expenses.

As of December 31, 2021 and 2020, the carrying value of Alcoa's investment in this joint venture was $687 and $559, respectively.

ELYSIS™ Limited Partnership – In June 2018, Alcoa Corporation, Rio Tinto Alcan Inc. (Rio Tinto), and Investissement Québec, a company wholly-owned by the Government of Québec, Canada, launched a new joint venture, ELYSIS™ Limited Partnership (ELYSIS™). The purpose of this partnership is to advance larger scale development and commercialization of its patent-protected technology that produces oxygen and eliminates all direct greenhouse gas emissions from the traditional aluminum smelting process. Alcoa and Rio Tinto plc, as general partners, each own a 48.235% stake in ELYSIS™, and the Québec provincial government, as a limited partner, owns a 3.53% stake. The federal government of Canada and Apple Inc., as well as the Québec provincial government, are providing initial financing to the partnership.

The total planned combined investment (equity and debt) of the five participants in the joint venture was updated in the fourth quarter of 2021 to $289 (C$369). Alcoa and Rio Tinto plc will each invest $76 (C$97) in the joint venture, as well as contribute and license certain intellectual property and patents to ELYSIS™. Through December 31, 2021, the Company has contributed $23 (C$30) toward its investment commitment in ELYSIS™. In addition to cash contributions, Alcoa is contributing approximately $3 annually to cover overhead expenses incurred by Alcoa and charged to the joint venture. The Company's basis in the investment has been reduced to zero for its share of losses incurred to date. As a result, the Company has $55 in unrecognized losses as of December 31, 2021 that will be recognized upon additional contributions into the partnership.

The following table summarizes the profit and loss data for the respective periods ended December 31, as it relates to Alcoa Corporation's equity investments. Information shown for the Saudi Arabia Joint Venture for 2021 and 2020 includes the combined balances for MAC and MBAC. For 2019, the information shown for the Saudi Arabia Joint Venture includes the full period for both MAC and MBAC, and the data for MRC through the divestiture date. The investments are grouped based on the nature of the investment. The Mining investments are part of the Bauxite segment, while the Energy and Other investments are primarily part of the Aluminum segment.

	Saudi Arabia Joint Venture	Mining	Energy	Other
2021				
Sales	$ 3,127	$ 794	$ 264	$ 404
Cost of goods sold	2,083	571	135	365
Net (loss) income	495	30	114	(42)
Equity in net income (loss) of affiliated companies, before reconciling adjustments	124	18	45	(20)
Other	(8)	5	(1)	25
Alcoa Corporation's equity in net (loss) income of affiliated companies	116	23	44	5
2020				
Sales	$ 2,279	$ 841	$ 238	$ 316
Cost of goods sold	1,829	543	107	283
Net (loss) income	(108)	46	74	(24)
Equity in net (loss) income of affiliated companies, before reconciling adjustments	(27)	23	31	(11)
Other	(7)	(1)	2	14
Alcoa Corporation's equity in net (loss) income of affiliated companies	(34)	22	33	3

	Saudi Arabia Joint Venture	Mining	Energy	Other
2019				
Sales	$ 3,185	$ 846	$ 269	$ 159
Cost of goods sold	2,722	580	143	151
Net(loss) income	(198)	35	107	(28)
Equity in net (loss) income of affiliated companies, before reconciling adjustments	(50)	16	42	(13)
Other	3	5	1	16
Alcoa Corporation's equity in net (loss) income of affiliated companies	(47)	21	43	3

The following table summarizes the balance sheet data for Alcoa Corporation's equity investments.

	Saudi Arabia Joint Venture	Mining	Energy	Other
2021				
Current assets	$ 1,748	$ 142	$ 96	$ 246
Non-current assets	7,330	852	316	755
Current liabilities	956	158	17	95
Non-current liabilities	5,018	331	27	73
2020				
Current assets	$ 1,099	$ 143	$ 119	$ 219
Non-current assets	7,648	828	401	757
Current liabilities	794	206	27	66
Non-current liabilities	5,347	331	113	62

I. RECEIVABLES

On October 25, 2019, a wholly-owned subsidiary of the Company entered into a $120 three-year revolving credit facility agreement secured by certain customer receivables. Alcoa Corporation guaranteed the performance obligations of the wholly-owned subsidiary under the facility; however no assets (other than the receivables) were pledged as collateral.

On April 20, 2020, the Company amended this agreement converting it to a Receivables Purchase Agreement to sell up to $120 of the receivables previously secured by the credit facility without recourse on a revolving basis. The unsold portion of the specified receivable pool is pledged as collateral to the purchasing bank to secure the sold receivables.

On November 8, 2021, the Company terminated the Receivables Purchase Agreement. No receivables were sold under this agreement.

J. INVENTORIES

December 31,	2021	2020
Finished goods	$ 538	$ 321
Work-in-process	85	112
Bauxite and alumina	539	412
Purchased raw materials	619	377
Operating supplies	175	176
	$ 1,956	$ 1,398

Inventories related to the Warrick Rolling Mill were excluded from the December 31, 2020 balances in the above table due to the sale of the rolling mill and were reclassified to Assets held for sale (see Note C).

K. PROPERTIES, PLANTS, AND EQUIPMENT, NET

December 31,	2021	2020
Land and land rights, including mines	$ 264	$ 320
Structures (by type of operation):		
Bauxite mining	1,148	1,119
Alumina refining	2,400	2,474
Aluminum smelting and casting	3,298	3,447
Energy generation	339	360
Other	340	350
	7,525	7,750
Machinery and equipment (by type of operation):		
Bauxite mining	565	517
Alumina refining	3,946	4,180
Aluminum smelting and casting	5,877	6,111
Energy generation	836	844
Other	452	465
	11,676	12,117
	19,465	20,187
Less: accumulated depreciation, depletion, and amortization	13,130	13,332
	6,335	6,855
Construction work-in-progress	288	335
	$ 6,623	$ 7,190

Properties, plants, and equipment, net related to the Warrick Rolling Mill were excluded from the December 31, 2020 balances in the above table due to the sale of the rolling mill and were reclassified to Assets held for sale (see Note C).

L. GOODWILL AND OTHER INTANGIBLE ASSETS

Goodwill, which is included in Other non-current assets on the accompanying Consolidated Balance Sheet, was as follows:

December 31,	2021	2020
Bauxite	$ 2	$ 2
Alumina	2	2
Aluminum	–	–
Corporate[(1)]	140	141
	$ 144	$ 145

(1) The carrying value of Corporate's goodwill is net of accumulated impairment losses of $742 as of both December 31, 2021 and 2020. As of December 31, 2021, the $140 of goodwill reflected in Corporate is allocated to two of Alcoa Corporation's three reportable segments ($46 to Bauxite and $94 to Alumina) for purposes of impairment testing (see Note B). This goodwill is reflected in Corporate for segment reporting purposes because it is not included in management's assessment of performance by the two reportable segments.

Management performed a quantitative assessment for the Bauxite reporting unit in 2021. As a result of the assessment, the estimated fair value of the Bauxite reporting unit was substantially in excess of carrying value, resulting in no impairment.

Additionally, Management performed a qualitative assessment for the Alumina reporting unit in 2021 and determined that it was not more likely than not that the fair value of the reporting unit was less than carrying value. Management last performed a quantitative impairment test for the Alumina reporting unit in 2019. At the time of the quantitative assessment, the estimated fair value of the Alumina reporting unit was substantially in excess of carrying value, resulting in no impairment.

Other intangible assets, which are included in Other non-current assets on the accompanying Consolidated Balance Sheet, were as follows:

	2021			2020		
December 31,	Gross carrying amount	Accumulated amortization	Net carrying amount	Gross carrying amount	Accumulated amortization	Net carrying amount
Computer software	$ 214	$ (204)	$ 10	$ 236	$ (218)	$ 18
Patents and licenses	25	(9)	16	25	(8)	17
Other intangibles	19	(10)	9	20	(10)	10
Total other intangible assets	$ 258	$ (223)	$ 35	$ 281	$ (236)	$ 45

Computer software consists primarily of software costs associated with the enterprise business solution within Alcoa to drive common systems among all businesses.

Amortization expense related to the intangible assets in the tables above for the years ended December 31, 2021, 2020, and 2019 was $11, $9, and $19, respectively, and is expected to be approximately $10 annually from 2022 to 2026.

M. DEBT

Short-term borrowings.

December 31,	2021	2020
Short-term borrowings	$ 75	$ 77

Short-term borrowings are reported in Other current liabilities on the accompanying Consolidated Balance Sheet.

Long-Term Debt.

December 31,	2021	2020
6.75% Notes, due 2024	$ –	$ 750
7.00% Notes, due 2026	–	500
5.500% Notes, due 2027	750	750
6.125% Notes, due 2028	500	500
4.125% Notes, due 2029	500	–
Other	5	6
Unamortized discounts and deferred financing costs	(28)	(41)
Total	1,727	2,465
Less: amount due within one year	1	2
Long-term debt, less amount due within one year	$ 1,726	$ 2,463

The principal amount of long-term debt maturing in each of the next five years is: $1 in each of 2022, 2023, 2024, and 2025, $0 in 2026.

144A Debt.

2029 Notes. In March 2021, Alcoa Nederland Holding B.V. (ANHBV), a wholly-owned subsidiary of Alcoa Corporation, completed a Rule 144A (U.S. Securities Act of 1933, as amended) debt issuance for $500 aggregate principal amount of 4.125% Senior Notes due 2029 (the 2029 Notes) with the following terms:

- Net proceeds were approximately $493, reflecting a discount to the initial purchasers as well as issuance costs. The discount, as well as costs to complete the financing, were deferred and are being amortized to interest expense over the term.
- Interest is paid semi-annually in March and September, which commenced September 30, 2021.
- Indenture contains customary affirmative and negative covenants, see below.

- Option to redeem on at least 10 days, but not more than 60 days, prior notice to the holders under multiple scenarios, including, in whole or in part, at any time, or from time to time after March 31, 2024, at a redemption price up to 102.063% of the principal amount, plus any accrued and unpaid interest.

- Subject to repurchase upon the occurrence of a change in control repurchase event (as defined in the indenture) at a repurchase price in cash equal to 101% of the aggregate principal amount of the notes repurchased, plus any accrued and unpaid interest.

The Company used the net proceeds of the 2029 Notes, together with cash on hand, to contribute $500 to its U.S. defined benefit pension plans applicable to salaried and hourly employees on April 1, 2021 (see Note O), to redeem in full $750 aggregate principal amount of the Company's outstanding 6.75% Senior Notes due 2024 (the 2024 Notes) on April 7, 2021, and to pay transaction-related fees and expenses.

2027 Notes. In July 2020, ANHBV completed a Rule 144A debt issuance for $750 aggregate principal amount of 5.500% Senior Notes due 2027 (the 2027 Notes) with the following terms:

- Net proceeds were approximately $736, reflecting a discount to the initial purchasers as well as issuance costs. The discount, as well as costs to complete the financing, were deferred and are being amortized to interest expense over the term.

- Interest is paid semi-annually in June and December, which commenced on December 15, 2020.

- Indenture contains customary affirmative and negative covenants, see below.

- Option to redeem on at least 15 days, but not more than 60 days, prior notice to the holders under multiple scenarios, including, in whole or in part, at any time, or from time to time after June 15, 2023, at a redemption price up to 102.750% of the principal amount, plus any accrued and unpaid interest.

- Subject to repurchase upon the occurrence of a change in control repurchase event (as defined in the indenture) at a repurchase price in cash equal to 101% of the aggregate principal amount of the notes repurchased, plus any accrued and unpaid interest.

The Company used the net proceeds of the 2027 Notes for general corporate purposes, including adding cash to its balance sheet.

2028 Notes. In May 2018, ANHBV completed a Rule 144A debt issuance for $500 aggregate principal amount of 6.125% Senior Notes due 2028 (the 2028 Notes) with the following terms:

- Net proceeds were approximately $492, reflecting a discount to the initial purchasers as well as issuance costs. The discount, as well as costs to complete the financing, were deferred and are being amortized to interest expense over the term.

- Interest is paid semi-annually in November and May, which commenced November 15, 2018.

- Indenture contains customary affirmative and negative covenants, see below.

- Option to redeem on at least 30 days, but not more than 60 days, prior notice to the holders under multiple scenarios, including, in whole or in part, at any time, or from time to time after May 2023, at a redemption price up to 103.063% of the principal amount, plus any accrued and unpaid interest.

- Subject to repurchase upon the occurrence of a change in control repurchase event (as defined in the indenture) at a repurchase price in cash equal to 101% of the aggregate principal amount of the notes repurchased, plus any accrued and unpaid interest.

The Company used the net proceeds of the 2028 Notes, together with cash on hand, to make discretionary contributions to certain U.S. defined benefit pension plans.

The indentures of the 2027 Notes, 2028 Notes, and 2029 Notes contain customary affirmative and negative covenants, such as limitations on liens, limitations on sale and leaseback transactions, and a prohibition on a reduction in the ownership of AWAC entities below an agreed level. The negative covenants in the indentures are less extensive than those in the Facility (see below). For example, the indentures do not include a limitation on restricted payments, such as repurchases of common stock and shareholder dividends.

The 2027 Notes, the 2028 Notes, and the 2029 Notes are senior unsecured obligations of ANHBV and do not entitle the holders to any registration rights pursuant to a registration rights agreement. ANHBV does not intend to file a registration statement with respect to resales of or an exchange offer for the notes. The notes are guaranteed on a senior unsecured basis by Alcoa Corporation and its subsidiaries that are guarantors under the Facility (the ''subsidiary guarantors'' and, together with Alcoa Corporation, the ''guarantors''). Each of the subsidiary guarantors will be released from their guarantees upon the occurrence of certain events, including the release of such guarantor from its obligations as a guarantor under the Facility.

The 2027 Notes, the 2028 Notes, and the 2029 Notes rank equally in right of payment with each other and with all of ANHBV's existing and future senior unsecured indebtedness; rank senior in right of payment to any future subordinated obligations of ANHBV; and are effectively subordinated to ANHBV's existing and future secured indebtedness, including under the Facility, to the extent of the value of property and assets securing such indebtedness. The guarantees of the notes rank equally in right of payment with each other and with all the guarantors' existing and future senior unsecured indebtedness; rank senior in right of payment to any future subordinated obligations of the guarantors; and are effectively subordinated to the guarantors' existing and future secured indebtedness, including under the Facility, to the extent of the value of property and assets securing such indebtedness.

Redemption events. On April 7, 2021, the Company redeemed in full $750 aggregate principal amount notes due in 2024 at a redemption price equal to 103.375% of the principal amount, plus accrued and unpaid interest. The issuance of the 2029 Notes and this redemption were determined to be an issuance of new debt and an extinguishment of existing debt. As a result, the Company recorded a loss of $32 on the extinguishment of debt in the second quarter of 2021 in Interest expense, which was comprised of the redemption premium and the write-off of deferred financing fees and unamortized debt issuance costs. The cash flows related to the transaction were classified as financing cash flows.

On September 30, 2021, the Company redeemed in full $500 aggregate principal amount notes due in 2026 at a redemption price equal to 103.5% of the principal amount, plus accrued and unpaid interest. As a result, the Company recorded a loss of $22 on the extinguishment of debt in the third quarter of 2021 in Interest expense, which was comprised of the redemption premium and the write-off of deferred financing fees and unamortized debt issuance costs. The cash flows related to the transaction were classified as financing cash flows.

Credit Facilities.

Alcoa Norway ANS

On October 2, 2019, Alcoa Norway ANS, a wholly-owned subsidiary of Alcoa Corporation, entered into a one-year, multicurrency revolving credit facility agreement for NOK 1.3 billion (approximately $149) which was fully and unconditionally guaranteed on an unsecured basis by Alcoa Corporation. The maturity date of the facility was subsequently extended by one year.

On April 8, 2020, Alcoa Norway ANS drew $100 against this facility. Repayment of the drawn amount, including interest accrued at 2.93%, occurred upon maturity on June 29, 2020.

In September 2021, Alcoa Norway ANS made the decision not to extend the maturity of the facility allowing it to expire, effective October 4, 2021. During 2021, no amounts were drawn related to this credit facility. In all periods, Alcoa Norway ANS was in compliance with related covenants.

Revolving Credit Facility

The Company has a senior secured $1,500 revolving credit and letter of credit facility in place for working capital and/or other general corporate purposes (the Facility). The Facility was established on September 16, 2016, was amended in each of 2017, 2018, 2019, 2020, and 2021, and is scheduled to mature on November 21, 2023. Subject to the terms and conditions under the Facility, the Company may borrow funds or issue letters of credit through its Alcoa Corporation or ANHBV legal entities. Borrowings can be executed in U.S. dollar, and letter of credit issuances are limited to $750. Effective January 1, 2022, the Company agreed to suspend borrowings denominated in euros due to reference rate reform and the phase-out of LIBOR. This suspension of borrowing denominated in euros will not materially impact the Company or its ability to access capital, if necessary.

The Facility is secured by, subject to certain exceptions, a first priority security interest in substantially all assets of Alcoa Corporation, ANHBV, the material domestic wholly-owned subsidiaries of Alcoa Corporation, and the material foreign wholly-owned subsidiaries of Alcoa Corporation located in Australia, Brazil, Canada, Luxembourg, the Netherlands, Norway, and Switzerland. This includes equity interests of certain subsidiaries that directly hold equity interests in AWAC entities. However, no AWAC entity is a guarantor of any obligation under the Facility and no asset of any AWAC entity, or equity interests in any AWAC entity, will be pledged to secure the obligations under the Facility. As provided in the Facility, each of the mentioned companies shall be released from all obligations under the first priority security interest upon (i) Alcoa Corporation attaining at least a Baa3 rating from either Moody's Investor Service or BBB- rating from Standard and Poor's Global Ratings, in each case with a stable outlook or better, (ii) ANHBV delivering the required written notice, and (iii) no default or event of default, as defined in the Facility, has occurred or is continuing.

The Facility includes several customary affirmative and negative covenants (applicable to Alcoa Corporation and certain subsidiaries described as restricted), that, subject to certain exceptions, include limitations on (among other things): indebtedness, liens, investments, sales of assets, restricted payments, entering into restrictive agreements, a covenant prohibiting reductions in the ownership of AWAC entities, and certain other specified restricted subsidiaries of Alcoa Corporation, below an agreed level. The Facility also contains customary events of default, including failure to make payments under the Facility, cross-default and cross-judgment default, and certain bankruptcy and insolvency events. In addition, the Facility contains two financial covenants, a leverage ratio and an interest expense coverage ratio, that impact availability of the $1,500 commitment and pricing.

As of December 31, 2021, the Company was in compliance with all covenants. The maximum additional borrowing capacity available to the Company to remain in compliance with the maximum leverage ratio covenant in the Facility was approximately $6,610. Therefore, the Company may access the entire amount of commitments under the Facility. There were no borrowings outstanding at December 31, 2021 and 2020, and no amounts were borrowed during 2021 and 2020 under the Facility.

On March 4, 2021, Alcoa Corporation and ANHBV, entered into an amendment (Amendment No. 4) to the Facility that provided additional flexibility to the Company by (i) increasing the maximum leverage ratio from 2.50 to 1.00 to 2.75 to 1.00, (ii) decreasing the minimum interest expense coverage ratio from 5.00 to 1.00 to 4.00 to 1.00, (iii) amending the definition of Total Indebtedness (as defined in the Facility) to permit the Company to exclude the principal amount of new senior notes issued during 2021 from indebtedness for purposes of the calculation of the leverage ratio in fiscal year 2021 (subject to adjustments based on pension obligations funded), and (iv) ending temporary restrictions on the Company's ability to make certain restricted payments or incur incremental loans under the Facility. Amendment No. 4 also (i) provided additional debt capacity to permit the Company to issue up to $750 in aggregate principal amount of new senior notes prior to the end of fiscal year 2021 and (ii) provided a corresponding increase in the maximum leverage ratio commensurate with the increase in leverage resulting from the issuance of such notes up to the amount of pension obligations funded after the issuance of such notes but prior to December 31, 2021, which increase shall in any event not be in excess of the principal amount of such notes. Such additional increase in the maximum leverage ratio will be available beginning March 31, 2022.

N. PREFERRED AND COMMON STOCK

Preferred Stock. Alcoa Corporation is authorized to issue 100,000,000 shares of preferred stock at a par value of $0.01 per share. At December 31, 2021 and 2020, the Company had no issued preferred stock.

Common Stock. Alcoa Corporation is authorized to issue 750,000,000 shares of common stock at a par value of $0.01 per share. As of December 31, 2021 and 2020, Alcoa Corporation had 184,099,748 and 185,978,069, respectively, issued and outstanding shares of common stock.

Under its employee stock-based compensation plan, the Company issued shares of 1,305,979 in 2021, 397,903 in 2020, and 809,917 in 2019. The Company issues new shares to satisfy the exercise of stock options and the conversion of stock units. As of December 31, 2021, 23,463,347 shares of common stock were available for issuance.

Share Repurchase

In October 2018, Alcoa Corporation's Board of Directors approved a common stock repurchase program under which the Company may purchase shares of its outstanding common stock up to an aggregate transactional value of $200, depending on cash availability, market conditions, and other factors.

In October 2021, Alcoa Corporation's Board of Directors approved a new common stock repurchase program under which the Company may purchase shares of its outstanding common stock up to an aggregate transactional value of $500, depending on cash availability, market conditions, and other factors.

Repurchases under these programs may be made using a variety of methods, which may include open market purchases, privately negotiated transactions, or pursuant to a Rule 10b5-1 plan. These programs do not have predetermined expiration dates. Alcoa Corporation intends to retire repurchased shares of common stock.

In the fourth quarter of 2021, the Company repurchased 3,184,300 shares of its common stock for $150; the shares were immediately retired. These purchases exhausted the remaining dollar value of shares that were available for repurchase under the Board of Directors' October 2018 authorization. No shares were repurchased in 2020 or 2019.

The Company has remaining authorization to repurchase up to a total of $500, in the aggregate, of its outstanding shares of common stock, under the new share repurchase program approved in 2021.

Dividend

Dividends on common stock are subject to authorization by Alcoa Corporation's Board of Directors.

On October 14, 2021, the Company announced the initiation of a quarterly cash dividend on its common stock. The Board of Directors declared the first quarterly cash dividend of $0.10 per share of the Company's common stock, paid on November 19, 2021 to stockholders of record as of the close of business on October 29, 2021.

The Company did not declare any dividends in 2020 or 2019.

Stock-based Compensation

Stock options and restricted stock units are generally granted in either January or February each calendar year to eligible employees (the Company's Board of Directors also receive certain stock units; however, these amounts are not material). Stock options were historically granted at the closing market price of Alcoa Corporation's common stock on the date of grant and grade vest over a three-year service period (1/3 each year) with a ten-year contractual term. As of January 1, 2021, the Company no longer grants new stock options. Time-based restricted stock units (RSUs) generally cliff vest on the third anniversary of the award grant date. The Company also grants performance restricted stock units (PRSUs), which are subject to performance conditions.

The final number of PRSUs earned is dependent on Alcoa Corporation's achievement of certain targets over a three-year measurement period for grants. For PRSUs granted in 2019, the award was earned at the end of the measurement period of January 1, 2019 through December 31, 2021 based on performance against two measures: (1) the Company's total shareholder return measured against the total shareholder return of the Standard & Poor's 500® Index; and (2) a pre-established return-on-capital target. For PRSUs granted in 2020, the award will be earned at the end of the measurement period of January 1, 2020 through December 31, 2022 based on performance against four measures: (1) the Company's total shareholder return measured against the ranked total shareholder return of the Standard & Poor's Metals and Mining Select Industry Index components; (2) a pre-established return-on-equity target; (3) an improvement in proportional net debt; and (4) a reduction in carbon intensity in both refining (through reduced carbon dioxide emissions) and smelting (through increased production from renewable energy) operations. For PRSUs granted in 2021, the award will be earned at the end of the measurement period of January 1, 2021 through December 31, 2023 based on performance against four measures: (1) the Company's total shareholder return measured against the ranked total shareholder return of the Standard & Poor's Metals and Mining Select Industry Index components; (2) a pre-established return-on-equity target; (3) an improvement in proportional net debt; and (4) a reduction in carbon intensity in both refining (through reduced carbon dioxide emissions) and smelting (through increased production from renewable energy) operations.

In 2021, 2020, and 2019, Alcoa Corporation recognized stock-based compensation expense of $39, $25, and $30, respectively, of which approximately 85% to 95% was related to stock units in each period. There was no stock-based compensation expense capitalized in 2021, 2020, or 2019.

Stock-based compensation expense is based on the grant date fair value of the applicable equity grant. For both RSUs and PRSUs, the fair value was equivalent to the closing market price of Alcoa Corporation's common stock on the date of grant in the respective periods. For stock units with a market condition, the fair value was estimated on the date of grant using a Monte Carlo simulation model, which generated a result of $39.88, $21.43, and $35.70 per unit in 2021, 2020, and 2019, respectively. The Monte Carlo simulation model uses certain assumptions to estimate the fair value of a market-based stock unit, including volatility (60.19%, 41.65%, and 42.04% in 2021, 2020, and 2019, respectively, for the Company) and a risk-free interest rate (0.22%, 1.38%, and 2.57% in 2021, 2020, and 2019, respectively), to estimate the probability of satisfying market conditions. For stock options, the fair value was estimated on the date of grant using a lattice pricing model, which generated a result of $6.12, and $10.86 per option in 2020, and 2019, respectively. There were no stock options granted in 2021. The lattice pricing model uses several assumptions to estimate the fair value of a stock option, including an average risk-free interest rate, dividend yield, volatility, annual forfeiture rate, exercise behavior, and contractual life.

The activity for stock options and stock units during 2021 was as follows:

	Stock options		Stock units	
	Number of options	Weighted average exercise price	Number of units	Weighted average FMV per unit
Outstanding, January 1, 2021	2,036,625	$26.85	3,290,679	$24.19
Granted	–	–	1,736,527	23.34
Exercised	(1,032,864)	23.69	–	–
Converted	–	–	(371,300)	50.77
Expired or forfeited	(93,341)	34.80	(109,703)	18.92
Performance share adjustment	–	–	156,343	34.22
Outstanding, December 31, 2021	910,420	29.61	4,702,546	22.23

The number of Converted units includes 74,610 shares withheld to meet the Company's statutory tax withholding requirements related to the income earned by the employees as a result of vesting in the units.

As of December 31, 2021, the 910,420 outstanding stock options had a weighted average remaining contractual life of 5.45 years and a total intrinsic value of $27. Additionally, 585,774 of the total outstanding stock options were fully vested and exercisable and had a weighted average remaining contractual life of 4.67 years, a weighted average exercise price of $34.20, and a total intrinsic value of $15 as of December 31, 2021. Cash received from stock option exercises was $25, $1, and $2 in 2021, 2020, and 2019, respectively, and the total intrinsic value of stock options exercised during 2021, 2020, and 2019 was $17, $0, and $1, respectively.

At December 31, 2021, there was $30 (pretax) of combined unrecognized compensation expense related to non-vested grants of both stock options and stock units. This expense is expected to be recognized over a weighted average period of 1.72 years.

O. PENSION AND OTHER POSTRETIREMENT BENEFITS

Defined Benefit Plans

Alcoa sponsors several defined benefit pension plans covering certain employees in the U.S. and foreign locations. Pension benefits generally depend on length of service, job grade, and remuneration. Substantially all benefits are paid through pension trusts that are sufficiently funded to ensure that all plans can pay benefits to retirees as they become due. Most salaried and non-bargaining hourly U.S. employees hired after March 1, 2006 participate in a defined contribution plan instead of a defined benefit plan.

The Company also maintains health care and life insurance postretirement benefit plans covering certain eligible U.S. retired employees and certain retirees from foreign locations. Generally, the medical plans are unfunded and pay a percentage of medical expenses, reduced by deductibles and other coverage. Life benefits are generally provided by insurance contracts. The Company retains the right, subject to existing agreements, to change or eliminate these benefits. All salaried and certain non-bargaining hourly U.S. employees hired after January 1, 2002 and certain bargaining hourly U.S. employees hired after July 1, 2010 are not eligible for postretirement health care benefits. All salaried and certain hourly U.S. employees that retire on or after April 1, 2008 are not eligible for postretirement life insurance benefits.

As of January 1, 2021, the pension benefit plans and the other postretirement benefit plans covered an aggregate of approximately 37,000 and approximately 24,000 participants, respectively.

2021 Plan Actions. In 2021, management initiated the following actions to certain pension and other postretirement benefit plans:

Action #1 – On March 31, 2021, Alcoa completed the sale of the Warrick Rolling Mill to Kaiser Aluminum Corporation for total consideration of $670, which included the assumption of $69 in other postretirement benefit liabilities. Approximately 1,150 employees at the rolling operations, which includes the casthouse, hot mill, cold mills, and coating and slitting lines, became employees of Kaiser. As a result, the affected plan was remeasured, including an update to the discount rate used to determine the benefit obligation of the plan. Accrued other postretirement benefits reflects a decrease of $40 related to the remeasurement in addition to the $69 assumed by Kaiser. Further, Alcoa recognized a curtailment gain of $17 and a settlement charge of $26.

Action #2 – In the second quarter of 2021, settlement accounting and a related plan remeasurement was triggered within Alcoa's U.S. salaried pension plan as a result of a high number of participants electing lump sum payments. This includes former employees of the Warrick Rolling Mill, as well as other Alcoa employees making this election at retirement. Alcoa recorded a $90 decrease to Accrued pension benefits related to this remeasurement and recognized a settlement charge of $39.

Action #3 – In the third quarter of 2021, settlement accounting and a related plan remeasurement was triggered within Alcoa's U.S. salaried pension plan as a result of participants electing lump sum payments. Alcoa recorded a $7 increase to Accrued pension benefits related to this remeasurement and recognized a settlement charge of $7.

Action #4 – In the third quarter of 2021, settlement accounting and a related plan remeasurement was triggered within Alcoa's Australian pension plan as a result of participants electing lump sum payments. Alcoa recorded a $38 decrease to Accrued pension benefits related to this remeasurement and recognized a settlement charge of $1.

Action #5 – In the fourth quarter of 2021, the Company purchased a group annuity contract to transfer the obligation to pay the remaining retirement benefits of approximately 800 retirees and deferred vested participants from one of its Suriname pension plans to an insurance company. The transfer of $55 in both plan obligations and plan assets were completed on October 19, 2021. As a result, the Company recorded a settlement loss of $63 in Restructuring and other charges, net on the Statement of Consolidated Operations in the fourth quarter of 2021.

Action #6 – In the fourth quarter of 2021, settlement accounting and related plan remeasurements were triggered within Alcoa's U.S. pension plans as a result of the Company purchasing group annuity contracts to transfer the obligation to pay remaining retirement benefits of approximately 14,000 retirees and beneficiaries from its U.S. defined benefit pension plans and transferred approximately $1,540 in both plan obligations and plan assets. The transfers were completed on November 23, 2021 and December 16, 2021. As a result, the Company recorded a $84 decrease to Accrued pension benefits related to this remeasurement and recognized a non-cash settlement loss of $848 (pre- and after-tax) in Restructuring and other charges, net on the Statement of Consolidated Operations in the fourth quarter of 2021.

Action #7 – In the fourth quarter of 2021, settlement accounting and related plan remeasurements were triggered within Alcoa's U.S. pension plans as a result of participants electing lump sum payments (and the group annuity contracts discussed in Action 6 above). Alcoa recorded a $1 decrease to Accrued pension benefits related to this remeasurement and recognized a settlement charge of $10.

The following table presents certain information and the financial impacts of these actions on the accompanying Consolidated Financial Statements:

Action #	Number of affected plan participants	Weighted average discount rate as of prior plan remeasurement date	Plan remeasurement date	Weighted average discount rate as of plan remeasurement date	Increase (decrease) to accrued pension benefits liability	Decrease to accrued other postretirement benefits liability	Curtailment gain[(1)]	Settlement charge[(1)]
1	840	2.45%	March 31, 2021	3.06%	$ –	$ (106)	$ (17)	$ 26
2	120	2.38%	June 30, 2021	2.71%	(90)	–	–	39
3	20	2.71%	September 30, 2021	2.74%	7	–	–	7
4	20	1.34%	September 30, 2021	1.53%	(38)	–	–	1
5	800	N/A	N/A	N/A	N/A	–	–	63
6	14,000	2.59%	November 30, 2021	2.79%	(84)	–	–	848
7	60	2.59%	November 30, 2021	2.79%	(1)	–	–	10
					$ (206)	$ (106)	$ (17)	$ 994

(1) These amounts primarily represent the accelerated amortization of a portion of the existing prior service benefit for curtailments and net actuarial loss for settlements and were reclassified from Accumulated other comprehensive loss to Restructuring and other charges, net (see Note D) on the accompanying Statement of Consolidated Operations.

2020 Plan Actions. In 2020, management initiated the following actions to certain pension and other postretirement benefit plans:

Action #1 – In February 2020, the Company entered into a new, six-year collective bargaining agreement with the Union of Professional and Office Workers of the Alcoa Smelter of Baie-Comeau in Canada. Under the agreement, all unionized office employees that are participants in one of the Company's defined benefit pension plans ceased accruing retirement benefits for future service effective January 1, 2021. This change affected approximately 20 employees, who were transitioned to a target benefit plan, where the funding risk is assumed by the employees. The Company will contribute approximately 12% of these participants' eligible earnings to the new plan on an annual basis. Participants already collecting benefits or who terminated with a vested benefit under the defined benefit pension plan were not affected by these changes.

Action #2 – In February 2020, the Company notified all non-unionized hourly employees of Aluminerie de Deschambault, who are participants in one of the Company's defined benefit pension plans, that they will cease accruing retirement benefits for future service effective January 1, 2021. This change affected approximately 430 employees, who were transitioned to a to a member-funded pension plan, where the funding risk is assumed by the employees. The Company will contribute approximately 12% of these participants' eligible earnings to the new plan on an annual basis. Participants already collecting benefits or who terminated with a vested benefit under the defined benefit pension plan were not affected by these changes.

Action #3 – In April 2020, as part of the Company's portfolio review, Alcoa announced that it will curtail the remaining capacity at its Intalco smelter in Ferndale, Washington amid declining market conditions. The full curtailment was completed during the third quarter of 2020, and the workforce was reduced by approximately 685 people. As a result, curtailment accounting was triggered in the U.S. hourly defined benefit pension and retiree life plans (3a and 3b in the below table, respectively).

Action #4 – In September 2020, the Company and the United Steelworkers jointly notified certain U.S. retirees that their medical and prescription drug coverage will be provided through an insured group Medicare Advantage and Prescription Drug plan and will include an increase to participant contributions, effective January 1, 2021. These changes affected approximately 8,600 participants. Although the plan change and related remeasurement increased the other postretirement benefit liability by $74, the plan change lowered the Company's expected cash requirements for the program over the next five years.

Action #5 – In October 2020, the Company offered lump sum buyouts to specific participants in its U.S. defined benefit pension plans. As a result, the Company paid approximately $33 from plan assets on December 31, 2020 to approximately 430 participants, was relieved of the corresponding pension obligation of $35, and recognized a settlement charge of $44.

Action #6 – On November 30, 2020, Alcoa announced an agreement to sell the Warrick Rolling Mill to Kaiser. The sale closed on March 31, 2021. Approximately 1,170 employees at the rolling operations, which includes the casthouse, hot mill, cold mills, and coating and slitting lines, will become employees of Kaiser once the transaction is complete. As a result, Alcoa recognized a pension curtailment charge of $5 in the fourth quarter of 2020.

The following table presents certain information and the financial impacts of these actions on the accompanying Consolidated Financial Statements:

Action #	Number of affected plan participants	Weighted average discount rate as of December 31, 2019	Plan remeasurement date	Weighted average discount rate as of plan remeasurement date	Increase (decrease) to accrued pension benefits liability[1]	Decrease to accrued other postretirement benefits liability[1]	Curtailment charge (gain)[2]	Settlement charge[2]
1	~20	3.15%	January 31, 2020	2.75%	$ 18	$ –	$ 1	$ –
2	~430	3.20%	January 31, 2020	2.75%	28	–	2	–
3a	~300	3.25%	April 30, 2020	2.92%	156	–	1	–
3b	~600	3.75%	April 30, 2020	3.44%	–	–	(2)	–
4	~8,600	3.11%	August 31, 2020	2.65%	–	74	–	–
5	~430	N/A	December 31, 2020	N/A	(2)	–	–	44
6	~900	N/A	December 31, 2020	N/A	5	–	5	–
	~11,280				$ 205	$ 74	$ 7	$ 44

(1) Actions 1-4 caused interim plan remeasurements, including an update to the discount rates used to determine the benefit obligations of the affected plans. These amounts include the impacts due to the interim plan remeasurements.

(2) These amounts primarily represent the accelerated amortization of a portion of the existing prior service cost or benefit for curtailments and net actuarial loss for settlements and were reclassified from Accumulated other comprehensive loss to Restructuring and other charges, net (see Note D) on the accompanying Statement of Consolidated Operations.

Obligations and Funded Status

	Pension benefits		Other postretirement benefits	
December 31,	**2021**	**2020**	**2021**	**2020**
Change in benefit obligation				
Benefit obligation at beginning of year	$ 6,904	$ 6,532	$ 892	$ 848
Service cost	22	56	4	5
Interest cost	120	168	15	19
Amendments	–	1	–	(19)
Actuarial losses (gains)	(305)	578	(78)	133
Settlements	(1,763)	(127)	–	–
Curtailments	–	6	–	(1)
Benefits paid, net of participants' contributions	(362)	(381)	(56)	(100)
Medicare Part D subsidy receipts	–	–	2	7
Divestitures	–	(2)	(69)	–
Foreign currency translation impact	(22)	73	–	–
Benefit obligation at end of year	$ 4,594	$ 6,904	$ 710	$ 892
Change in plan assets				
Fair value of plan assets at beginning of year	$ 5,356	$ 5,015	$ –	$ –
Actual return on plan assets	513	455	–	–
Employer contributions	581	347	–	–
Participant contributions	5	10	–	–
Benefits paid	(356)	(379)	–	–
Administrative expenses	(4)	(24)	–	–
Settlements	(1,763)	(127)	–	–
Divestitures	–	(2)	–	–
Foreign currency translation impact	(26)	61	–	–
Fair value of plan assets at end of year	$ 4,306	$ 5,356	$ –	$ –
Funded status	$ (288)	$ (1,548)	$ (710)	$ (892)
Less: Amounts attributed to joint venture partners	(25)	(45)	–	–
Net funded status	$ (263)	$ (1,503)	$ (710)	$ (892)

December 31,	Pension benefits 2021	Pension benefits 2020	Other postretirement benefits 2021	Other postretirement benefits 2020
Amounts recognized in the Consolidated Balance Sheet consist of:				
Non-current assets	$ 164	$ –	$ –	$ –
Current liabilities	(10)	(11)	(60)	(65)
Non-current liabilities	(417)	(1,492)	(650)	(744)
Liabilities held for sale	–	–	–	(83)
Net amount recognized	$ (263)	$ (1,503)	$ (710)	$ (892)
Amounts recognized in Accumulated Other Comprehensive Loss consist of:				
Net actuarial loss	$ 1,877	$ 3,563	$ 253	$ 374
Prior service cost (benefit)	2	2	(125)	(156)
Total, before tax effect	1,879	3,565	128	218
Less: Amounts attributed to joint venture partners	38	57	–	–
Net amount recognized, before tax effect	$ 1,841	$ 3,508	$ 128	$ 218
Other Changes in Plan Assets and Benefit Obligations Recognized in Other Comprehensive Income (Loss) consist of:				
Net actuarial loss (benefit)	$ (527)	$ 462	$ (74)	$ 133
Amortization of accumulated net actuarial loss	(1,159)	(263)	(47)	(20)
Prior service cost (benefit)	–	1	–	(19)
Amortization of prior service (cost) benefit	–	(4)	31	17
Total, before tax effect	(1,686)	196	(90)	111
Less: Amounts attributed to joint venture partners	(19)	15	–	–
Net amount recognized, before tax effect	$ (1,667)	$ 181	$ (90)	$ 111

At December 31, 2021, the benefit obligation, fair value of plan assets, and funded status for U.S. pension plans were $2,712, $2,681, and $(31), respectively. At December 31, 2020, the benefit obligation, fair value of plan assets, and funded status for U.S. pension plans were $4,695, $3,676, and $(1,019), respectively.

Pension Plan Benefit Obligations

	Pension benefits	
	2021	2020
The aggregate projected benefit obligation and accumulated benefit obligation for all defined benefit pension plans was as follows:		
Projected benefit obligation	$ 4,594	$ 6,904
Accumulated benefit obligation	4,438	6,702
The aggregate projected benefit obligation and fair value of plan assets for pension plans with projected benefit obligations in excess of plan assets was as follows:		
Projected benefit obligation	3,031	6,813
Fair value of plan assets	2,579	5,267
The aggregate accumulated benefit obligation and fair value of plan assets for pension plans with accumulated benefit obligations in excess of plan assets was as follows:		
Accumulated benefit obligation	2,918	6,210
Fair value of plan assets	2,579	4,805

Components of Net Periodic Benefit Cost

	Pension benefits[1]			Other postretirement benefits		
	2021	2020	2019	2021	2020	2019
Service cost	$ 22	$ 54	$ 48	$ 4	$ 5	$ 4
Interest cost[2]	116	164	221	15	19	36
Expected return on plan assets[2]	(281)	(292)	(325)	–	–	–
Recognized net actuarial loss[2]	190	212	171	21	20	10
Amortization of prior service cost (benefit)[2]	–	–	4	(14)	(15)	–
Settlements[3]	968	51	73	26	–	8
Curtailments[4]	–	9	38	(17)	(2)	–
Net periodic benefit cost[5]	$ 1,015	$ 198	$ 230	$ 35	$ 27	$ 58

(1) In 2021, 2020, and 2019, net periodic benefit cost for U.S pension plans was $962, $154, and $155, respectively.

(2) These amounts were reported in Other (income) expenses, net on the accompanying Statement of Consolidated Operations.

(3) These amounts were reported in Restructuring and other charges, net on the accompanying Statement of Consolidated Operations (see Note D). In 2021, settlements were due to management actions (see Plan Actions above). In 2020, settlements were due to management actions (see Plan Actions above) ($44) and payment of additional lump sum benefits ($7). In 2019, settlements were due to management actions (see Plan Actions above) ($74) and payment of additional lump sum benefits ($7).

(4) These amounts were reported in Restructuring and other charges, net on the accompanying Statement of Consolidated Operations (see Note D). In 2021, 2020, and 2019, curtailments were due to management actions (see Plan Actions above).

(5) Amounts attributed to joint venture partners are not included.

Assumptions. Weighted average assumptions used to determine benefit obligations for pension and other postretirement benefit plans were as follows:

December 31,	**2021**	**2020**
Discount rate – pension plans	2.99%	2.41%
Discount rate – other postretirement benefit plans	2.82	2.41
Rate of compensation increase – pension plans	3.11	2.58

The yield curve model used to develop the discount rate parallels the plans' projected cash flows and has a weighted average duration of 12 years. The underlying cash flows of the high-quality corporate bonds included in the model exceed the cash flows needed to satisfy the Company's plan obligations multiple times. If a deep market of high-quality corporate bonds does not exist in a country, then the yield on government bonds plus a corporate bond yield spread is used.

Weighted average assumptions used to determine net periodic benefit cost for pension and other postretirement benefit plans were as follows:

	2021	**2020**	**2019**
Discount rate – pension plans	1.91%	3.02%	3.89%
Discount rate – other postretirement benefit plans	1.99	2.84	3.94
Expected long-term rate of return on plan assets – pension plans	5.66	6.28	6.59
Rate of compensation increase – pension plans	2.58	3.25	3.26

For 2021, 2020, and 2019, the expected long-term rate of return used by management was based on the prevailing and planned strategic asset allocations, as well as estimates of future returns by asset class. For 2022, management anticipates that 4.94% will be the weighted average expected long-term rate of return.

In October 2019, the Society of Actuaries (SOA) issued updated base mortality tables (Pri-2012) and their annual update to the mortality improvement scale (MP-2019). These were both considered in developing the Company's updated mortality assumptions for U.S. pension and postretirement benefit obligations recorded at December 31, 2019, in connection with an experience study performed approximately every five years. The study resulted in the use of Pri-2012 base tables with an adjustment to reflect Alcoa's experience and a modified version of the MP-2019 improvement scales.

Assumed health care cost trend rates for U.S. other postretirement benefit plans were as follows (non-U.S. plans are not material):

	2021	2020	2019
Health care cost trend rate assumed for next year	5.5%	5.5%	5.5%
Rate to which the cost trend rate gradually declines	4.5%	4.5%	4.5%
Year that the rate reaches the rate at which it is assumed to remain	2026	2026	2023

The assumed health care cost trend rate is used to measure the expected cost of gross eligible charges covered by the Company's other postretirement benefit plans. For 2022, a 5.5% trend rate will be used, reflecting management's best estimate of the change in future health care costs covered by the plans.

Plan Assets. Alcoa's pension plan weighted average target and actual asset allocations at December 31, 2021 and 2020, by asset class, were as follows:

	Target asset allocation		Plan assets at December 31,	
Asset class	2021	2020	2021	2020
Equities	25%	30%	28%	39%
Fixed income	65	50	64	50
Other investments	10	20	8	11
Total	100%	100%	100%	100%

The principal objectives underlying the investment of the pension plan assets are to ensure that the Company can properly fund benefit obligations as they become due under a broad range of potential economic and financial scenarios, maximize the long-term investment return with an acceptable level of risk based on such obligations, and broadly diversify investments across and within various asset classes to protect asset values against adverse movements. Investment risk is controlled by rebalancing to target allocations on a periodic basis and ongoing monitoring of investment manager performance.

The portfolio includes an allocation to investments in long-duration corporate credit and government debt, public and private market equities, intermediate duration corporate credit and government debt, global-listed infrastructure, high-yield bonds and bank loans, real estate, and securitized credit.

Investment practices comply with the requirements of applicable laws and regulations in the respective jurisdictions, including the Employee Retirement Income Security Act of 1974 (ERISA) in the United States.

The following section describes the valuation methodologies used by the trustees to measure the fair value of pension plan assets. For plan assets measured at net asset value, this refers to the net asset value of the investment on a per share basis (or its equivalent) as a practical expedient. Otherwise, an indication of the level in the fair value hierarchy in which each type of asset is generally classified is provided (see Note P for the definition of fair value and a description of the fair value hierarchy).

Equities – These securities consist of: (i) direct investments in the stock of publicly traded U.S. and non-U.S. companies and are valued based on the closing price reported in an active market on which the individual securities are traded (generally classified in Level 1); (ii) the plans' share of commingled funds that are invested in the stock of publicly traded companies and are valued at net asset value; and (iii) direct investments in long/short equity hedge funds and private equity (limited partnerships and venture capital partnerships) and are valued at net asset value.

Fixed income – These securities consist of: (i) U.S. government debt and are generally valued using quoted prices (included in Level 1); (ii) cash and cash equivalents invested in publicly-traded funds and are valued based on the closing price reported in an active market on which the individual securities are traded (generally classified in Level 1); (iii) publicly traded U.S. and non-U.S. fixed interest obligations (principally corporate bonds and debentures) and are valued through consultation and evaluation with brokers in the institutional market using quoted prices and other observable market data (included in Level 2); and (iv) cash and cash equivalents invested in institutional funds and are valued at net asset value.

Other investments – These investments include, among others: (i) real estate investment trusts valued based on the closing price reported in an active market on which the investments are traded (included in Level 1); (ii) the plans' share of commingled funds that are invested in real estate partnerships and are valued at net asset value; (iii) direct investments in private real estate (includes limited partnerships) and are valued at net asset value; and (iv) absolute return strategy funds and are valued at net asset value.

The fair value methods described above may not be indicative of net realizable value or reflective of future fair values. Additionally, while Alcoa believes the valuation methods used by the plans' trustees are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different fair value measurement at the reporting date.

The following table presents the fair value of pension plan assets classified under either the appropriate level of the fair value hierarchy or net asset value:

December 31, 2021	Level 1	Level 2	Level 3	Net Asset Value	Total
Equities:					
Equity securities	$ 210	$ –	$ –	$ 671	$ 881
Long/short equity hedge funds	–	–	–	4	4
Private equity	–	–	–	281	281
	$ 210	$ –	$ –	$ 956	$ 1,166
Fixed income:					
Intermediate and long-duration government/credit	$ 827	$ 1,027	$ –	$ 651	$ 2,505
Cash and cash equivalent funds	64	–	–	172	236
Other	–	–	–	–	–
	$ 891	$ 1,027	$ –	$ 823	$ 2,741
Other investments:					
Real estate	$ 63	$ –	$ –	$ 263	$ 326
Other	–	–	–	31	31
	$ 63	$ –	$ –	$ 294	$ 357
Total[(1)]	$ 1,164	$ 1,027	$ –	$ 2,073	$ 4,264

December 31, 2020	Level 1	Level 2	Level 3	Net Asset Value	Total
Equities:					
Equity securities	$ 379	$ –	$ –	$ 1,469	$ 1,848
Long/short equity hedge funds	–	–	–	5	5
Private equity	–	–	–	207	207
	$ 379	$ –	$ –	$ 1,681	$ 2,060
Fixed income:					
Intermediate and long-duration government/credit	$ 925	$ 794	$ –	$ 619	$ 2,338
Cash and cash equivalent funds	165	–	–	189	354
Other	–	2	–	–	2
	$ 1,090	$ 796	$ –	$ 808	$ 2,694
Other investments:					
Real estate	$ 284	$ –	$ –	$ 273	$ 557
Other	–	–	–	37	37
	$ 284	$ –	$ –	$ 310	$ 594
Total[2]	$ 1,753	$ 796	$ –	$ 2,799	$ 5,348

(1) As of December 31, 2021, the total fair value of pension plan assets excludes a net receivable of $42, which represents securities not yet settled plus interest and dividends earned on various investments.

(2) As of December 31, 2020, the total fair value of pension plan assets excludes a net receivable of $8, which represents securities not yet settled plus interest and dividends earned on various investments.

Funding and Cash Flows. It is Alcoa's policy to fund amounts for defined benefit pension plans sufficient to meet the minimum requirements set forth in applicable country benefits laws and tax laws, including ERISA for U.S. plans. From time to time, the Company contributes additional amounts as deemed appropriate. In 2021, 2020, and 2019, cash contributions to Alcoa's defined benefit pension plans were $579, $343, and $173.

During 2020, the Company initially deferred approximately $200 in pension contributions under provisions in the U.S. Government's Coronavirus Aid, Relief, and Economic Security (CARES) Act. With ample cash on hand and having achieved its objective to hold cash during uncertain times in 2020, the Company made a $250 pension contribution to its U.S. pension plans in late December to cover both the deferred contributions due on January 4, 2021 and a discretionary prepayment. During 2021, Alcoa made $500 in unscheduled contributions to certain U.S. defined benefit pension plans. The additional contributions were discretionary in nature and were funded with net proceeds from a March 2021 debt issuance (see Note M) plus available cash on hand.

Alcoa's minimum required contribution to defined benefit pension plans in 2022 is estimated to be $80, of which approximately $65 is for U.S. plans. Under ERISA regulations, a plan sponsor that establishes a pre-funding balance by making discretionary contributions to a U.S. defined benefit pension plan may elect to apply all or a portion of this balance toward its minimum required contribution obligations to the related plan in future years. In 2022, management intends to make such election related to the Company's U.S. plans.

Benefit payments expected to be paid to pension and other postretirement benefit plan participants are as follows:

Year ending December 31,	**Pension benefits**	**Other postretirement benefits**
2022	$ 285	$ 60
2023	280	55
2024	285	55
2025	285	50
2026	285	50
2027 through 2031	1,365	215
	$ 2,785	$ 485

Defined Contribution Plans

The Company sponsors savings and investment plans in several countries, primarily in Australia and the United States. In the United States, employees may contribute a portion of their compensation to the plans, and Alcoa matches a specified percentage of these contributions in equivalent form of the investments elected by the employee. Also, the Company makes contributions to a retirement savings account based on a percentage of eligible compensation for certain U.S. employees hired after March 1, 2006 that are not able to participate in Alcoa's defined benefit pension plans. The Company's expenses related to all defined contribution plans were $72 in 2021, $73 in 2020, and $68 in 2019.

Member-funded Pension Plans

The Company contributes to member-funded pension plans for the employees of Aluminerie de Bécancour Inc. and Aluminerie de Deschambault in Canada. Alcoa makes contributions to the plans based on a percentage of the employees' eligible compensation. The Company's expenses related to the member-funded pension plans were $17 in 2021 and $10 in 2020.

Target Benefit Plan

The Company contributes to a target benefit plan for the employees of Baie-Comeau in Canada. Alcoa makes contributions to the plan based on a percentage of the employees' eligible compensation. The Company's expenses related to the target benefit plan were $9 in 2021.

P. DERIVATIVES AND OTHER FINANCIAL INSTRUMENTS

Fair Value. The Company follows a fair value hierarchy to measure its assets and liabilities. As of December 31, 2021 and 2020, respectively, the assets and liabilities measured at fair value on a recurring basis were primarily derivative instruments. In addition, the Company measures its pension plan assets at fair value (see Note O). Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The fair value hierarchy distinguishes between (i) market participant assumptions developed based on market data obtained from independent sources (observable inputs) and (ii) an entity's own assumptions about market participant assumptions developed based on the best information available in the circumstances (unobservable inputs). The fair value hierarchy consists of three broad levels, which gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3). The three levels of the fair value hierarchy are described below:

- Level 1 – Unadjusted quoted prices in active markets that are accessible at the measurement date for identical, unrestricted assets or liabilities.

- Level 2 – Inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly, including quoted prices for similar assets or liabilities in active markets; quoted prices for identical or similar assets or liabilities in markets that are not active; inputs other than quoted prices that are observable for the asset or liability (e.g., interest rates); and inputs that are derived principally from or corroborated by observable market data by correlation or other means.

- Level 3 – Inputs that are both significant to the fair value measurement and unobservable.

Derivatives. Alcoa Corporation is exposed to certain risks relating to its ongoing business operations, including the risks of changing commodity prices, foreign currency exchange rates and interest rates. Alcoa Corporation's commodity and derivative activities include aluminum, energy, foreign exchange, and interest rate contracts, which are held for purposes other than trading. They are used to mitigate uncertainty and volatility, and to cover underlying exposures. While Alcoa does not generally enter into derivative contracts to mitigate the risk associated with changes in aluminum price, the Company may do so in isolated cases to address discrete commercial or operational conditions. Alcoa is not involved in trading activities for energy, weather derivatives, or other non-exchange commodities.

Alcoa Corporation's commodity and derivative activities are subject to the management, direction, and control of the Strategic Risk Management Committee (SRMC), which consists of at least three members, including the chief executive officer, the chief financial officer, and the chief commercial officer. The remaining member(s) are other officers and/or employees of the Company as the chief executive officer may designate from time to time. As of December 31, 2021, the other member of the SRMC is Alcoa Corporation's treasurer. The SRMC meets on a periodic basis to review derivative positions and strategy and reports to the Audit Committee of Alcoa Corporation's Board of Directors on the scope of its activities.

Alcoa Corporation's aluminum, energy, and foreign exchange contracts are predominately classified as Level 1 under the fair value hierarchy. All of the Level 1 contracts are designated as either fair value or cash flow hedging instruments. Alcoa Corporation also has several derivative instruments classified as Level 3 under the fair value hierarchy, which are either designated as cash flow hedges or undesignated. Alcoa includes the changes in its equity method investee's Level 2 derivatives in Accumulated other comprehensive (loss) income.

The following tables present the detail for Level 1, 2 and 3 derivatives (see additional Level 3 information in further tables below):

	2021		2020	
Balance at December 31,	**Assets**	**Liabilities**	**Assets**	**Liabilities**
Level 1 derivative instruments	$ 19	$ 29	$ 21	7
Level 3 derivative instruments	$ 2	1,293	–	838
Total	$ 21	$ 1,322	$ 21	845
Less: Current	14	274	21	103
Non-current	$ 7	$ 1,048	$ –	$ 742

	2021		2020	
Year ended December 31,	**Unrealized loss recognized in Other comprehensive (loss) income**	**Realized loss reclassed from Other comprehensive (loss) income to earnings**	**Unrealized loss recognized in Other comprehensive (loss) income**	**Realized loss reclassed from Other comprehensive (loss) income to earnings**
Level 1 derivative instruments	$ (28)	$ (10)	$ 8	$ (19)
Level 3 derivative instruments	(759)	(279)	(374)	(88)
Non-controlling and equity interest (Level 2)	5	(6)	21	1
Total	$ (782)	$ (295)	$ (345)	$ (106)

The 2021 realized loss of $10 on Level 1 cash flow hedges was comprised of a $7 loss recognized in Sales and a $3 loss recognized in Cost of goods sold. The 2020 realized loss of $19 on Level 1 cash flow hedges was comprised of a $9 loss recognized in Sales and a $10 loss recognized in Cost of goods sold.

During 2019, Alcoa recognized a realized loss of $26 on Level 1 cash flow hedges comprised of an $18 loss recognized in Sales and an $8 loss recognized in Cost of goods sold.

Derivative instruments classified as Level 3 in the fair value hierarchy represent those in which management has used at least one significant unobservable input in the valuation model. Alcoa Corporation uses a discounted cash flow model to fair value all Level 3 derivative instruments. Inputs in the valuation models for Level 3 derivative instruments are composed of the following: (i) quoted market prices (e.g., aluminum prices on the 10-year LME forward curve and energy prices), (ii) significant other observable inputs (e.g., information concerning time premiums and volatilities for certain option type embedded derivatives and regional premiums for aluminum contracts), and (iii) unobservable inputs (e.g., aluminum and energy prices beyond those quoted in the market, and estimated credit spread between Alcoa and the counterparty). For periods beyond the term of quoted market prices for aluminum, Alcoa Corporation estimates the price of aluminum by extrapolating the 10-year LME forward curve. For periods beyond the term of quoted market prices for the Midwest premium, management estimates the Midwest premium based on recent transactions. Where appropriate, valuations are adjusted for various factors such as liquidity, bid/offer spreads, and credit considerations. Such adjustments are generally based on available market evidence (Level 2). In the absence of such evidence, management's best estimate is used (Level 3). If a significant input that is unobservable in one period becomes observable in a subsequent period, the related asset or liability would be transferred to the appropriate classification (Level 1 or 2) in the period of such change (there were no such transfers in the periods presented). There were no purchases, sales, or settlements of Level 3 derivative instruments in the periods presented.

Level 3 derivative instruments outstanding as of December 31, 2021 are described in the table below:

Description	Designation	Contract Termination	Unobservable Inputs Impacting Valuation	Sensitivity to Inputs
Power contracts				
Embedded derivative that indexes the price of power to the LME price of aluminum plus the Midwest premium	Cash flow hedge of forward sales of aluminum	March 2026 December 2029 February 2036	LME price, Midwest premium and MWh per year	Increase in LME price and/or the Midwest premium results in a higher cost of power and an increase to the derivative liability
Embedded derivative that indexes the price of power to the LME price of aluminum	Cash flow hedge of forward sales of aluminum	September 2027	LME price and MWh per year	Increase in LME price results in a higher cost of power and an increase to the derivative liability

Description	Designation	Contract Termination	Unobservable Inputs Impacting Valuation	Sensitivity to Inputs
Embedded derivative that indexes the price of power to the credit spread between the Company and the counterparty	Not designated	October 2028	Estimated credit spread	Wider credit spread results in a higher cost of power and increase in the derivative liability
Financial contract				
Hedge power prices	Not designated	June 2026	LME price and power price	Lower prices in the power market or higher LME prices result in an increase in the derivative liability

In addition to the instruments presented above, Alcoa had a financial contract that expired in July 2021 that hedged the anticipated power requirements at one of its smelters and was designated as a cash flow hedge of future purchases of electricity. In March 2021, Alcoa entered into four new financial contracts (Financial contracts (undesignated), below) with three counterparties to hedge the anticipated power requirements at this smelter for the period from August 1, 2021 through June 30, 2026. A fifth financial contract (undesignated) was entered into in November 2021; its effective date is dependent on power consumption associated with the restart of capacity at the smelter, will be effective during the period from July 1, 2022 through November 1, 2022, and expires June 30, 2026. Two of these financial contracts include LME-linked pricing components and do not qualify for hedge accounting treatment. Management elected not to apply hedge accounting treatment for the other three financial contracts as the value of these contracts is not significant. Unrealized and realized gains and losses on these financial contracts are included in Other (income) expenses, net on the accompanying Statement of Consolidated Operations.

At December 31, 2021, the outstanding Level 3 instruments are associated with seven smelters. At December 31, 2021 and 2020, the power contracts with embedded derivatives designated as cash flow hedges hedge forecasted aluminum sales of 1,905 kmt and 2,130 kmt, respectively.

The following table presents quantitative information related to the significant unobservable inputs described above for Level 3 derivative instruments (megawatt hours in MWh):

	December 31, 2021	Unobservable Input	Unobservable Input Range	
Asset Derivatives				
Financial contracts (undesignated)	$ 2	Interrelationship of forward energy price, LME forward price and the Consumer Price Index	Electricity (per MWh) LME (per mt)	2022: $41.30 2022: $47.44 2022: $2,803 2022: $2,803
Power contract	–	MWh of energy needed to produce the forecasted mt of aluminum	LME Midwest premium Electricity	2022: $2,803 2022: $2,808 2022: $0.3015 2022: $0.2915 Rate of 2 million MWh per year
Total Asset Derivatives	$ 2			
Liability Derivatives				
Power contract	$ 284	MWh of energy needed to produce the forecasted mt of aluminum	LME (per mt) Electricity	2022: $2,803 2027: $2,287 Rate of 4 million MWh per year
Power contracts	1,006	MWh of energy needed to produce the forecasted mt of aluminum	LME (per mt) Midwest premium (per pound) Electricity	2022: $2,803 2029: $2,364 2036: $2,660 2022: $0.3015 2029: $0.2715 2036: $0.2715 Rate of 18 million MWh per year
Power contract (undesignated)	3	Estimated spread between the 30- year debt yield of Alcoa and the counterparty	Credit spread	1.30%: 30-year debt yield spread 4.10%: Alcoa (estimated) 2.80%: counterparty
Total Liability Derivatives	$ 1,293			

The fair values of Level 3 derivative instruments recorded in the accompanying Consolidated Balance Sheet were as follows:

Asset Derivatives	**December 31, 2021**	**December 31, 2020**
Derivatives not designated as hedging instruments:		
Current – financial contract	$ 2	$ –
Total derivatives not designated as hedging instruments	$ 2	$ –
Total Asset Derivatives	$ 2	$ –
Liability Derivatives		
Derivatives designated as hedging instruments:		
Current – power contracts	$ 262	$ 94
Current – financial contract	–	1
Non-current – power contracts	1,028	720
Total derivatives designated as hedging instruments	$ 1,290	$ 815
Derivatives not designated as hedging instruments:		
Current – embedded credit derivative	$ 1	$ 4
Non-current – embedded credit derivative	2	19
Total derivatives not designated as hedging instruments	$ 3	$ 23
Total Liability Derivatives	$ 1,293	$ 838

The following table shows the net fair values of the Level 3 derivative instruments at December 31, 2021 and the effect on these amounts of a hypothetical change (increase or decrease of 10%) in the market prices or rates that existed as of December 31, 2021:

	Fair value asset (liability)	Index change of +/-10%
Power contracts	$ (1,290)	$ 357
Embedded credit derivative	(3)	1
Financial contract	2	7

The following tables present a reconciliation of activity for Level 3 derivative instruments:

	Assets		Liabilities	
2021	**Financial contract**	**Power contracts**	**Financial contract**	**Embedded credit derivative**
January 1, 2021	$ –	$ 814	$ 1	$ 23
Total gains or losses included in:				
Sales (realized)	–	(277)	–	–
Cost of goods sold (realized)	(6)	–	(8)	–
Other expenses, net (unrealized/realized)	7	–	–	(20)
Other comprehensive (loss) income (unrealized)	–	753	6	–
Other	1	–	1	–
December 31, 2021	$ 2	$ 1,290	$ –	$ 3
Change in unrealized gains or losses included in earnings for derivative instruments held at December 31, 2021:				
Other expenses, net	$ 5	$ –	$ (1)	$ (19)

	Assets		Liabilities	
2020	Financial contract	Power contracts	Financial contract	Embedded credit derivative
January 1, 2020	$ 74	$ 598	$ –	$ 17
Total gains or losses included in:				
Sales (realized)	–	(74)	–	–
Cost of goods sold (realized)	14	–	–	–
Other expenses, net (unrealized/realized)	–	–	–	7
Other comprehensive (loss) income (unrealized)	(83)	290	1	–
Other	(5)	–	–	(1)
December 31, 2020	$ –	$ 814	$ 1	$ 23
Change in unrealized gains or losses included in earnings for derivative instruments held at December 31, 2020:				
Other, net	$ –	$ –	$ –	$ 11

Derivatives Designated As Hedging Instruments – Cash Flow Hedges

Assuming market rates remain constant with the rates at December 31, 2021, a realized loss of $262 related to power contracts is expected to be recognized in Sales over the next 12 months.

Material Limitations

The disclosures with respect to commodity prices and foreign currency exchange risk do not consider the underlying commitments or anticipated transactions. If the underlying items were included in the analysis, the gains or losses on the futures contracts may be offset. Actual results will be determined by several factors that are not under Alcoa Corporation's control and could vary significantly from those factors disclosed.

Alcoa Corporation is exposed to credit loss in the event of non-performance by counterparties on the above instruments, as well as credit or performance risk with respect to its hedged customers' commitments. Alcoa Corporation does not anticipate non-performance by any of these parties. Contracts are with creditworthy counterparties and are further supported by cash, treasury bills, or irrevocable letters of credit issued by carefully chosen banks. In addition, various master netting arrangements are in place with counterparties to facilitate settlement of gains and losses on these contracts.

Other Financial Instruments. The carrying values and fair values of Alcoa Corporation's other financial instruments were as follows:

	2021		2020	
December 31,	Carrying value	Fair value	Carrying value	Fair value
Cash and cash equivalents	$ 1,814	$ 1,814	$ 1,607	$ 1,607
Restricted cash	110	110	3	3
Short-term borrowings	75	75	77	77
Long-term debt due within one year	1	1	2	2
Long-term debt, less amount due within one year	1,726	1,865	2,463	2,692

Cash and cash equivalents and Restricted cash. The carrying amounts approximate fair value because of the short maturity of the instruments. The fair value amounts for Cash and cash equivalents and Restricted cash were classified in Level 1 of the fair value hierarchy.

Short-term borrowings and Long-term debt, including amounts due within one year. The fair value of Long-term debt, less amount due within one year was based on quoted market prices for public debt and on interest rates that are currently available to Alcoa Corporation for issuance of debt with similar terms and maturities for non-public debt. The fair value amounts for all Short-term borrowings and Long-term debt were classified in Level 2 of the fair value hierarchy.

Q. INCOME TAXES

Provision for income taxes. The components of Income (loss) before income taxes were as follows:

	2021	2020	2019
Domestic	$ (663)	$ (328)	$ (1,000)
Foreign	1,862	501	562
Total	$ 1,199	$ 173	$ (438)

Provision for income taxes consisted of the following:

	2021	2020	2019
Current:			
Federal	$ 8	$ 2	$ (4)
Foreign	473	211	404
State and local	1	–	–
	482	213	400
Deferred:			
Federal	6	–	2
Foreign	141	(26)	13
State and local	–	–	–
	147	(26)	15
Total	$ 629	$ 187	$ 415

Federal includes U.S. income taxes related to foreign income.

A reconciliation of the U.S. federal statutory rate to Alcoa's effective tax rate was as follows:

	2021	2020	2019
U.S. federal statutory rate	21.0%	21.0%	21.0%
Changes in valuation allowances	23.4	168.3	(70.3)
Taxes on foreign operations – rate differential	10.8	34.5	(19.3)
Impacts of the TCJA	2.0	(88.8)	5.0
Tax on foreign operations – other	1.7	(0.7)	(2.7)
Non-controlling interest	0.5	1.6	(6.8)
Non-deductible losses on foreign divestitures	–	–	(23.1)
Adjustment of prior year income taxes	–	(2.5)	(1.1)
Uncertain tax positions	–	(21.5)	(0.6)
Equity (loss) income	(2.5)	2.0	(1.9)
Tax holidays	(2.8)	(1.9)	2.0
Other	(1.6)	(3.9)	2.9
Effective tax rate	52.5%	108.1%	(94.9)%

In the fourth quarter of 2020, the Supreme Court of Spain ruled in favor of Alcoa regarding the 2006 through 2009 tax year assessment. As a result, the reserve for Uncertain tax positions that was established in 2018 has been released. Refer to the Tax Matters section in Note S for further information.

On December 22, 2017, U.S. tax legislation known as the U.S. Tax Cuts and Jobs Act of 2017 (the TCJA) was enacted. In 2018, the Company made an accounting policy election to include as a period cost the tax impact generated by including Global Intangible Low-Taxed Income provisions (GILTI) in U.S. taxable income. During 2020, the U.S. Treasury Department finalized regulations implementing the GILTI provisions of the TCJA. Included in these regulations is an exclusion from GILTI for income subject to a high rate of foreign tax, which permits taxpayers to elect to apply the exception to previously filed tax returns. During 2020, an amended tax return was filed for 2018 to make this election. As a result, the Company recorded a tax benefit of ($138) in 2020 to reflect the re-establishment of certain U.S. Federal net operating loss carryforwards and a corresponding tax charge of $138 to record a full valuation allowance against the increased deferred tax asset.

Certain income earned by AWAB is eligible for a tax holiday, which decreases the tax rate on this income from 34% to 15.25%, which will result in future cash tax savings. The holiday related to production at the Alumar refinery will end on December 31, 2027, and the holiday related to the operation of the Juruti (Brazil) bauxite mine will end on December 31, 2026. In 2020 and 2019, deferred tax assets expected to reverse in the holiday period were revalued at the holiday rate. This resulted in a discrete income tax charge of $15 and $7 in 2020 and 2019, respectively. In 2021, it was determined that the deferred taxes associated with the tax holiday would be fully exhausted within the holiday period. These amounts were therefore maintained on the balance sheet at the holiday tax rate.

Certain components of the 2019 restructuring charges resulting from the MRC divestiture and the Avilés and La Coruña facilities curtailment and subsequent divestiture are not deductible for tax purposes. These amounts are $65 for MRC and $35 for Avilés and La Coruña combined and are included in Non-deductible losses on foreign divestitures in the above table. See Note C for additional information on the divestiture charges.

Deferred income taxes. The components of deferred tax assets and liabilities based on the underlying attributes without regard to jurisdiction were as follows:

	2021		2020	
December 31,	Deferred tax assets	Deferred tax liabilities	Deferred tax assets	Deferred tax liabilities
Tax loss carryforwards	$ 1,554	$ –	$ 1,668	$ –
Employee benefits	409	–	711	–
Derivatives and hedging activities	345	–	214	–
Loss provisions	214	–	183	–
Depreciation	128	425	66	434
Investment basis differences	117	–	139	–
Interest	105	1	60	2
Lease assets and liabilities	26	22	37	36
Tax credit carryforwards	26	–	27	–
Deferred income/expense	2	135	22	116
Other	38	–	41	2
	2,964	583	3,168	590
Valuation allowance	(2,062)	–	(2,127)	–
Total	$ 902	$ 583	$ 1,041	$ 590

The following table details the expiration periods of the deferred tax assets presented above:

December 31, 2021	Expires within 10 years	Expires within 11-20 years	No expiration	Other	Total
Tax loss carryforwards	$ 232	$ 366	$ 956	$ –	$ 1,554
Tax credit carryforwards	17	9	–	–	26
Other	–	–	265	1,119	1,384
Valuation allowance	(249)	(374)	(958)	(481)	(2,062)
Total	$ –	$ 1	$ 263	$ 638	$ 902

Deferred tax assets with no expiration may still have annual limitations on utilization. Other represents deferred tax assets whose expiration is dependent upon the reversal of the underlying temporary difference.

The total deferred tax asset (net of valuation allowance) is supported by projections of future taxable income exclusive of reversing temporary differences and taxable temporary differences that reverse within the carryforward period. The composition of Alcoa's net deferred tax asset by jurisdiction as of December 31, 2021 was as follows:

	Domestic	Foreign	Total
Deferred tax assets	$ 1,066	$ 1,898	$ 2,964
Valuation allowance	(965)	(1,097)	(2,062)
Deferred tax liabilities	(100)	(483)	(583)
Total	$ 1	$ 318	$ 319

The Company has several income tax filers in various foreign countries. Of the $318 net deferred tax asset included under the Foreign column in the table above, approximately 85% relates to six of Alcoa's income tax filers (the "Foreign Filers") as follows: a $148 net deferred tax asset for Alcoa Canada Company in Canada; a $141 net deferred tax asset for Alcoa Alumínio S.A. in Brazil; a $68 net deferred tax asset for AWAB in Brazil; a $67 net deferred tax asset for Alcoa Lauralco Management Company in Canada; a $34 net deferred tax asset for Alcoa Wolinbec Company in Canada; and, a $182 net deferred tax liability for AofA in Australia.

The future realization of the net deferred tax asset for each of the Foreign Filers was based on projections of the respective future taxable income (defined as the sum of pretax income, other comprehensive income, and permanent tax differences), exclusive of reversing temporary differences and carryforwards. The realization of the net deferred tax assets of the Foreign Filers is not dependent on any future tax planning strategies.

The Foreign Filers do not have a history of tax loss carryforwards expiring unused. Additionally, tax loss carryforwards have an infinite life under the income tax code in Brazil. However, utilization of an existing tax loss carryforward is limited to 30% of taxable income in a particular year in Brazil.

Accordingly, management concluded that the net deferred tax assets of the Foreign Filers will more likely than not be realized in future periods, resulting in no need for a partial or full valuation allowance as of December 31, 2021.

In December 2021, Alcoa recorded a valuation allowance of $103 against the net deferred tax assets of Alúmina Española, S.A. (Española). Management concluded that it is more likely than not that Española's net deferred tax assets, which consist primarily of tax loss carryforwards, will not be realized as the entity's sole operating asset, the San Ciprián refinery, is in a three-year cumulative loss position for the period ended December 31, 2021. This cumulative loss position is the result of recent operating losses due to the high energy costs in Spain and the impact of the refinery workers' strike on the fourth quarter of 2021. Despite recent favorable increases in the sales price of alumina, management has forecasted operating losses for Española for the foreseeable future due to the high energy costs in Spain and increases in raw materials costs, resulting in a need for a full valuation allowance as of December 31, 2021.

The following table details the changes in the valuation allowance:

December 31,	**2021**	**2020**	**2019**
Balance at beginning of year	$ (2,127)	$ (1,778)	$ (1,684)
Establishment of new allowances[(1)]	(103)	–	–
Net change to existing allowances[(2)]	139	(315)	(101)
Foreign currency translation	29	(34)	7
Balance at end of year	$ (2,062)	$ (2,127)	$ (1,778)

(1) This line item reflects valuation allowances initially established as a result of a change in management's judgment regarding the realizability of deferred tax assets.

(2) This line item reflects movements in previously established valuation allowances, which increase or decrease as the related deferred tax assets increase or decrease. Such movements occur as a result of remeasurement due to a tax rate change and changes in the underlying attributes of the deferred tax assets, including expiration of the attribute and reversal of the temporary difference that gave rise to the deferred tax asset.

Undistributed net earnings. Certain earnings of Alcoa's foreign subsidiaries are deemed to be permanently reinvested outside the United States. The cumulative amount of Alcoa's foreign undistributed net earnings deemed to be permanently reinvested was approximately $2,377 as of December 31, 2021. Alcoa Corporation has several commitments and obligations related to the Company's operations in various foreign jurisdictions; therefore, management has no plans to distribute such earnings in the foreseeable future. Alcoa Corporation continuously evaluates its local and global cash needs for future business operations and anticipated debt facilities, which may influence future repatriation decisions. If these earnings were distributed in the form of dividends or otherwise, we could be subject to foreign income or withholding taxes and state income taxes. Due to the uncertainty of the manner in which the undistributed earnings would be brought back to the United States and the tax laws in effect at that time, it is not practicable to estimate the tax liability that might be incurred if such earnings were remitted to the U.S.

Unrecognized tax benefits. Alcoa and its subsidiaries file income tax returns in the U.S. federal jurisdiction and various foreign and U.S. state jurisdictions. With few exceptions, the Company is not subject to income tax examinations by tax authorities for years prior to 2014. The U.S. federal income tax filings of the Company's U.S. consolidated tax group have been examined through the 2018 tax year. Foreign jurisdiction tax authorities are in the process of examining income tax returns of several of Alcoa's subsidiaries for various tax years. Excluding the Australia tax matter discussed in Note S, the period under foreign examination includes the income tax years from 2009 through 2020. For U.S. state income tax purposes, the Company and its subsidiaries remain subject to income tax examinations for the 2017 tax year and forward.

In the third quarter of 2020, AofA paid approximately $74 (A$107) to the ATO related to the tax dispute described in Note S. Upon payment, AofA recorded a non-current prepaid tax asset, as the Company continues to believe it is more likely than not that AofA's tax position will be sustained and therefore is not recognizing any tax expense in relation to this matter. In accordance with Australian tax laws, the initial interest assessment and additional interest are deductible against AofA's taxable income resulting in approximately $169 (A$219) and $14 (A$19) of lower cash tax payments in the second half of 2020 and the year-ended December 31, 2021, respectively. Interest compounded in future years is also deductible against AofA's income in the respective periods. If AofA is ultimately successful, the interest deduction would become taxable as income in the year the dispute is resolved. In addition, should the ATO decide in the interim to reduce any interest already assessed, the reduction would be taxable as income at that point in time. During 2021, AofA continued to record its tax provision and tax liability without effect of the ATO assessment, since it expects to prevail. The tax payable will remain on AofA's balance sheet as a non-current liability, increased by the tax effect of subsequent periods' interest deductions, until dispute resolution, which is expected to take several years. The non-current liability resulting from the cumulative interest deductions was approximately $174 (A$238) and $169 (A$219) at December 31, 2021 and 2020, respectively.

The reserve balance for unrecognized tax benefits is included in Non-current income taxes on the Consolidated Balance Sheet. A reconciliation of the beginning and ending amount of unrecognized tax benefits (excluding interest and penalties) was as follows:

December 31,	2021	2020	2019
Balance at beginning of year	$ 4	$ 29	$ 30
Reductions for tax positions of prior years	–	(26)	–
Foreign currency translation	–	1	(1)
Balance at end of year	$ 4	$ 4	$ 29

For all periods presented, a portion of the balance at end of year pertains to state tax liabilities, which are presented before any offset for federal tax benefits. The effect of unrecognized tax benefits, if recorded, that would impact the annual effective tax rate for 2021, 2020, and 2019 would be 0%, 3%, and (7)%, respectively, of pretax book (loss) income. In 2018, the Company recorded a charge of $30 (€26), including $10 (€9) for interest, in Provision for income taxes on the accompanying Statement of Consolidated Operations to establish a liability for its 49% share of the estimated loss on a disputed income tax matter (see Spain in the Tax section of Note S). In 2020, the Company received a favorable final ruling in the Supreme Court of Spain on the Spain tax matter and recorded income of $32 (€26) from the reversal of the 2018 entry and the interest expense accrued through 2019. This change is reflected in the above table as Reductions for tax positions of prior years in the amount of $21 (€17), which is exclusive of interest previously charged to expense. The remainder of the change in Reductions for tax positions of prior years is primarily related to changes in Brazil income tax positions. There were no material changes in Reductions for tax positions of prior years in 2021. Alcoa does not anticipate that changes in its unrecognized tax benefits will have a material impact on the Statement of Consolidated Operations during 2022.

It is the Company's policy to recognize interest and penalties related to income taxes as a component of the Provision for income taxes on the accompanying Statement of Consolidated Operations. In 2021, 2020, and 2019 Alcoa recognized $0, $0, and $2, respectively, in interest and penalties. Due to the expiration of the statute of limitations, settlements with tax authorities, and refunded overpayments, the Company also recognized interest income of $0, $13, and $1 in 2021, 2020, and 2019, respectively. As of December 31, 2021 and 2020, the amount accrued for the payment of interest and penalties was $2 and $2, respectively.

R. ASSET RETIREMENT OBLIGATIONS

Alcoa records AROs related to legal obligations associated with the standard operation of bauxite mines, alumina refineries, and aluminum smelters. These AROs consist primarily of costs associated with mine reclamation, closure of bauxite residue areas, spent pot lining disposal, and landfill closures. The Company also recognizes AROs for the disposal of regulated waste materials related to the demolition of facilities and for any significant lease restoration obligations, if required by a lease agreement.

The following table details the carrying value of recorded AROs by major category, of which $116 and $128 was classified as a current liability as of December 31, 2021 and 2020, respectively:

December 31,	2021	2020
Closure of bauxite residue areas	$ 274	$ 278
Mine reclamation	255	264
Spent pot lining disposal	107	108
Demolition	72	72
Landfill closure	30	31
Balance at end of year	$ 738	$ 753

The following table details the changes in the total carrying value of recorded AROs:

December 31,	2021	2020
Balance at beginning of year	$ 753	$ 717
Accretion expense	20	21
Liabilities incurred	101	107
Payments	(101)	(93)
Reversals of previously recorded liabilities	(6)	(17)
Foreign currency translation and other	(29)	18
Balance at end of year	$ 738	$ 753

Liabilities incurred in 2021 include:

- $30 for new mine areas opened during the year and higher estimated mine reclamation costs, partially driven by increased complexity of reclamation areas due to steeper mine pits and grades;
- $28 for bauxite residue areas, including new bauxite residue areas as well as changes in engineering designs for both open and closed bauxite residue areas;

- $17 related to spent pot lining treatment and disposal;
- $16 related to the closure of the Wenatchee smelter announced in the fourth quarter of 2021;
- $5 related to the closure of the Lake Charles anode facility announced in the third quarter of 2021; and,
- $5 related to changes in scope for landfill closures.

The additional accruals were primarily recorded with corresponding capitalized asset retirement costs (see Note B) except for $23 related to closed sites which were recorded to Restructuring and other charges, net on the accompanying Statement of Consolidated Operations (see Note D).

Liabilities incurred in 2020 include accruals for new mine areas opened during the year, higher estimated mine reclamation costs, accruals for bauxite residue areas opened during the year, and accruals related to spent pot lining treatment and disposals. The additional accruals were primarily recorded with corresponding capitalized asset retirement costs (see Note B) except for $2 which were recorded to Restructuring and other charges, net on the accompanying Statement of Consolidated Operations (see Note D).

In 2021, reversals of previously recorded liabilities included a reversal of $5 due to the determination that previously estimated demolition costs were not required at the previously closed Tennessee site. In 2020, reversals of previously recorded liabilities were primarily related to the sale of Gum Springs (see Note U) and completion of demolition projects at numerous permanently closed sites.

S. CONTINGENCIES AND COMMITMENTS

Contingencies

Environmental Matters

Alcoa Corporation participates in environmental assessments and cleanups at several locations. These include currently or previously owned or operated facilities and adjoining properties, and waste sites, including Superfund (Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)) sites.

Alcoa Corporation's environmental remediation reserve balance reflects the most probable costs to remediate identified environmental conditions for which costs can be reasonably estimated. The following table details the changes in the carrying value of recorded environmental remediation reserves:

Balance at December 31, 2018	$ 280
Liabilities incurred	73
Cash payments	(17)
Reversals of previously recorded liabilities	(1)
Balance at December 31, 2019	335
Liabilities incurred	7
Cash payments	(19)
Foreign currency translation and other	(1)
Balance at December 31, 2020	322
Liabilities incurred	21
Cash payments	(23)
Reversals of previously recorded liabilities	(17)
Foreign currency translation and other	6
Balance at December 31, 2021	$ 309

At December 31, 2021 and 2020, the current portion of the remediation reserve balance was $44 and $29, respectively.

In 2021, the Company incurred liabilities of $21 primarily related to remediation design considerations at the Longview site in Washington, closure of the Wenatchee aluminum smelter in Washington, environmental activities at the Point Comfort site in Texas, closure of the anode plant at the Lake Charles site in Louisiana, and wetlands mitigation at the Longview site in Washington, as well as other increases for ongoing monitoring and maintenance at various sites. These charges are primarily recorded in Cost of goods sold and Restructuring and other charges, net on the accompanying Statement of Consolidated Operations. Payments related to remediation expenses applied against the reserve were $23. These amounts include mandated expenditures as well as those not required by any regulatory authority or third-party. Further, the Company recorded reversals of reserves of $17 related to:

- $7 due to the determination that previously estimated site remediation is not required at the previously closed Tennessee site;
- $5 due to lower costs for waste treatment at a previously closed Suriname site; and,
- $5 due to lower costs for site remediation related to a previously closed site in Brazil.

In 2020, the Company incurred liabilities of $7 which were primarily related to ongoing remediation work at various sites. The additional accruals were recorded to Cost of goods sold except for $1 which was recorded to Restructuring and other charges, net on the accompanying Statement of Consolidated Operations (see Note D).

In 2019, the Company incurred liabilities of $73 which were primarily related to the closure of the Point Comfort alumina refinery and recorded in Restructuring and other charges, net on the accompanying Statement of Consolidated Operations (see Note D). The remaining amount was recorded to Cost of goods sold.

The estimated timing of cash outflows from the environmental remediation reserve at December 31, 2021 is as follows:

2022	$	44
2023-2027		155
Thereafter		110
Total	$	309

Reserve balances at December 31, 2021 and 2020, associated with significant sites with active remediation underway or for future remediation were $247 and $259, respectively. In management's judgment, the Company's reserves are sufficient to satisfy the provisions of the respective action plans. Upon changes in facts or circumstances, a change to the reserve may be required. The Company's significant sites include:

Poços de Caldas, Brazil – The reserve associated with the 2015 closure of the Alcoa Alumínio S.A. smelter in Poços de Caldas, Brazil, is for remediation of historic spent potlining storage and disposal areas. The final remediation plan is currently under review; such review could require the reserve balance to be adjusted.

Fusina and Portovesme, Italy – Alcoa Corporation's subsidiary Alcoa Trasformazioni S.r.l. has remediation projects underway for its closed smelter sites at Fusina and Portovesme which have been approved by the Italian Ministry for Ecologic Transition (MET). Work is ongoing for soil remediation at the Fusina site with expected completion by the end of 2023 and at the Portovesme site with expected completion in the first half of 2022. The final remedial design for the groundwater remediation project at Portovesme was completed in 2020 and is awaiting approval from the MET.

Suriname – The reserve associated with the 2017 closure of the Suralco refinery and bauxite mine is for treatment and disposal of refinery waste and soil remediation. The work began in 2017 and is expected to be completed at the end of 2025.

Hurricane Creek, Arkansas – The reserve associated with the 1990 closure of two mining areas and refineries near Hurricane Creek, Arkansas is for ongoing monitoring and maintenance for water quality surrounding the mine areas and residue disposal areas.

Massena, New York – The reserve associated with the 2015 closure of the Massena East smelter by the Company's subsidiary, Reynolds Metals Company, is for subsurface soil remediation to be performed after demolition of the structures. Remediation work commenced in 2021 and will take four to eight years to complete.

Point Comfort, Texas – The reserve associated with the 2019 closure of the Point Comfort alumina refinery is for disposal of industrial wastes contained at the site, subsurface remediation, and post-closure monitoring and maintenance. The final remediation plan is currently under review, which may result in a change to the existing reserve.

Sherwin, Texas – In connection with the 2018 settlement of a dispute related to the previously-owned Sherwin alumina refinery, the Company's subsidiary, Copano Enterprises LLC, accepted responsibility for the final closure of four bauxite residue waste disposal areas (known as the Copano facility). Work commenced on the first residue disposal area in 2018 and will take up to six additional years to complete, depending on the nature of its potential re-use. Work on the next three areas has not commenced but is expected to be completed by 2048, depending on its potential re-use.

Longview, Washington – In connection with a 2018 Consent Decree and Cleanup Action Plan with the State of Washington Department of Ecology, the Company's subsidiary, Northwest Alloys as landowner, accepted certain responsibilities for future remediation of contaminated soil and sediments at the site located near Longview, Washington. In December 2020, the lessee of the land, who was a partner in the remediation of the site, filed for bankruptcy and exited the site in January 2021. Remediation design changes for consolidation and remediation of the onsite industrial waste landfills, groundwater remediation, and post-closure monitoring and maintenance at the site was completed in 2021. As of December 31, 2021, the reserve related to the site is deemed to be sufficient.

Other Sites – The Company is in the process of decommissioning various other plants and remediating sites in several countries for potential redevelopment or to return the land to a natural state. In aggregate, there are approximately 35 remediation projects at these other sites that are planned or underway. These activities will be completed at various times in the future with the latest expected to be in 2026, after which ongoing monitoring and other activities may be required. At December 31, 2021 and 2020, the reserve balance associated with these activities was $62 and $63, respectively.

Tax

Spain – In July 2013, following a corporate income tax audit covering the 2006 through 2009 tax years, an assessment was received from Spain's tax authorities disallowing certain interest deductions claimed by ParentCo's Spanish consolidated tax group. Through various stages of subsequent appeal, denial and re-assessment through the third quarter of 2018, Alcoa Corporation management came to believe that it was no longer more likely than not (greater than 50%) to prevail in this matter. Accordingly, in the third quarter of 2018, Alcoa Corporation recorded a charge of $30 (€26) in Provision for income taxes to establish a liability for its portion of the estimated loss in this matter, representing management's best estimate at the time.

On November 8, 2018, Alcoa filed a petition for appeal to the Supreme Court of Spain. During the fourth quarter of 2020, the Supreme Court of Spain met and ruled in favor of Alcoa on the 2006 through 2009 tax year assessment. The ruling is final and cannot be further appealed. As a result of the final ruling, in the fourth quarter of 2020 Alcoa reversed the $32 (€26) reserve that was established in 2018 and the matter is now considered closed. Additionally, a lien secured with the San Ciprián smelter to Spain's tax authorities that was provided in relation to this matter has been released.

Brazil (AWAB) – In March 2013, AWAB was notified by the Brazilian Federal Revenue Office (RFB) that approximately $110 (R$220) of value added tax credits previously claimed are being disallowed and a penalty of 50% assessed. Of this amount, AWAB received $41 (R$82) in cash in May 2012. The value-added tax credits were claimed by AWAB for both fixed assets and export sales related to the Juruti bauxite mine and São Luís refinery expansion. The RFB has disallowed credits they allege belong to the consortium in which AWAB owns an interest and should not have been claimed by AWAB. Credits have also been disallowed as a result of challenges to apportionment methods used, questions about the use of the credits, and an alleged lack of documented proof. AWAB presented defense of its claim to the RFB on April 8, 2013. If AWAB is successful in this administrative process, the RFB would have no further recourse. If unsuccessful in this process, AWAB has the option to litigate at a judicial level. Separately from AWAB's administrative appeal, in June 2015, new tax law was enacted repealing the provisions in the tax code that were the basis for the RFB assessing a 50% penalty in this matter. As such, the estimated range of reasonably possible loss for these matters is $0 to $39 (R$220). It is management's opinion that the allegations have no basis; however, at this time, the Company is unable to reasonably predict an outcome for this matter.

Australia (AofA) – In December 2019, AofA received a statement of audit position (SOAP) from the Australian Taxation Office (ATO) related to the pricing of certain historic third-party alumina sales. The SOAP proposed adjustments that would result in additional income tax payable by AofA. During 2020, the SOAP was the subject of an independent review process within the ATO. At the conclusion of this process, the ATO determined to continue with the proposed adjustments and issued Notices of Assessment (the Notices) that were received by AofA on July 7, 2020. The Notices asserted claims for income tax payable by AofA of approximately $156 (A$214). The Notices also included claims for compounded interest on the tax amount totaling approximately $516 (A$707). On September 17, 2020, the ATO issued a position paper with its preliminary view on the imposition of administrative penalties related to the tax assessment issued to AofA. This paper proposed penalties of approximately $94 (A$128).

AofA disagreed with the Notices and with the ATO's proposed position on penalties. In September 2020, AofA lodged formal objections to the Notices. In the fourth quarter of 2020, AofA provided a submission on the ATO's imposition of interest and also submitted a response to the ATO's position paper on penalties. After the ATO completes its review of AofA's response to the penalties position paper, the ATO could issue a penalty assessment.

To date, AofA has not received a determination from the objections team on the Notices, nor has it received a response to its submission on the ATO's imposition of interest or its response to the ATO's position paper on penalties.

On February 1, 2022, AofA submitted statutory notices to the ATO requiring the ATO to make decisions on AofA's objections within a 60-day period.

The Company does not agree with the ATO's positions, and AofA will continue to defend this matter and pursue all available dispute resolution methods, up to and including the filing of proceedings in the Australian Courts, a process which could last several years and could involve significant expenses. The Company maintains that the sales subject to the ATO's review, which were ultimately sold to Aluminium Bahrain B.S.C., were the result of arm's length transactions by AofA over two decades and were made at arm's length prices consistent with the prices paid by other third-party alumina customers.

In accordance with the ATO's dispute resolution practices, AofA paid 50% of the assessed income tax amount exclusive of interest and any penalties, or approximately $74 (A$107), during the third quarter 2020, and the ATO is not expected to seek further payment prior to final resolution of the matter. If AofA is ultimately successful, any amounts paid to the ATO as part of the 50% payment would be refunded. AofA funded the payment with cash on hand and recorded the payment within Other non-current assets as a non-current prepaid tax asset; the related December 31, 2021 balance is $78 (A$107).

Further interest on the unpaid tax and interest amounts will continue to accrue during the dispute. The initial interest assessment and the additional interest accrued are deductible against taxable income by AofA but would be taxable as income in the year the dispute is resolved if AofA is ultimately successful. AofA applied this deduction beginning in the third quarter of 2020 which reduced cash tax payments by approximately $169 (A$219) in 2020 and $14 (A$19) in 2021. This amount has been reflected within Other non-current liabilities and deferred credits as a non-current accrued tax liability; the related December 31, 2021 balance is $174 (A$238) (see Note U).

The Company continues to believe it is more likely than not that AofA's tax position will be sustained and therefore is not recognizing any tax expense in relation to this matter. However, because the ultimate resolution of this matter is uncertain at this time, the Company cannot predict the potential loss or range of loss associated with the outcome, which may materially affect its results of operations and financial condition. References to any assessed U.S. dollar amounts presented in connection with this matter have been converted into U.S. dollars from Australian dollars based on the exchange rate in the respective period.

AofA is part of the Company's joint venture with Alumina Limited, an Australian public company listed on the Australian Securities Exchange. The Company and Alumina Limited own 60% and 40%, respectively, of the joint venture entities, including AofA.

Other

Spain – In July 2019, the Company completed the divestiture of the Avilés and La Coruña (Spain) aluminum facilities to PARTER Capital Group AG (PARTER) in a sale process endorsed by the Spanish government and supported by the workers' representatives following a collective dismissal process. In connection with the divestiture, Alcoa committed to make financial contributions to the divested entities of up to $95; a total of $78 was paid through December 31, 2021. In the fourth quarter of 2021, the Company reversed the remaining reserve of $17, in accordance with the terms of the agreement, as the period for which the divested entities could incur qualifying capital expenditures had lapsed.

In early 2020, PARTER sold a majority stake in the facilities to an unrelated party. Alcoa had no knowledge of the subsequent transaction prior to its announcement and on August 28, 2020, Alcoa filed a lawsuit with the Court of First Instance in Madrid, Spain asserting that the sale was in breach of the sale agreement between Alcoa and PARTER.

Related to this subsequent sale transaction, certain proceedings and investigations have been initiated by or at the request of the employees of the facilities against their current employers, the new owners of the current employers, and Alcoa, alleging that certain agreements from the 2019 collective dismissal process remain in force and that, under such agreements, Alcoa remains liable for certain related employment benefits. One such proceeding is a collective case before the Spanish National Court, filed on November 10, 2020, wherein the workers' representatives and employees are seeking to have the terms of a Collective Dismissal Agreement signed between Alcoa and the workers in January 2019 be fulfilled. Other proceedings include: a second collective claim filed in National Court on behalf employees that were not affected by the 2019 collective dismissal process, numerous individual labor claims filed in the labor courts of Avilés and La Coruña and the initiation of a separate criminal investigation by the National Court.

On June 15, 2021, the Spanish National Court ruled that the collective dismissal agreement for the divested Avilés and La Coruña aluminum facilities should be applied to the situation of the claimant workers, and that Alcoa should be liable for the severance of those employees to the extent they were affected by the 2019 collective dismissal process. Alcoa has appealed this ruling to the Supreme Court of Spain.

In July 2021, the Spanish National Court appointed a judicial director to oversee the facilities and later declared the facilities insolvent. In early 2022, the insolvency administrators appointed by the courts (one for each facility) announced their intention to collectively dismiss all employees at the two facilities.

In February 2022, Alcoa and relevant stakeholders initiated discussions to explore a potential global resolution of all pending matters involving Alcoa arising from the prior sale of the two facilities, including a waiver of all claims and investigations previously initiated by or at the request of the employees of the facilities. As of the date of this filing, these initial discussions are ongoing.

If a global resolution is not reached, Alcoa will continue with its appeal to the National Court ruling to the Spanish Supreme Court and will strongly defend all other pending and future legal proceedings arising from the sale of the Avilés and La Coruña facilities. Alcoa believes it has acted in good faith, in full compliance with the law and with all of the terms that it committed to in the contract for the sale of the Avilés and La Coruña facilities to PARTER and in the agreements that it entered into with the representatives of the workers of both facilities.

The estimated range of reasonably possible loss is $0 to $70. Due to the uncertainty regarding both the outcome of the discussions and the likelihood of securing waivers for all claims, Alcoa is unable to reasonably predict the ultimate outcome of this matter.

General

In addition to the matters discussed above, various other lawsuits, claims, and proceedings have been or may be instituted or asserted against Alcoa Corporation, including those pertaining to environmental, safety and health, commercial, tax, product liability, intellectual property infringement, employment, and employee and retiree benefit matters, and other actions and claims arising out of the normal course of business. While the amounts claimed in these other matters may be substantial, the ultimate liability is not readily determinable because of the considerable uncertainties that exist. Accordingly, it is possible that the Company's liquidity or results of operations in a particular period could be materially affected by one or more of these other matters. However, based on facts currently available, management believes that the disposition of these other matters that are pending or asserted will not have a material adverse effect, individually or in the aggregate, on the financial position of the Company.

Commitments

Purchase Obligations. Alcoa Corporation is party to unconditional purchase obligations for energy that expire between 2040 and 2041. Commitments related to these contracts total $57 in 2022, $60 in 2023, $62 in 2024, $64 in 2025, $66 in 2026, and $1,155 thereafter. Expenditures under these contracts totaled $86 in 2021, $79 in 2020, and $146 in 2019. Additionally, the Company has entered into other purchase commitments for energy, raw materials, and other goods and services, which total $3,829 in 2022 $1,853, in 2023, $1,585 in 2024, $1,637 in 2025, $1,594 in 2026, and $10,547 thereafter.

AofA has a gas supply agreement to power its three alumina refineries in Western Australia which began in July 2020 for a 12-year period. The terms of this agreement required AofA to make a prepayment of $500 in two installments, the first of which was made in June 2015 for $300. The second installment of $200 was made in April 2016. At December 31, 2021, Alcoa Corporation had a total asset of $417 (A$571), which was included in Prepaid expenses and other current assets ($40) and Other non-current assets ($377) (see Note U) on the accompanying Consolidated Balance Sheet related to these prepayments. At December 31, 2020, Alcoa Corporation had a total asset of $481 (A$625), which was included in Prepaid expenses and other current assets ($42) and Other non-current assets ($439) (see Note U) on the accompanying Consolidated Balance Sheet.

Guarantees of Third Parties. As of December 31, 2021 and 2020, the Company had no outstanding potential future payments for guarantees issued on behalf of a third-party.

Bank Guarantees and Letters of Credit. Alcoa Corporation has outstanding bank guarantees and letters of credit related to, among others, energy contracts, environmental obligations, legal and tax matters, leasing obligations, workers compensation, and customs duties. The total amount committed under these instruments, which automatically renew or expire at various dates between 2022 and 2026, was $312 (includes $110 issued under a standby letter of credit agreement – see below) at December 31, 2021. Additionally, ParentCo has outstanding bank guarantees and letters of credit related to the Company in the amount of $15 at December 31, 2021. In the event ParentCo would be required to perform under any of these instruments, ParentCo would be indemnified by Alcoa Corporation in accordance with the Separation and Distribution Agreement. Likewise, the Company has outstanding bank guarantees and letters of credit related to ParentCo in the amount of $11 at December 31, 2021. In the event Alcoa Corporation would be required to perform under any of these instruments, the Company would be indemnified by ParentCo in accordance with the Separation and Distribution Agreement.

In August 2017, Alcoa Corporation entered into a standby letter of credit agreement, which expires on May 3, 2023 (extended in August 2018, May 2019, and May 2021), with three financial institutions. The agreement provides for a $150 facility used by the Company for matters in the ordinary course of business. Alcoa Corporation's obligations under this facility are secured in the same manner as obligations under the Company's revolving credit facility. Additionally, this facility contains similar representations and warranties and affirmative, negative, and financial covenants as the Company's revolving credit facility (see Note M). As of December 31, 2021, letters of credit aggregating $110 were issued under this facility.

Surety Bonds. Alcoa Corporation has outstanding surety bonds primarily related to tax matters, contract performance, workers compensation, environmental-related matters, and customs duties. The total amount committed under these bonds, which automatically renew or expire at various dates between 2022 and 2026, was $158 at December 31, 2021. Additionally, ParentCo has outstanding surety bonds related to the Company in the amount of $12 at December 31, 2021. In the event ParentCo would be required to perform under any of these instruments, ParentCo would be indemnified by Alcoa Corporation in accordance with the Separation and Distribution Agreement. Likewise, the Company has outstanding surety bonds related to ParentCo in the amount of $3 at December 31, 2021. In the event Alcoa Corporation would be required to perform under any of these instruments, the Company would be indemnified by ParentCo in accordance with the Separation and Distribution Agreement.

T. LEASING

Management records a right-of-use asset and lease liability for several types of operating leases, including land and buildings, alumina refinery process control technology, plant equipment, vehicles, and computer equipment. These amounts are equivalent to the aggregate future lease payments on a discounted basis. The leases have remaining terms of less than one to 36 years. The discount rate applied to these leases is the Company's incremental borrowing rate based on the information available at the commencement date in determining the present value of lease payments, unless there is a rate implicit in the lease agreement. The Company does not have material financing leases.

Lease expense and operating cash flows include:

December 31,	**2021**	**2020**
Costs from operating leases	$ 70	$ 74
Variable lease payments	$ 13	$ 11
Short-term rental expense	$ 3	$ 3

The weighted average lease term and weighted average discount rate were as follows:

December 31,	**2021**	**2020**
Weighted average lease term for operating leases (years)	4.9	4.4
Weighted average discount rate for operating leases	5.2%	5.2%

The following represents the aggregate right-of-use assets and related lease obligations recognized in the Consolidated Balance Sheet:

December 31,	2021	2020
Properties, plants, and equipment, net	$ 97	$ 137
Other current liabilities	35	60
Other non-current liabilities and deferred credits	64	82
Total operating lease liabilities	$ 99	$ 142

Right-of-use assets and lease liabilities related to the Warrick Rolling Mill were excluded from the December 31, 2020 balances in the above table due to the sale of the rolling mill and were reclassified to Assets held for sale (see Note C).

New leases of $24 and $54 were added during the years ended December 31, 2021 and 2020, respectively.

The future cash flows related to the operating lease obligations as of December 31, 2021 were as follows:

Year Ending December 31,	
2022	$ 41
2023	27
2024	15
2025	10
2026	7
Thereafter	17
Total lease payments (undiscounted)	117
Less: discount to net present value	(18)
Total	$ 99

U. OTHER FINANCIAL INFORMATION

Interest Cost Components

	2021	2020	2019
Amount charged to expense	$ 195	$ 146	$ 121
Amount capitalized	6	9	13
	$ 201	$ 155	$ 134

Other (Income) Expenses, Net

	2021	2020	2019
Equity (gain) loss	$ (105)	$ 46	$ 49
Foreign currency losses, net	3	20	16
Net gain from asset sales	(354)	(173)	(3)
Net (gain) loss on mark-to-market derivative instruments (P)	(25)	11	(1)
Non-service costs – pension and OPEB (O)	47	108	117
Other, net	(11)	(4)	(16)
	$ (445)	$ 8	$ 162

In 2021, Net gain from asset sales of $354 was primarily related to the sales of the Rockdale site, the Eastalco site, and the Warrick Rolling Mill (see Note C). In 2020, Net gain from asset sales included a $181 gain related to the sale of EES (see Note C).

Other Non-current Assets

December 31,	2021	2020
Gas supply prepayment (S)	$ 377	$ 439
Prepaid gas transmission contract	304	315
Value-added tax credits	215	134
Deferred mining costs, net	149	136
Prepaid pension benefit (O)	164	–
Goodwill (L)	144	145
Non-current restricted cash (see below)	106	–
Non-current prepaid tax asset (S)	78	82
Intangibles, net (L)	35	45
Other	92	148
	$ 1,664	$ 1,444

Prepaid gas transmission contract – As part of a previous sale transaction of an equity investment, Alcoa maintained access to approximately 30% of the Dampier to Bunbury Natural Gas Pipeline transmission capacity in Western Australia for gas supply to three alumina refineries. At December 31, 2021 and 2020, AofA had an asset of $304 and $315, respectively, representing prepayments made under the agreement for future gas transmission services.

Value-added tax credits – The Value-added tax (VAT) credits (federal and state) relate to two of the Company's subsidiaries in Brazil, AWAB and Alumínio, concerning the São Luís smelter and refinery and the Juruti mine. This refinery pays VAT on the purchase of goods and services used in the alumina production process. The credits generally can be utilized to offset the VAT charged on domestic sales of alumina and aluminum.

In March 2021, the Brazil Federal Supreme Court provided clarification on an earlier ruling that found the inclusion of state VAT within the federal VAT tax base to be unconstitutional. After receiving further clarification from the court in August 2021, the Company finalized the amount of its recovery claim and submitted the claim to the tax authorities in the fourth quarter and received acknowledgment of the claim in January 2022. As a result, in the fourth quarter of 2021, the Company recorded $95 of additional VAT credits in Other non-current assets, $47 payable to Arconic Corporation within Other non-current liabilities, $34 in Sales, and $14 of interest income within Other (income) expenses, net. The amount due to Arconic Corporation represents VAT payments related to an Arconic subsidiary previously owned by Aluminio for a portion of the claim years and covered under agreements related to the Separation Transaction (see Note A).

In the fourth quarter of 2018, as a result of an assessment on the future realizability of the state VAT credits, management established an allowance on the accumulated state VAT credit balances and recorded a $107 charge in Restructuring and other charges, net, on the accompanying Statement of Consolidated Operations. While the Company retains the ability to utilize the state credits in the future, the restart of the Alumar smelter in São Luís, Brazil provided the only practical opportunity to monetize these credits. In 2021, the Company announced its plan to restart its 268 kmt per year share of capacity at the Alumar smelter, which had been fully curtailed since 2015. The smelter restart began in late 2021 and is expected to be operational at full capacity in the fourth quarter of 2022. Once smelter domestic sales start in mid-2022 and VAT credits are realized, the Company expects to reverse the initial valuation allowance with a credit to Restructuring and other charges, net and reverse the subsequent additions to the valuation allowance with a credit to Cost of goods sold (same account as when incurred).

Other Non-current Liabilities and Deferred Credits

December 31,	2021	2020
Non-current accrued tax liability (S)	$ 174	$ 169
Accrued compensation and retirement costs	120	116
Operating lease obligations (T)	64	82
Deferred carbon dioxide emission credits	54	56
Value-added tax credits payable to Arconic Corporation	47	–
Non-current restructuring reserve (D)	44	1
Deferred alumina sales revenue	36	45
Non-current site separation reserve (C)	26	–
Other	34	46
	$ 599	$ 515

Other non-current liabilities related to the Warrick Rolling Mill were excluded from the December 31, 2020 balances in the above table due to the sale of the rolling mill and were reclassified to Liabilities held for sale (see Note C).

Deferred carbon dioxide emission credits – Deferred credits relate to cash received for carbon dioxide emissions related to the San Ciprián smelter ($40) and refinery ($6), as well as the divested Avilés and La Coruña facilities ($8), from a governmental agency in Spain. The terms of the credits require the Company to comply with certain conditions for a period of three years. These deferred credits will be recognized as a reduction to Cost of goods sold once it is determined to be probable the Company will satisfy all conditions. Should the Company not meet all conditions during the three-year period, the credits will be repaid to the governmental agency.

Value-added tax credits payable to Arconic Corporation – See, Other non-current assets – Value-added tax credits, above.

Cash and Cash Equivalents and Restricted Cash

December 31,	2021	2020
Cash and cash equivalents	$ 1,814	$ 1,607
Current restricted cash	4	3
Non-current restricted cash	106	–
	$ 1,924	$ 1,610

Current restricted cash amounts are reported in Prepaid expenses and other current assets on the accompanying Consolidated Balance Sheet. Non-current restricted cash amounts are reported in Other non-current assets on the accompanying Consolidated Balance Sheet.

On December 29, 2021, the Company announced the two-year curtailment of the San Ciprián aluminum smelter in Spain. As a result of the agreement reached between Alcoa and the San Ciprián workers' representatives, the Company has restricted cash of $103 to be made available in the future to cover capital expenditures and future restart costs associated with the planned restart at the end of the curtailment period, expected to begin in January 2024.

Cash Flow Information

Cash paid for interest and income taxes was as follows:

	2021	2020	2019
Interest, net of amount capitalized	$ 191	$ 135	$ 113
Income taxes, net of amount refunded	152	183	732

V. SUBSEQUENT EVENTS

On February 15, 2022, the Company signed an agreement to sell its share of its investment in Mineração Rio do Norte S.A in Brazil for $10 to South32 Limited. Related to this transaction, the Company expects to record an asset impairment of approximately $55 in the first quarter of 2022 in Restructuring and other charges, net on the Statement of Consolidated Operations. The transaction is expected to close by April 2022. Further, an additional $30 in cash could be paid to Alcoa if certain post-closing conditions are satisfied.

A2. LETTER TO STAKEHOLDERS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2021

Letter to Stockholders

Dear Stockholders,

Alcoa Corporation achieved several milestones in 2021 that made it a transformative year for our Company, which is now in its best financial position since inception in November of 2016.

We drove strong profitability, significantly reduced our debt and pension obligations, continued to make progress on improving our portfolio of assets, and generated cash from the sale of non-core assets. Due to the strength of our Company and our positive outlook, we also announced our first cash dividend in the fourth quarter and expanded our share repurchase program. We ended the year with return on equity of 33 percent and a cash balance of $1.9 billion.

Today, we are in an enviable position, well positioned for all market cycles and ready to drive value now and into the future, motivated by a clear vision and purpose.

Over these past several years, our employees have worked to unleash our collective potential, improving our company commercially, operationally, and financially. We're now at a pivotal point in our history, uniquely positioned to fill the growing demand for more aluminum-based solutions in a world focused on reducing greenhouse gas emissions.

We developed the aluminum industry more than 135 years ago, and we're now ready to reinvent the aluminum industry for a sustainable future.

CREATING SUSTAINABLE VALUE FOR OUR BUSINESS

Our consistent focus on delivering on our strategic priorities has helped create a more resilient company.

In 2021, our total revenue was up 31 percent on a year-over-year basis to $12.15 billion. Net income was $429 million, an annual record. Adjusted EBITDA excluding special items increased 140 percent to $2.76 billion from $1.15 billion in 2021.

We significantly reduced our debt. At December 31, our total debt was $1.8 billion. Our adjusted proportional net debt was $1.1 billion, a $2.3 billion improvement from year-end 2020. We also improved our balance sheet with the annuitization of certain pension liabilities while ensuring payments to pensioners and their beneficiaries continue.

We progressed the review of our portfolio of operational assets. At the end of the second year of a five-year program, we have addressed roughly 75 percent of the 1.5 million metric tons of global smelting capacity under review for significant improvement, curtailment, closure, or divestiture.

The strength of our business strategy and a solid market put us in a position to announce the restart of 268,000 metric tons per year (mtpy) at the Alumar smelter in Brazil and 19,000 mtpy at Portland Aluminium in Australia. The factors supporting higher aluminum prices represent fundamental, structural changes that we believe will persist over the next decade, supported by demand for sustainable aluminum solutions.

CREATING SUSTAINABLE VALUE FOR OUR PEOPLE

Safety is always our top priority. We had no workplace fatalities involving employees or contractors in 2021, but we did experience some serious injuries. We must and will remain vigilant with our systems and processes to keep people safe, always working to prevent injuries.

We also know how vital an inclusive and diverse culture is to our overall business success, so we continue to strengthen our "everyone culture." We helped broaden the reach of our global inclusion groups and expanded initiatives to create more opportunity for employees from all backgrounds, including women and underrepresented groups.

We are honored to be recognized annually as a leading company for inclusion and diversity through various independent ratings, including Bloomberg's Equality Index and the Human Rights Campaign's Corporate Equality Index. We have also been named to Fortune's Most Admired Companies, and we were named as one of the Best Employers for Diversity by Forbes.

CREATING SUSTAINABLE VALUE FOR OUR CUSTOMERS AND SOCIETY

Aluminum is critical to enabling a low-carbon future given the inherent qualities of the metal, including its light weight, conductivity and infinite recyclability.

In 2021, we revealed a technology roadmap that supports our vision to reinvent the aluminum industry for a sustainable future. We also announced an ambition to achieve net zero greenhouse gas (GHG) emissions by 2050, including Scope 1 and Scope 2 emissions. Our technology roadmap – built around the zero-carbon emitting ELYSIS™ joint venture smelting technology, the Refinery of the Future projects, and our ASTRAEA™ metal purification technology – has the potential to reduce carbon in large portions of the aluminum production process and create new opportunities to recycle low-value, post-consumer scrap.

Through our Sustana™ brand, we continue to provide solutions to help customers reduce their carbon footprints with the industry's most comprehensive portfolio of low-carbon products. For example, we announced in 2021 a deal that supplies a mix of low-carbon EcoLum™ metal and ELYSIS aluminum for the wheels on Audi's flagship e-Tron GT electric sports car.

We also continue to strengthen the governance practices around our social initiatives to deliver value to the communities where we operate. We have introduced a rigorous global social management system to further strengthen the social value we bring to the communities where we operate. We continue also to invest in local social and environmental projects that create economic opportunity and protect local biodiversity.

ALCOA IS READY FOR A SUSTAINABLE FUTURE

It's a very good time to be in the upstream aluminum business. We expect the aluminum market to remain strong, with continued demand growth across all major end-use sectors. And, given the world's increased drive to decarbonize global supply chains, we expect the pull for lightweight and low-carbon products to increase further.

Alcoa's future is bright. We are the right company at the right time, one where the industry's fundamentals are positively changing. There are ever-increasing expectations for excellence in environmental, social and governance standards, and Alcoa's long history of leadership in these areas has us well positioned now and for the future.

We will continue to deliver sustainable value for our investors, customers, communities, and employees.

Thank you, as always, for your continued support.

Sincerely,

Steven W. Williams
Chairman of the Board

Roy C. Harvey
President and Chief Executive Officer

A3. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATION FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2021

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.

(dollars in millions, except per-share amounts, average realized prices, and average cost amounts; dry metric tons in millions (mdmt); metric tons in thousands (kmt))

FORWARD-LOOKING STATEMENTS

This report contains statements that relate to future events and expectations and as such constitute forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements include those containing such words as "anticipates," "endeavors," "strive", "working," "potential," "ambition," "develop," "reach," "believes," "could," "estimates," "expects," "forecasts," "goal," "intends," "may," "outlook," "plans," "projects," "seeks," "sees," "should," "targets," "will," "would," or other words of similar meaning. All statements by Alcoa Corporation that reflect expectations, assumptions or projections about the future, other than statements of historical fact, are forward-looking statements, including, without limitation, forecasts concerning global demand growth for bauxite, alumina, and aluminum, and supply/demand balances; statements, projections or forecasts of future or targeted financial results, or operating or sustainability performance; statements about strategies, outlook, and business and financial prospects; and statements about capital allocation and return of capital. These statements reflect beliefs and assumptions that are based on Alcoa Corporation's perception of historical trends, current conditions, and expected future developments, as well as other factors that management believes are appropriate in the circumstances. Forward-looking statements are not guarantees of future performance and are subject to known and unknown risks, uncertainties, and changes in circumstances that are difficult to predict. Although Alcoa Corporation believes that the expectations reflected in any forward-looking statements are based on reasonable assumptions, it can give no assurance that these expectations will be attained and it is possible that actual results may differ materially from those indicated by these forward-looking statements due to a variety of risks and uncertainties. Such risks and uncertainties include, but are not limited to: (a) current and potential future impacts of the COVID-19 pandemic and related regulatory developments on the global economy and our business, financial condition, results of operations, or cash flows and judgments and assumptions used in our estimates; (b) material adverse changes in aluminum industry conditions, including global supply and demand conditions and fluctuations in London Metal Exchange-based prices and premiums, as applicable, for primary aluminum and other products, and fluctuations in indexed-based and spot prices for alumina; (c) deterioration in global economic and financial market conditions generally and which may also affect Alcoa Corporation's ability to obtain credit or financing upon acceptable terms or at all; (d) unfavorable changes in the markets served by Alcoa Corporation; (e) the impact of changes in foreign currency exchange and tax rates on costs

and results; (f) increases in energy or raw material costs or uncertainty of energy supply or raw materials; (g) the inability to achieve improvement in profitability and margins, cost savings, cash generation, revenue growth, fiscal discipline, sustainability targets, or strengthening of competitiveness and operations anticipated from portfolio actions, operational and productivity improvements, technology advancements, and other initiatives; (h) the inability to realize expected benefits, in each case as planned and by targeted completion dates, from acquisitions, divestitures, restructuring activities, facility closures, curtailments, restarts, expansions, or joint ventures; (i) political, economic, trade, legal, public health and safety, and regulatory risks in the countries in which Alcoa Corporation operates or sells products; (j) labor disputes and/or work stoppages and strikes; (k) the outcome of contingencies, including legal and tax proceedings, government or regulatory investigations, and environmental remediation; (l) the impact of cyberattacks and potential information technology or data security breaches; (m) risks associated with long-term debt obligations; (n) the timing and amount of future cash dividends and share repurchases; (o) declines in the discount rates used to measure pension and other postretirement benefit liabilities or lower-than-expected investment returns on pension assets, or unfavorable changes in laws or regulations that govern pension plan funding; and, (p) the other risk factors discussed in Part I Item 1A of this Form 10-K and other reports filed by Alcoa Corporation with the U.S. Securities and Exchange Commission, including those described in this report.

Alcoa Corporation disclaims any obligation to update publicly any forward-looking statements, whether in response to new information, future events or otherwise, except as required by applicable law. Market projections are subject to the risks described above and other risks in the market.

OVERVIEW

Our Business

Alcoa Corporation (Alcoa or the Company) is a vertically integrated aluminum company comprised of bauxite mining, alumina refining, aluminum production (smelting and casting), and energy generation. Aluminum is a commodity that is traded on the London Metal Exchange (LME) and priced daily. Additionally, alumina is subject to market pricing through the Alumina Price Index (API), which is calculated by the Company based on the weighted average of a prior month's daily spot prices published by the following three indices: CRU Metallurgical Grade Alumina Price, Platts Metals Daily Alumina PAX Price, and FastMarkets Metal Bulletin Non-Ferrous Metals Alumina Index. As a result, the price of both aluminum and alumina is subject to significant volatility and, therefore, influences the operating results of Alcoa Corporation.

Through direct and indirect ownership, Alcoa Corporation has 28 operating locations in nine countries around the world, situated primarily in Australia, Brazil, Canada, Iceland, Norway, Spain, and the United States. Governmental policies, laws and regulations, and other economic factors, including inflation and fluctuations in foreign currency exchange rates and interest rates, affect the results of operations in these countries.

Business Update

COVID-19 Pandemic

In response to the ongoing COVID-19 pandemic, Alcoa implemented comprehensive measures to protect the health of the Company's workforce, prevent infection in our locations, mitigate impacts, and safeguard business continuity. As a result of these measures and the aluminum industry being classified as an essential business, all of Alcoa's bauxite mines, alumina refineries, and aluminum manufacturing facilities continue to remain in operation. The Company continues, through its operations leadership team and global crisis response team, to ensure that each location's preparedness and response plans are up to date.

To date, the Company has experienced isolated interruptions from its supply sources but has identified alternate solutions to avoid any significant production impacts. In relation to the Company's workforce, operating locations have experienced elevated levels of absenteeism but ultimately have had minimal contractor- and employee-related disruptions to operations. The magnitude and duration of the COVID-19 pandemic continues to be unknown. The pandemic could have adverse future impacts on the Company's business, financial condition, operating results, and cash flows. Further adverse conditions or prolonged deterioration of conditions could negatively impact our financial condition and result in asset impairment charges, including long-lived assets or goodwill, or affect the realizability of deferred tax assets.

As a result of the pandemic's impact on the macroeconomic environment, management evaluated the future recoverability of the Company's assets, including goodwill and long-lived assets, and the realizability of deferred tax assets while considering the Company's current market capitalization. Management concluded that no COVID-19 related asset impairments or additional valuation allowances were required during the year ended December 31, 2021.

Strategy Update and Actions

The Company has a goal to innovate and create low-carbon solutions. The Company has a comprehensive portfolio of products manufactured through low-carbon emitting processes in its Sustana™ family of products and future-oriented research and development projects focused on reducing carbon output. The Company intends to progress low-carbon solutions on a cost-competitive basis, supported by its operational and technical experience.

The Company announced the initiation of a quarterly cash dividend program and paid the first quarterly cash dividend of $0.10 per share of the Company's common stock in November 2021, totaling $19. Also in the fourth quarter, the Company repurchased 3.2 million shares under a previously authorized $200 common stock repurchase program, concluding the program. The Company authorized a new $500 common stock repurchase program in the fourth quarter of 2021.

In the first quarter of 2021, the Company reached its target, announced in October 2019, to generate between $500 and $1,000 from non-core asset sales by completing the divestiture of the Warrick Rolling Mill in a transaction valued at $670. Additionally in 2021, the Company completed two other significant non-core asset sales of the Eastalco and Rockdale smelter sites for $100 and $240, respectively.

In 2021, Alcoa made significant progress on its smelting portfolio review reaching approximately 75 percent of its target to improve, curtail, close, or divest 1.5 million metric tons of smelting capacity within the five-year program ending in 2024. As detailed below, notable portfolio actions in 2021 include the two-year curtailment and future repowering of the smelter in San Ciprián, Spain, the permanent closure of the smelter in Wenatchee, Washington, the full smelter restart now underway at Alumar in Brazil, and the repowering of Portland Aluminium in Australia, including restart of a portion of the smelter's curtailed capacity.

The Company continues to review the 4 million metric tons of alumina refining capacity which is also part of the five-year program although no actions were announced in 2021. Progress to date on the alumina refining capacity includes the December 2019 announced permanent closure of 2.3 million metric tons of capacity at the Point Comfort alumina refinery in Texas, which had been fully curtailed since 2016.

Strengthening the Company's balance sheet has been a focus since Alcoa Corporation's separation in 2016. As discussed below, the Company made significant progress with long-term debt and pension actions, reducing its long-term debt, including current portion and short-term borrowings, to $1,802 at December 31, 2021 from $2,542 at the prior year end, and reducing the net pension and other postretirement benefits liability to $973 from $2,395, in the respective periods. With these reductions, the Company achieved its proportional adjusted net debt target.

San Ciprián Smelter and Refinery

Since 2020, the Company has been evaluating potential solutions for the San Ciprián (Spain) aluminum smelter which has incurred persistent and recurring financial losses. The San Ciprián smelter incurred a net loss $72 (pre- and after-tax) in 2021, excluding Restructuring and other charges, net.

On September 27, 2021, the labor force at the San Ciprián refinery and aluminum facilities resumed the strike that had previously been suspended since January 2021. Under the strike conditions, the refinery reduced production and related shipments, and the aluminum facilities stopped all metal shipments. Further, the San Ciprián refining and aluminum operations faced significantly higher energy and raw materials costs, as well as the loss of value-add premiums during the strike. Strike-related delays in shipments and higher costs also had unfavorable impacts on the Company's working capital and operating cash flow.

On December 29, 2021, with the support of the workers' representatives, the Company announced the two-year curtailment of 228 kmt of smelting capacity at the San Ciprián aluminum smelter. The temporary curtailment, which began in January 2022, is the result of an agreement reached with the workers at the site to suspend production due to exorbitant energy prices in Spain. Under the terms of the agreement, the Company is responsible for certain employee and contractual obligations during the curtailment period. As a result, the Company recorded charges of $62 in the fourth quarter of 2021 in Restructuring and other charges, net on the Statement of Consolidated Operations. Cash outlays related to these obligations are expected to be split between 2022 and 2023. The Company plans to begin the restart of the smelter in January 2024. The San Ciprián smelter will continue to incur some operating costs for the casthouse as well as resources to maintain and improve the smelter for restart.

Additionally, in connection with the agreement, the Company made commitments of $103 and restricted cash to be made available in the future to cover $68 in capital improvements at the site and $35 in smelter restart costs, with the majority of cash spend expected in 2023. Restricted cash is included in Other non-current assets on the Consolidated Balance Sheet.

The casthouse and alumina refinery will continue to operate during the curtailment period.

Alumar Smelter

On September 20, 2021, the Company announced its plan to restart its 268 kmt per year share of capacity at the Alumar smelter in São Luís, Brazil, which had been fully curtailed since 2015. The process to restart the idle capacity began in September. The first molten metal is expected in the second quarter of 2022, and the smelter is expected to be operational at full capacity in the fourth quarter of 2022. The cost of the restart is anticipated to be approximately $75, including approximately $10 in capital expenses, with the majority to be spent in 2022.

The restart leverages the site's integration with an alumina refinery, new long-term contracts for renewable energy and an available skilled workforce, as well as tax efficiencies and a strong U.S. dollar. With this planned restart, Alcoa will have approximately 80 percent of its 2.99 million metric tons of global aluminum smelting capacity operating.

Other Portfolio Actions

Wenatchee – On December 9, 2021, as part of the Company's ongoing strategic review, the Company announced the permanent closure of the Wenatchee aluminum smelter in Washington. The smelter has been fully curtailed since 2015. Charges related to the closure totaled $90 in the fourth quarter of 2021 and included a charge of $10 for the write down of remaining inventories to net realizable value recorded in Cost of goods sold on the Statement of Consolidated Operations and a charge of $80 recorded in Restructuring and other charges, net on the Statement of Consolidated Operations. The restructuring charges were comprised of: $30 to write-off the remaining net book value of various assets; $23 of asset impairments; $21 to establish reserves related to environmental and demolition obligations, $5 related to take-or-pay contractual obligations; and, $1 of severance and employee termination costs from the separation of approximately 10 employees. Cash outlays related to the permanent closure of the site are expected to be approximately $60 over the next five years, with approximately $10 estimated to be spent in 2022.

Portland – On November 7, 2021, the Company announced the Portland Aluminium joint venture's plan to restart 35 kmt of curtailed annual capacity at the Portland aluminum smelter in Australia (19 kmt Alcoa share). Alcoa's share of the restart costs are approximately $15, with the majority to be spent in 2022 through the expected completion in the third quarter. Once the restart is complete, the plant will operate at approximately 95 percent of its total capacity and Alcoa will have approximately 186 kmt of consolidated annual capacity at Portland. Energy to operate the restored capacity will be supplied under a new agreement which will supplement the March 2021 agreements, see below.

On March 18, 2021, the Company signed agreements to repower the Portland aluminum smelter in the State of Victoria, Australia. The agreements with three separate providers commenced on August 1, 2021 and are effective through June 30, 2026. Further, the Australian Federal Government has committed to the joint venture, subject to approval, to provide up to $15 (A$20) per year for four years to underwrite the smelter's participation in the Reliability and Emergency Reserve Trader (RERT) scheme. The arrangement will recognize the smelter's ability to rapidly shed load when required to help protect the power grid from unexpected interruptions when it is under duress.

Fixed Price Commitments – As part of the planned restart of the Alumar smelter in São Luís, Brazil, the Company began entering into fixed price commitments on aluminum sales and certain input costs in the third quarter 2021, to protect project economics through 2023. Once the smelter is operational in 2022, the fixed price commitments will settle monthly through 2023. Further, starting in October 2021, Alcoa began entering into fixed price commitments to reduce price risk associated with aluminum produced during the San Ciprián strike. The commitments related to San Ciprián metal will settle in 2022 as the metal is consumed by the facilities' casthouse which continues to operate to meet customer commitments.

Lake Charles – On July 28, 2021, as part of the Company's ongoing strategic review, Alcoa made the decision to permanently close the previously curtailed anode facility in Lake Charles, Louisiana, United States. The anode facility within the Lake Charles site has been fully curtailed since 2015. The Company recorded restructuring and other charges of $27 in the third quarter of 2021, comprised of asset impairments of $22 and cash-based charges for closure and asset retirement obligations of $5. Majority of cash outlays related to demolition and environmental related activities are expected in 2022. The Company's petroleum coke calciner located at the same site in Lake Charles remains in operation, unaffected by the closure of the anode facility.

Non-core assets

Rockdale – On October 29, 2021, the Company completed the sale of the previously closed Rockdale smelter site in the state of Texas in a transaction valued at $240. Upon the closing of the transaction, the Company received $230 in cash and recorded a net gain of $202 in Other (income) expenses, net (pre- and after-tax) on the Statement of Consolidated Operations.

Eastalco – In June 2021, the Company completed the sale of the previously closed Eastalco smelter site in the state of Maryland in a transaction valued at $100. Upon the closing of the transaction, the Company received $94 in cash and recorded a gain of $90 in Other (income) expenses, net ($90 pre- and $89 after-tax) on the Statement of Consolidated Operations.

Warrick Rolling Mill – On November 30, 2020, the Company entered into an agreement to sell its rolling mill located at Warrick Operations (Warrick Rolling Mill), an integrated aluminum manufacturing site near Evansville, Indiana (Warrick Operations), to Kaiser Aluminum Corporation (Kaiser). On March 31, 2021, the Company completed the sale for total consideration of approximately $670, which included the assumption of $69 in other postretirement benefits. The Company recorded a net gain of $30 in Other (income) expenses, net (pre- and after-tax) on the Statement of Consolidated Operations.

Upon closure, the Company recorded estimated liabilities for future site separation commitments and remaining transaction costs associated with the sales agreement. At December 31, 2021, the remaining reserve was approximately $70; over half of the expected cash outlay is to be spent within the next 12 months, with the remainder to be spent through 2023.

Alcoa retains ownership of the site's 269 kmt aluminum smelter and its electricity generating units at Warrick Operations and supplies metal to Kaiser under a market-based supply agreement.

Strengthening the Balance Sheet

In the fourth quarter of 2021, the Company purchased group annuity contracts to transfer the obligation to pay remaining retirement benefits for approximately 14,000 retirees and beneficiaries from its U.S. defined benefit pension plans and transferred approximately $1,540 in both plan obligations and plan assets. The transfers were completed on November 23, 2021 and December 16, 2021. As a result, the Company recorded a non-cash settlement loss of $848 (pre- and after-tax) in Restructuring and other charges, net on the Statement of Consolidated Operations in the fourth quarter of 2021. See Part II Item 8 of this Form 10-K in Note O to the Consolidated Financial Statements for additional information.

In September 2021, the Company used cash on hand to redeem outstanding $500 of 7.00% Senior Notes due 2026 (see Liquidity and Capital below).

In March 2021, the Company issued $500 of 4.125% Senior Notes due 2029. The Company used the net proceeds, together with cash on hand, to make discretionary contributions of $500 to its U.S. defined benefit pension plans applicable to salaried and hourly employees on April 1, 2021, and $750 to redeem its outstanding 6.75% Senior Notes due 2024 (see Liquidity and Capital below).

Other Spain Matters

San Ciprián Carbon Dioxide Compensation Credits – In June 2021, the Spanish Ministry of Industry, Trade and Tourism (the Ministry) initiated the process to request repayment of $40 (€34) in carbon dioxide compensation credits $13 (€11) for 2018 and $27 (€23) for 2019, which were subject to a three-year clawback provision based on continued operations and employment. The request for repayment is related to Alcoa's communication of the decision to implement the collective dismissal process and its potential impact on operations and employment at San Ciprián. Alcoa disagrees with the Ministry's position as the collective dismissal process was not concluded and qualifying operations and employment at San Ciprián have been maintained. Accordingly, the Company has filed an appeal.

Spain has a compensatory mechanism for the indirect cost of carbon dioxide and provides associated credits. Such carbon dioxide compensation credits are typically recorded as a reduction to Costs of goods sold. Upon receipt of the credits in each of the applicable years, the Company recorded the cash received as deferred income (liability) due to the clawback provisions. Further, Alcoa did not receive carbon dioxide compensation credits earned in 2020 and 2021 based on the same circumstances.

Avilés and La Coruña – In July 2019, the Company completed the divestiture of the Avilés and La Coruña (Spain) aluminum facilities to PARTER Capital Group AG (PARTER) in a sale process endorsed by the Spanish government and supported by the workers' representatives following a collective dismissal process. In connection with the divestiture, Alcoa committed to make financial contributions to the divested entities of up to $95; a total of $78 was paid through December 31, 2021. In the fourth quarter of 2021, the Company reversed the remaining reserve of $17 in accordance with the terms of the agreement, as the period for which the divested entities could incur qualifying capital expenditures had lapsed.

In early 2020, PARTER sold a majority stake in the facilities to an unrelated party. Alcoa had no knowledge of the subsequent transaction prior to its announcement and on August 28, 2020, Alcoa filed a lawsuit with the Court of First Instance in Madrid, Spain asserting that the sale was in breach of the sale agreement between Alcoa and PARTER.

Related to this subsequent sale transaction, certain proceedings and investigations have been initiated by or at the request of the employees of the facilities against their current employers, the new owners of the current employers, and Alcoa, alleging that certain agreements from the 2019 collective dismissal process remain in force and that, under such agreements, Alcoa remains liable for certain related employment benefits. One such proceeding is a collective case before the Spanish National Court, filed on November 10, 2020, wherein the workers' representatives and employees are seeking to have the terms of a Collective Dismissal Agreement signed between Alcoa and the workers in January 2019 be fulfilled. Other proceedings include: a second collective claim filed in National Court on behalf employees that were not affected by the 2019 collective dismissal process, numerous individual labor claims filed in the labor courts of Avilés and La Corufia and the initiation of a separate criminal investigation by the National Court.

On June 15, 2021, the Spanish National Court ruled that the collective dismissal agreement for the divested Avilés and La Corufia aluminum facilities should be applied to the situation of the claimant workers, and that Alcoa should be liable for the severance of those employees to the extent they were affected by the 2019 collective dismissal process. Alcoa has appealed this ruling to the Supreme Court of Spain.

In July 2021, the Spanish National Court appointed a judicial director to oversee the facilities and later declared the facilities insolvent. In early 2022, the insolvency administrators appointed by the courts (one for each facility) announced their intention to collectively dismiss all employees at the two facilities.

In February 2022, Alcoa and relevant stakeholders initiated discussions to explore a potential global resolution of all pending matters involving Alcoa arising from the prior sale of the two facilities, including a waiver of all claims and investigations previously initiated by or at the request of the employees of the facilities. As of the date of this filing, these initial discussions are ongoing.

If a global resolution is not reached, Alcoa will continue with its appeal to the National Court ruling to the Spanish Supreme Court and will strongly defend all other pending and future legal proceedings arising from the sale of the Avilés and La Corufia facilities. Alcoa believes it has acted in good faith, in full compliance with the law and with all of the terms that it committed to in the contract for the sale of the Avilés and La Corufia facilities to PARTER and in the agreements that it entered into with the representatives of the workers of both facilities.

The estimated range of reasonably possible loss is $0 to $70. Due to the uncertainty regarding both the outcome of the discussions and the likelihood of securing waivers for all claims, Alcoa is unable to reasonably predict the ultimate outcome of this matter.

Basis of Presentation. The Consolidated Financial Statements of Alcoa Corporation are prepared in conformity with accounting principles generally accepted in the United States of America (GAAP). In accordance with GAAP, certain situations require management to make estimates based on judgments and assumptions, which may affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements. They also may affect the reported amounts of revenues and expenses during the reporting periods. Actual results could differ from those estimates upon subsequent resolution of identified matters.

RESULTS OF OPERATIONS

The discussion that follows includes a comparison of our results of operations and liquidity and capital resources for the fiscal years ended December 31, 2021 and 2020. For a comparison of changes for the fiscal years ended December 31, 2020 and 2019, refer to Management's Discussion and Analysis of Financial Condition and Results of Operation in Part II Item 7 of Alcoa Corporation's Annual Report on Form 10-K for the year ended December 31, 2020 (filed February 25, 2021).

	For the year ended December 31,	
Statement of Operations	**2021**	**2020**
Sales	$ 12,152	$ 9,286
Cost of goods sold (exclusive of expenses below)	9,153	7,969
Selling, general administrative, and other expenses	227	206
Research and development expenses	31	27
Provision for depreciation, depletion, and amortization	664	653
Restructuring and other charges, net	1,128	104
Interest expense	195	146
Other (income) expenses, net	(445)	8
Total costs and expenses	10,953	9,113
Income before income taxes	1,199	173
Provision for income taxes	629	187
Net income (loss)	570	(14)
Less: Net income attributable to non-controlling interest	141	156
Net income (loss) attributable to Alcoa Corporation	$ 429	$ (170)

Selected Financial Metrics		2021		2020
Diluted income (loss) per share attributable to Alcoa Corporation common shareholders	$	2.26	$	(0.91)
Third-party shipments of alumina (kmt)		9,629		9,641
Third-party shipments of aluminum products (kmt)		3,007		3,016
Average realized price per metric ton of alumina	$	326	$	273
Average realized price per metric ton of primary aluminum	$	2,879	$	1,915
Average Alumina Price Index (API)[(1)]	$	324	$	270
Average London Metal Exchange (LME) 15-day lag[(2)]	$	2,443	$	1,693

(1) API (Alumina Price Index) is a pricing mechanism that is calculated by the Company based on the weighted average of a prior month's daily spot prices published by the following three indices: CRU Metallurgical Grade Alumina Price, Platts Metals Daily Alumina PAX Price, and FastMarkets Metal Bulletin Non-Ferrous Metals Alumina Index.

(2) LME (London Metal Exchange) is a globally recognized exchange for commodity trading, including aluminum. The LME pricing component represents the underlying base metal component, based on quoted prices for aluminum on the exchange.

Earnings Summary

Annual Comparison

Overview

Net income attributable to Alcoa Corporation increased $599 primarily as a result of:

- Higher average realized prices for aluminum and alumina
- Higher gains on the sale of non-core assets
- Higher equity earnings primarily from the Ma'aden aluminum joint venture due to higher aluminum prices
- Favorable pricing at the Brazil hydro-electric facilities

Partially offset by:

- Higher restructuring costs in 2021
- Higher energy costs, primarily due to a new gas contract at the Australia alumina refineries and higher market prices in Europe and Brazil
- Higher taxes on improved earnings in jurisdictions with higher tax rates and recognition of a valuation allowance on deferred tax assets of a Spanish subsidiary

Annual Comparison

- Unfavorable currency impacts due to a weaker U.S. dollar against most major currencies
- Higher raw material costs due to inflation and isolated supply chain issues

Sales

Sales increased $2,866 primarily as a result of:

- Higher average realized prices of aluminum and alumina
- Restart of the Bécancour smelter
- Higher value-add product sales
- Favorable pricing at the Brazil hydro-electric facilities

Partially offset by:

- Absence of sales from the divested Warrick Rolling Mill
- Curtailment of the Intalco (Washington) smelter

Cost of goods sold

Cost of goods sold as a percentage of sales decreased 10.5% primarily as a result of:

- Higher average realized prices for aluminum and alumina
- Higher value-add product sales
- Favorable pricing at the Brazil hydro-electric facilities

Partially offset by:

- Higher market energy prices, primarily due to a new gas contract, commencing June 2020, for the Australia alumina refineries and higher market prices in Europe and Brazil
- Higher market prices for raw materials primarily due to inflation and isolated supply chain issues

Selling, general administrative, and other expenses

Selling, general administrative, and other expenses increased $21 primarily as a result of:

- Higher labor and variable compensation costs
- Net unfavorable currency impacts

Annual Comparison

Provision for depreciation, depletion, and amortization

The Provision for depreciation, depletion, and amortization increased $11 primarily as a result of:

- Higher depreciation at the Australia mine sites primarily due to completion of mine moves
- Unfavorable currency impacts due to a weaker U.S. dollar against most major currencies

Partially offset by:

- Lower depreciation due to the sale of the Warrick Rolling Mill

Interest expense

Interest expense increased $49 primarily as a result of:

- Early redemption costs for the $750 6.75% Senior Notes and $500 7.00% Senior Notes
- Interest on the $750 5.5% Senior Notes issued in July 2020
- Interest on the $500 4.125% Senior Notes issued in March 2021

Partially offset by:

- Absence of interest on $750 6.75% Senior Notes redeemed early in April 2021
- Absence of interest on $500 7.00% Senior Notes redeemed early in September 2021

Other (income) expenses, net

Other (income) expenses, net increased $453 primarily as a result of:

- Gain on the sale of non-core assets including the former Rockdale site, former Eastalco site, and Warrick Rolling Mill
- Higher equity earnings primarily from the Ma'aden aluminum joint venture due to higher aluminum prices
- Lower non-service costs related to pension and OPEB

Partially offset by:

- Absence of a gain related to the divestiture of the Gum Springs waste treatment facility

Annual Comparison

Restructuring and other charges, net

In 2021, Restructuring and other charges, net of $1,128, primarily related to:

- $858 for U.S. pension group annuity contracts and lump sum settlements
- $80 for the permanent closure of the previously curtailed Wenatchee (Washington) smelter
- $63 for Suriname pension group annuity contract
- $62 for the temporary curtailment of the San Ciprián (Spain) smelter
- $47 for the settlement of certain pension benefits
- $27 for the permanent closure of the anode portion of the Lake Charles (Louisiana) facility
- $13 related to additional take-or-pay contract costs at the curtailed Intalco and Wenatchee smelters (prior to closure)
- $11 to record additional environmental related reserves
- $9 in settlements and curtailments of certain other postretirement benefits related to the sale of the Warrick Rolling Mill

Partially offset by:

- $22 of reversals for environmental and asset retirement obligation reserves at previously closed locations
- $17 for the reversal of a reserve related to the divested Avilés and La Coruña entities
- $6 for the reversal of a take-or-pay obligation at Sao Luis smelter due to the announced restart

In 2020, Restructuring and other charges, net of $104, primarily related to: $59 for settlements and curtailments of certain pension and other postretirement benefits; $28 (net) for costs related to the curtailment of the Intalco (Washington) smelter; and, $20 for additional contract costs related to the curtailed Wenatchee (Washington) smelter.

Annual Comparison

Provision for income taxes

The Provision for income taxes in 2021 was $629 on income before taxes of $1,199 or 52.5%. In comparison, the 2020 Provision for income taxes was $187 on income before taxes of $173 or 108.1%. The increase in taxes is primarily attributable to the overall higher income before taxes as noted in the discussion of results above. Additionally, a valuation allowance of $103 was recorded in 2021 against the net deferred tax assets of Alúmina Española, S.A (Española). Management concluded that it is more likely than not that Española's net deferred tax assets, which consist primarily of tax loss carryforwards, will not be realized as the entity's sole operating asset, the San Ciprián refinery, is in a three-year cumulative loss position for the period ended December 31, 2021.

In 2020, the Company generated losses in jurisdictions where it maintains a full tax valuation reserve resulting in no tax benefit. Accordingly, taxes in the jurisdictions where the Company records and pays tax expense represent a higher effective rate on income before taxes.

Non-controlling interest

Net income attributable to non-controlling interest was $141 in 2021 compared with $156 in 2020.

Despite the higher alumina price in 2021, net income attributable to non-controlling interest decreased in 2021 due to: higher depreciation, higher restructuring charges primarily for pension actions, higher taxes due to both higher profits before taxes and a valuation allowance established against deferred taxes, and higher elimination of intercompany profit in inventory, partially offset by higher other income related to Ma'aden equity income, and non-core asset sales.

Segment Information

Alcoa Corporation is a producer of bauxite, alumina, and aluminum products. The Company's operations consist of three worldwide reportable segments: Bauxite, Alumina, and Aluminum. Segment performance under Alcoa Corporation's management reporting system is evaluated based on a number of factors; however, the primary measure of performance is the Adjusted EBITDA (Earnings before interest, taxes, depreciation, and amortization) of each segment. The Company calculates Segment Adjusted EBITDA as Total sales (third-party and intersegment) minus the following items: Cost of goods sold; Selling, general administrative, and other expenses; and Research and development expenses. Alcoa Corporation believes that the presentation of Adjusted EBITDA is useful to investors because such measure provides both additional information about the operating performance of Alcoa Corporation and insight on the ability of Alcoa Corporation to meet its financial obligations. The presentation of Adjusted EBITDA is not intended to be a substitute for, and should not be considered in isolation from, the financial measures reported in accordance with GAAP. Alcoa Corporation's Adjusted EBITDA may not be comparable to similarly titled measures of other companies.

Segment Adjusted EBITDA totaled $3,053 in 2021, $1,317 in 2020, and $1,626 in 2019. The following information provides production, shipments, sales, and Segment Adjusted EBITDA data for each reportable segment, as well as certain realized price and average cost data, for each of the three years in the period ended December 31, 2021. See Part II Item 8 of this Form 10-K in Note E to the Consolidated Financial Statements for additional information.

Bauxite

	2021	2020
Production (mdmt)	47.6	48.0
Third-party shipments (mdmt)	5.7	6.5
Intersegment shipments (mdmt)	42.4	42.2
Total shipments (mdmt)	48.1	48.7
Third-party sales	$ 236	$ 272
Intersegment sales	711	941
Total sales	$ 947	$ 1,213
Segment Adjusted EBITDA	$ 172	$ 495
Operating costs	$ 912	$ 835
Average cost per dry metric ton of bauxite shipped	$ 19	$ 17

Production in the above table can vary from Total shipments due primarily to differences between the equity allocation of production and off-take agreements with the respective equity investment. Operating costs in the table above includes all production-related costs: conversion costs, such as labor, materials, and utilities; depreciation, depletion, and amortization; and plant administrative expenses.

Overview. This segment represents the Company's global bauxite mining operations. A portion of this segment's production represents the offtake from equity method investments in Brazil and Guinea, as well as AWAC's share of production related to the equity investment in Saudi Arabia. The bauxite mined by this segment is sold primarily to internal customers within the Alumina segment; a portion of the bauxite is sold to external customers. Bauxite mined by this segment and used internally is transferred to the Alumina segment at negotiated terms that are intended to approximate market prices; sales to third-parties are conducted on a contract basis. Generally, this segment's sales are transacted in U.S. dollars while costs and expenses are transacted in the local currency of the respective operations, which are the Australian dollar and the Brazilian real. Most of the operations that comprise the Bauxite segment are part of AWAC (see Non-controlling Interest in Earnings Summary above).

Business Update. The Bauxite segment had a solid year of production, following a year of production records in 2020, despite lower demand from the Alumina segment related to the Alumar refinery ship unloader outage, see Alumina below.

In December 2021, third-party bauxite sales out of Western Australia ceased due to the expiration of the Company's export license; export sales out of Western Australia represented approximately $27 and $45 of total third-party sales for 2021 and 2020, respectively, and represented only 3% of total bauxite shipments from the Western Australian mines. Going forward, all Western Australia bauxite production will be consumed internally by the Company's refineries.

Mining operations are relocated periodically in support of optimizing the value extracted from bauxite reserves. During 2021, the Company completed the process of moving the Willowdale mining operations to the next planned location in the Darling range and started the process of moving the Juruti mining operations, which is expected to complete by the end of 2022. During 2021, the Company incurred $38 and $8 in capital expenditures related to the Willowdale and Juruti mining operation relocations, respectively.

	Annual Comparison
Production	Production was stable across Alcoa owned mines with a slight decrease primarily due to lower demand from the Alumar refinery as a result of the ship unloader outage.
Third-party sales	Third-party sales decreased $36 primarily as a result of: • Lower third-party realized prices • Lower third-party sales volumes primarily due to port congestion in Western Australia
Intersegment sales	Intersegment sales decreased $230 primarily as a result of: • Lower average internal prices on sales to the Alumina segment
Segment Adjusted EBITDA	Segment adjusted EBITDA decreased $323 primarily as a result of: • Lower realized prices • Higher costs primarily associated with timing of maintenance and slightly higher energy costs • Unfavorable currency impacts due to a weaker U.S. dollar mainly against the Australian dollar • Lower third-party sales volumes

Forward-Look. In 2022, the Company projects total bauxite shipments to range between 48.0 and 49.0 million metric tons, consistent with 2021 as improved demand from the Alumina segment, see Alumina below, offsets lower third-party shipments with the expiration of the Company's license to export bauxite from Australia. Further, the segment expects continued levels of high capital expenditures as the Juruti mining relocation will offset the decline in spend related to the completion of the Willowdale relocation in 2021.

Alumina

	2021	2020
Production (kmt)	13,259	13,475
Third-party shipments (kmt)	9,629	9,641
Intersegment shipments (kmt)	4,287	4,243
Total shipments (kmt)	13,916	13,884
Third-party sales	$ 3,139	$ 2,627
Intersegment sales	1,586	1,268
Total sales	$ 4,725	$ 3,895
Segment Adjusted EBITDA	$ 1,002	$ 497
Average realized third-party price per metric ton of alumina	$ 326	$ 273
Operating costs	$ 3,678	$ 3,379
Average cost per metric ton of alumina shipped	$ 264	$ 243

In the above table, Total shipments include metric tons that were not produced by the Alumina segment. Such alumina was purchased to satisfy certain customer commitments or requirements. The Alumina segment bears the risk of loss of the purchased alumina until control of the product has been transferred to this segment's customer. Additionally, operating costs in the table above includes all production-related costs: raw materials consumed; conversion costs, such as labor, materials, and utilities; depreciation and amortization; and plant administrative expenses.

Overview. This segment represents the Company's worldwide refining system, which processes bauxite into alumina. The alumina produced by this segment is sold primarily to internal and external aluminum smelter customers; a portion of the alumina is sold to external customers who process it into industrial chemical products. Approximately two-thirds of Alumina's production is sold under supply contracts to third parties worldwide, while the remainder is used internally by the Aluminum segment. Alumina produced by this segment and used internally is transferred to the Aluminum segment at prevailing market prices. A portion of this segment's third-party sales are completed through the use of alumina traders. Generally, this segment's sales are transacted in U.S. dollars while costs and expenses are transacted in the local currency of the respective operations, which are the Australian dollar, the Brazilian real, and the euro. Most of the operations that comprise the Alumina segment are part of AWAC (see Non-controlling Interest in Earnings Summary above). This segment also includes AWAC's 25.1% ownership interest in the mining and refining joint venture company in Saudi Arabia.

Business Update. The Alumina segment had a strong year of production following 2020, a record year for the segment, despite certain production issues, as noted below.

During 2021, the average API (on 30-day lag) remained stable throughout the first half of the year before trending favorably in the second half of the year, reaching a high point in November 2021. As discussed above, the majority of third-party alumina sales are linked to the API and the favorable price trend has resulted in strong results for the segment.

On September 27, 2021, the labor force at the San Ciprián refinery and smelting facilities resumed the strike that had previously been suspended since January 2021. Under the strike conditions, the refinery reduced production and related shipments. On December 29, 2021, the Company reached an agreement with the workers' representatives and the refinery immediately resumed normal operations. See Part II Item 7 of this Form 10-K in Business Update for additional information.

In July 2021, one of two ship unloaders at the Alumar refinery in São Luís, Brazil, which Alcoa operates, sustained structural damage, reducing the amount of bauxite that can be unloaded. Until late September, the refinery supplemented the bauxite supply from the one functioning loader with existing, on-hand inventory and reduced production by one-third, to about 7 kmt per day. In early October, alumina production was restored to approximately 95 percent capacity and full capacity was achieved by the end of the fourth quarter. As a result, the Alumar refinery also incurred additional maintenance and rental costs. See Part II Item 7 of this Form 10-K in Business Update for additional information.

Capacity. The Alumina segment had a base capacity of 13,843 kmt with 214 kmt of curtailed refining capacity. In early 2022, the Company updated nameplate capacity of certain facilities to reflect capital expenditures, upgrades, or other investments which expanded production capacity, and productivity initiatives and process and supply changes that improved capacity in a sustained manner. There was no change in curtailed capacity.

	Annual Comparison
Production	Production decreased 2% primarily as a result of: • Reduced alumina capacity at the Alumar refinery due to the ship unloader outage • Slightly lower production at the San Ciprián refinery, which saw reduced production in both periods due to strike conditions present in the fourth quarter of each year Partially offset by: • Record production at the Kwinana refinery in Western Australia
Third-party sales	Third-party sales increased $512 primarily as a result of: • Higher average realized price of $53/ton principally driven by a higher average API
Intersegment sales	Intersegment sales increased $318 primarily as a result of: • Higher average realized prices on sales to the Aluminum segment
Segment Adjusted EBITDA	Segment adjusted EBITDA increased $505 primarily as a result of: • Higher average realized price of $53/ton principally driven by a higher average API • Lower costs for bauxite Partially offset by: • Higher energy prices in Australia due to a new gas contract and higher market energy prices in Spain and Brazil • Net unfavorable currency impacts due to a weaker U.S. dollar mainly against the Australian dollar • Unfavorable impacts related to the ship unloader outage at Alumar • Higher costs associated with impoundments

Forward-Look. The Company projects total alumina shipments to range between 14.2 and 14.4 million metric tons in 2022, up from 2021 with the resolution of the strike at the San Ciprián refinery and recovery from the Alumar unloader outage. Additionally, in 2022, the Alumina segment expects to continue to be challenged by high energy prices and expects higher raw material prices.

Aluminum

Total Aluminum information		**2021**		**2020**
Third-party aluminum shipments (kmt)		3,007		3,016
Third-party sales	$	8,766	$	6,365
Intersegment sales		18		12
Total sales	$	8,784	$	6,377
Segment Adjusted EBITDA	$	1,879	$	325

Primary aluminum information		**2021**		**2020**
Production (kmt)		2,193		2,263
Third-party shipments (kmt)		2,924		2,710
Third-party sales	$	8,420	$	5,190
Average realized third-party price per metric ton	$	2,879	$	1,915
Total shipments (kmt)		2,949		2,773
Operating costs	$	6,593	$	5,222
Average cost per metric ton of primary aluminum shipped	$	2,235	$	1,883

In the above table, total aluminum third-party shipments and total primary aluminum shipments include metric tons that were not produced by the Aluminum segment. Such aluminum was purchased by this segment to satisfy certain customer commitments or requirements. The Aluminum segment bears the risk of loss of the purchased aluminum until control of the product has been transferred to this segment's customer. Until the sale of the Warrick Rolling Mill on March 31, 2021, total aluminum information included flat-rolled aluminum while Primary aluminum information did not. Operating costs includes all production-related costs: raw materials consumed; conversion costs, such as labor, materials, and utilities; depreciation and amortization; and plant administrative expenses.

The average realized third-party price per metric ton of primary aluminum includes three elements: a) the underlying base metal component, based on quoted prices from the LME; b) the regional premium, which represents the incremental price over the base LME component that is associated with the physical delivery of metal to a particular region (e.g., the Midwest premium for metal sold in the United States); and c) the product premium, which represents the incremental price for receiving physical metal in a particular shape (e.g., billet, slab, rod, etc.) or alloy.

Overview. This segment consists of the Company's (i) worldwide smelting and casthouse system, which processes alumina into primary aluminum, and the (ii) portfolio of energy assets in Brazil, Canada, and the United States.

Aluminum's combined smelting and casting operations produce primary aluminum products, virtually all of which are sold to external customers and traders. The smelting operations produce molten primary aluminum, which is then formed by the casting operations into either common alloy ingot (e.g., t-bar, sow, standard ingot) or into value-add ingot products (e.g., foundry, billet, rod, and slab). A variety of external customers purchase the primary aluminum products for use in fabrication operations, which produce products primarily for the transportation, building and construction, packaging, wire, and other industrial markets. Results from the sale of aluminum powder and scrap are also included in this segment, as well as the impacts of embedded aluminum derivatives related to energy supply contracts.

The energy assets supply power to external customers in Brazil and the United States, as well as internal customers in the Aluminum (Canadian smelters and Warrick (Indiana) smelter) and, to a lesser extent, the Alumina segments (Brazilian refineries).

Generally, this segment's aluminum sales are transacted in U.S. dollars while costs and expenses of this segment are transacted in the local currency of the respective operations, which are the U.S. dollar, the euro, the Norwegian krone, the Icelandic króna, the Canadian dollar, the Brazilian real, and the Australian dollar.

This segment also includes Alcoa Corporation's 25.1% ownership interest in the smelting joint venture company in Saudi Arabia (Alcoa's interest in the rolling mill joint venture was divested in June 2019).

Business Update. The Aluminum segment maintained solid production compared with 2020, capitalizing on improved market pricing during the year. During 2021, the average LME (on 15-day lag) trended favorably throughout the year, reaching a high point in October 2021.

On September 27, 2021, the labor force at the San Ciprián refinery and smelting facilities resumed the strike that had previously been suspended since January 2021. Under the strike conditions, the smelter stopped all metal shipments and the production of value-add products. Further, the San Ciprián smelting operations experienced significantly higher energy and raw materials costs. On December 29, 2021, the Company reached an agreement with the workers' representatives and announced a two-year curtailment of smelting capacity at the facility. See Part II Item 7 of this Form 10-K in Business Update for additional information on the announcement and related charges taken as a result of the agreement reached with the workers. The San Ciprián smelter incurred a net loss $72 (pre- and after-tax) in 2021, excluding Restructuring and other charges, net.

In December 2021, the company announced the permanent closure of the 146 kmt of aluminum smelting capacity at the Wenatchee aluminum smelter (Washington). The smelter had been fully curtailed since 2015. See Part II Item 8 of this Form 10-K in Note D to the Consolidated Financial Statements for additional information.

In November 2021, Alcoa announced the Portland Aluminium joint ventures plan to restart 19 kmt of curtailed annual capacity at the Portland aluminum smelter (Australia). The restart is expected to complete in the third quarter of 2022. Once the restart is complete, the plant will operate at approximately 95 percent of its total capacity and Alcoa will have approximately 186 kmt of consolidated annual capacity at Portland. See Part II Item 7 of this Form 10-K in Business Update for additional information.

In September 2021, Alcoa announced the restart of 268 kmt of curtailed annual capacity at the Alumar aluminum smelter (Brazil). The smelter had been fully curtailed since 2015. The restart is expected to complete in the fourth quarter of 2022 with the first molten metal expected in the second quarter of 2022. See Part II Item 7 of this Form 10-K in Business Update for additional information.

In March 2021, the Company completed the sale of the Warrick Rolling Mill to Kaiser Aluminum Corporation. Results from the divested rolling mill are included in the Aluminum segment's results through the first quarter of 2021. Alcoa retains ownership of the 269 kmt of annual smelting capacity at the Warrick smelter. As part of the sale, Alcoa entered into a market-based metal supply agreement, a long-term ground lease, and a transition services agreement with Kaiser. See Part II Item 8 of this Form 10-K in Note C to the Consolidated Financial Statements for additional information.

Capacity. The Aluminum segment had a base capacity of 2,962 kmt with 685 kmt of curtailed smelting capacity. In early 2022, the Company updated nameplate capacity of certain facilities to reflect capital expenditures, upgrades, or other investments which expanded production capacity, and productivity initiatives and process and supply changes that improved capacity in a sustained manner. Base and curtailed capacity were reduced by 146 kmt for the permanent closure of the Wenatchee smelter in December 2021.

	Annual Comparison
Production	Production decreased 3% primarily as a result of: • Curtailment of the Intalco smelter, completed in the third quarter of 2020 Partially offset by: • Restart of the Bécancour smelter, completed in the third quarter of 2020
Third-party sales	Third-party sales increased $2,401 primarily as a result of: • Higher average realized price of $964/ton principally driven by a higher average LME (on a 15-day lag) and higher regional premiums • Restart of the Bécancour smelter • Increase in value-add product sales on higher price and increased volume • Favorable market pricing at the Brazilian hydro-electric facilities Partially offset by: • Absence of sales from the divested Warrick Rolling Mill • Curtailment of the Intalco smelter
Segment Adjusted EBITDA	Segment adjusted EBITDA increased $1,554 primarily as a result of: • Higher average realized price driven by higher average LME and regional premiums • Favorable market pricing at the Brazilian hydro-electric facilities • Increase in value-add product sales • Favorable impacts from the curtailment of the Intalco smelter Partially offset by: • Higher alumina costs, driven by an increase in API, as well as higher market prices for other raw materials • Higher energy prices, primarily in Spain and Norway • Unfavorable currency impacts due to a weaker U.S. dollar against most major currencies

Forward-Look. The Company projects total aluminum shipments to range between 2.5 and 2.6 million metric tons in 2022, a decrease from 2021 primarily due to the two-year curtailment of the San Ciprián smelter, the absence of first quarter sales from the divested Warrick Rolling Mill, partially offset by the announced restarts of smelter capacity in Alumar and Portland. Additionally, the Company engages in trading activity when favorable market conditions allow, such as in 2021. Availability of trading opportunities in 2022 may impact the Company's shipment projection.

Further, in 2022 the Aluminum segment expects to benefit from the avoidance of the high energy costs related to the curtailment of the San Ciprián smelter. The Aluminum segment expects to continue to be challenged by high raw material costs across the smelting portfolio and by high energy prices in Norway.

Reconciliations of Certain Segment Information

Reconciliation of Total Segment Third-Party Sales to Consolidated Sales

	2021	2020
Bauxite	$ 236	$ 272
Alumina	3,139	2,627
Aluminum:		
Primary aluminum	8,420	5,190
Other[(1)]	346	1,175
Total segment third-party sales	12,141	9,264
Other	11	22
Consolidated sales	$ 12,152	$ 9,286

(1) Other includes third-party sales of flat-rolled aluminum and energy, as well as realized gains and losses related to embedded derivative instruments designated as cash flow hedges of forward sales of aluminum. Following the sale of the Warrick Rolling Mill on March 31, 2021, Other no longer includes the sales of flat-rolled aluminum.

Reconciliation of Total Segment Operating Costs to Consolidated Cost of Goods Sold

	2021	2020
Bauxite	$ 912	$ 835
Alumina	3,678	3,379
Primary aluminum	6,593	5,222
Other[(1)]	737	1,233
Total segment operating costs	11,920	10,669
Eliminations[(2)]	(2,214)	(2,213)
Provision for depreciation, depletion, amortization[(3)]	(639)	(627)
Other[(4)]	86	140
Consolidated cost of goods sold	$ 9,153	$ 7,969

(1) Prior to the sale of the Warrick Rolling Mill on March 31, 2021, Other largely relates to the Aluminum segment's flat-rolled aluminum product division.

(2) Represents the elimination of cost of goods sold related to intersegment sales between Bauxite and Alumina and between Alumina and Aluminum.

(3) Depreciation, depletion, and amortization is included in the operating costs used to calculate average cost for each of the bauxite, alumina, and primary aluminum product divisions (see Bauxite, Alumina, and Aluminum above). However, for financial reporting purposes, depreciation, depletion, and amortization is presented as a separate line item on Alcoa Corporation's Statement of Consolidated Operations.

(4) Other includes costs related to Transformation, and certain other items that impact Cost of goods sold on Alcoa Corporation's Statement of Consolidated Operations that are not included in the operating costs of the segments (see footnotes 1 and 3 in the Reconciliation of Total Segment Adjusted EBITDA to Consolidated Net Income (Loss) Attributable to Alcoa Corporation below).

Reconciliation of Total Segment Adjusted EBITDA to Consolidated Net Income (Loss) Attributable to Alcoa Corporation

	2021	2020
Net income (loss) attributable to Alcoa Corporation:		
Total segment Adjusted EBITDA	$ 3,053	$ 1,317
Unallocated amounts:		
Transformation[(1)]	(44)	(45)
Intersegment eliminations	(101)	(8)
Corporate expenses[(2)]	(129)	(102)
Provision for depreciation, depletion, and amortization	(664)	(653)
Restructuring and other charges, net	(1,128)	(104)
Interest expense	(195)	(146)
Other income (expenses), net	445	(8)
Other[(3)]	(38)	(78)
Consolidated income (loss) before income taxes	1,199	173
Provision for income taxes	(629)	(187)
Net income attributable to non-controlling interest	(141)	(156)
Consolidated net income (loss) attributable to Alcoa Corporation	$ 429	$ (170)

(1) Transformation includes, among other items, the Adjusted EBITDA of previously closed operations.

(2) Corporate expenses are composed of general administrative and other expenses of operating the corporate headquarters and other global administrative facilities, as well as research and development expenses of the corporate technical center.

(3) Other includes certain items that impact Cost of goods sold and other expenses on Alcoa Corporation's Statement of Consolidated Operations that are not included in the Adjusted EBITDA of the reportable segments.

ENVIRONMENTAL MATTERS

See Part II Item 8 of this Form 10-K in Note S to the Consolidated Financial Statements under caption Contingencies – Environmental Matters.

LIQUIDITY AND CAPITAL RESOURCES

Alcoa Corporation's primary future cash flows are centered on operating activities, particularly working capital, as well as capital expenditures and capital returns. Alcoa's ability to fund its cash needs depends on the Company's ongoing ability to generate and raise cash in the future.

In 2021, the Company capitalized on strong market conditions through stable operational performance to reach record annual net income. The strong financial results allowed the Company to significantly improve its balance sheet, capital structure, and liquidity profile through the successful completion of the following actions:

- On March 31, completed the sale of the Warrick Rolling Mill for initial net cash proceeds of $583;
- In March, issued $500 of 4.125% Senior Notes due 2029;
- On April 1, made discretionary contribution of $500 to its U.S. defined benefit pension plans;
- On April 7, fully redeemed $750 of 6.75% Senior Notes due 2024 at a redemption price equal to 103.375% plus accrued and unpaid interest;
- In June, completed the sale of the former Eastalco site for net cash proceeds of $94;
- On September 30, fully redeemed $500 of 7.00% Senior Notes due 2026 at a redemption price equal to 103.5% plus accrued and unpaid interest;
- On October 29, completed the sale of the Rockdale site for net cash proceeds of $230.

Further, management has taken the following actions in 2021 in regard to Alcoa's liquidity levers:

- Amended the Company's Revolving Credit Facility to provide a more favorable leverage ratio calculation and a more favorable minimum interest expense coverage ratio;
- Allowed to expire (effective October 4, 2021) the NOK 1.3 billion (approximately $149) multicurrency revolving credit facility agreement. No amounts were drawn on the facility in both 2020 and 2021; and,
- Terminated a receivables purchase agreement, effective November 8, 2021, which provided Alcoa the ability to sell up to $120 of its receivables. No receivables were sold under this agreement.

Management believes that the Company's cash on hand, future operating cash flows, and liquidity options, combined with its strategic actions, are adequate to fund its short term and long term operating and investing needs. Further, the above actions have provided the Company with significant flexibility related to its use of cash; the Company has no significant debt maturities until 2027 and no significant cash contribution requirements related to its U.S. pension plan obligations for the foreseeable future (refer to Material Cash Commitments, below, for more information).

Although management believes that Alcoa's future cash from operations and other liquidity options will provide adequate resources to fund operating and investing needs, the Company's access to, and the availability of, financing on acceptable terms in the future will be affected by many factors, including: (i) Alcoa Corporation's credit rating; (ii) the liquidity of the overall capital markets; and (iii) the current state of the economy and commodity markets. There can be no assurances that the Company will continue to have access to capital markets on terms acceptable to Alcoa Corporation.

Changes in market conditions caused by the COVID-19 pandemic could have adverse effects on Alcoa's ability to obtain additional financing and cost of borrowing. Inability to generate sufficient earnings could impact the Company's ability to meet the financial covenants in our outstanding debt and revolving credit facility agreements and limit our ability to access these sources of liquidity or refinance or renegotiate our outstanding debt or credit agreements on terms acceptable to the Company. Additionally, the impact on market conditions from the COVID-19 pandemic could adversely affect the liquidity of Alcoa's customers, suppliers, and joint venture partners and equity method investments, which could negatively impact the collectability of outstanding receivables and our cash flows.

At December 31, 2021, the Company's cash and cash equivalents were $1,814, of which $1,732 was held outside the United States. Alcoa Corporation has a number of commitments and obligations related to the Company's operations in various foreign jurisdictions, resulting in the need for cash outside the United States. Alcoa Corporation continuously evaluates its local and global cash needs for future business operations, which may influence future repatriation decisions. See Part II Item 8 of this Form 10-K in Note Q to the Consolidated Financial Statements for additional information related to undistributed net earnings.

Cash from Operations

Cash provided from operations was $920 in 2021 compared with $394 in 2020. Notable changes to the sources and (uses) of cash include:

- $1,608 higher net income generation, excluding the impacts from restructuring charges, primarily on higher aluminum and alumina pricing;

- ($862) in certain working capital accounts (receivables, inventories, and accounts payable, trade), primarily an increase in receivables balances on higher aluminum and alumina prices in 2021 and higher inventories and accounts payable balances on higher raw material and energy prices;

- ($236) from higher pension contributions, including a $500 discretionary contribution to the Company's U.S. defined benefit pension plan in 2021, partially offset by a $250 pension contribution to the Company's U.S. pension plans in 2020 to cover deferred contributions and a discretionary payment;

- $182 relating to changes in taxes, primarily higher income taxes payable on higher income in Canada and Australia where final tax payments of approximately $250 in total are due in the subsequent year; and,

- $115 from changes in accrued expenses, including lower payments on restructuring and other postretirement benefits.

In the third quarter of 2020, AofA paid approximately $74 (A$107) to the ATO related to the tax dispute described in Note S to the Consolidated Financial Statements in Part II Item 8 of this Form 10-K. Upon payment, AofA recorded a non-current prepaid tax asset, as the Company continues to believe it is more likely than not that AofA's tax position will be sustained and therefore is not recognizing any tax expense in relation to this matter. In accordance with Australian tax laws, the initial interest assessment and additional interest are deductible against AofA's taxable income resulting in approximately $169 (A$219) and $14 (A$19) lower cash tax payments in 2020 and 2021, respectively. If AofA is ultimately successful, the interest deduction would become taxable as income in the year the dispute is resolved. In addition, should the ATO decide in the interim to reduce any interest already assessed, the reduction would be taxable as income at that point in time. During 2021, AofA continued to record its tax provision and tax liability without effect of the ATO assessment, since it expects to prevail. The tax payable will remain on AofA's balance sheet as a non-current liability, increased by the tax effect of subsequent periods' interest deductions, until dispute resolution, which is expected to take several years. At December 31, 2021, the non-current liability resulting from the cumulative interest deductions was approximately $174 (A$238).

Financing Activities

Cash used for financing activities was $1,158 in 2021 compared with cash provided from financing activities of $514 in 2020.

The use of cash in 2021 was primarily $775 for the full, early repayment of $750 aggregate principal amount of 2024 Notes (including $25 redemption premium) in April 2021, $518 for the full, early repayment of $500 aggregate principal amount of 2026 Notes (including $18 redemption premium) in September 2021, $194 in net cash paid to Alumina Limited (see Non-controlling interest in Results of Operations above), $150 for the repurchase of common stock, $19 for dividends paid on common stock, and $17 in financial contributions primarily related to the divested Spanish facilities. The uses of cash were partially offset by the issuance of $500 aggregate principal amount 2029 Notes by ANHBV in March 2021 with net proceeds of approximately $493.

The source of cash in 2020 was primarily due to the issuance of $750 aggregate principal amount of 2027 Notes by ANHBV in July 2020 resulting in net proceeds of $736. The net proceeds were partially offset by $183 in net cash paid to Alumina Limited and $38 in financial contributions related to the divested Spanish facilities.

Credit Facilities. The Company has a senior secured $1,500 revolving credit and letter of credit facility in place for working capital and/or other general corporate purposes (the Facility). The Facility was established on September 16, 2016, was amended in each of 2017, 2018, 2019, 2020, and 2021 and is scheduled to mature on November 21, 2023. Subject to the terms and conditions under the Facility, the Company may borrow funds or issue letters of credit through its Alcoa Corporation or ANHBV legal entities. Borrowings can be executed in U.S. dollars, and letter of credit issuances are limited to $750. Effective January 1, 2022, the Company agreed to suspend borrowings denominated in euros due to reference rate reform and the phase-out of LIBOR. This suspension of borrowing denominated in euros will not materially impact the Company or its ability to access capital, if necessary.

The Facility is secured by, subject to certain exceptions, a first priority security interest in substantially all assets of Alcoa Corporation, ANHBV, the material domestic wholly-owned subsidiaries of Alcoa Corporation, and the material foreign wholly-owned subsidiaries of Alcoa Corporation located in Australia, Brazil, Canada, Luxembourg, the Netherlands, Norway, and Switzerland. This includes equity interests of certain subsidiaries that directly hold equity interests in AWAC entities. However, no AWAC entity is a guarantor of any obligation under the Facility and no asset of any AWAC entity, or equity interests in any AWAC entity, will be pledged to secure the obligations under the Facility. As provided in the Facility, each of the mentioned companies shall be released from all obligations under the first priority security interest upon (i) Alcoa Corporation attaining at least a Baa3 rating from either Moody's Investor Service or BBB- rating from Standard and Poor's Global Ratings, in each case with a stable outlook or better, (ii) ANHBV delivering the required written notice, and (iii) no default or event of default, as defined in the Facility, has occurred or is continuing.

The Facility includes several customary affirmative and negative covenants (applicable to Alcoa Corporation and certain subsidiaries described as restricted), that, subject to certain exceptions, include limitations on (among other things): indebtedness, liens, investments, sales of assets, restricted payments, entering into restrictive agreements, a covenant prohibiting reductions in the ownership of AWAC entities, and certain other specified restricted subsidiaries of Alcoa Corporation, below an agreed level. The Facility also contains customary events of default, including a failure to make payments under the Facility, cross-default and cross-judgment default, and certain bankruptcy and insolvency events. In addition, the Facility contains two financial covenants, a leverage ratio and an interest expense coverage ratio, that impact availability of the $1,500 commitment and pricing.

As of December 31, 2021, the Company was in compliance with all covenants. The maximum additional borrowing capacity available to the Company to remain in compliance with the maximum leverage ratio covenant in the Facility was approximately $6,610. Therefore, the Company may access the entire amount of commitments under the Facility. There were no borrowings outstanding at December 31, 2021 and 2020, and no amounts were borrowed during 2021 and 2020 under the Facility.

On March 4, 2021, Alcoa Corporation and ANHBV, entered into an amendment (Amendment No. 4) to the Facility that provided additional flexibility to the Company by (i) increasing the maximum leverage ratio from 2.50 to 1.00 to 2.75 to 1.00, (ii) decreasing the minimum interest expense coverage ratio from 5.00 to 1.00 to 4.00 to 1.00, (iii) amending the definition of Total Indebtedness (as defined in the Facility) to permit the Company to exclude the principal amount of new senior notes issued during 2021 from indebtedness for purposes of the calculation of the leverage ratio in fiscal year 2021 (subject to adjustments based on pension obligations funded), and (iv) ending temporary restrictions on the Company's ability to make certain restricted payments or incur incremental loans under the Facility. Amendment No. 4 also (i) provided additional debt capacity to permit the Company to issue up to $750 in aggregate principal amount of new senior notes prior to the end of fiscal year 2021 and (ii) provided a corresponding increase in the maximum leverage ratio commensurate with the increase in leverage resulting from the issuance of such notes up to the amount of pension obligations funded after the issuance of such notes but prior to December 31, 2021, which increase shall in any event not be in excess of the principal amount of such notes. Such additional increase in the maximum leverage ratio will be available beginning March 31, 2022.

Alcoa's maximum additional borrowing capacity, discussed above, can be used through any combination of the Revolving Credit Facility or through additional indebtedness. The Company may draw on the facility periodically to ensure working capital needs are met. See Part II Item 8 of this Form 10-K in Note M to the Consolidated Financial Statements for additional information related to the Revolving Credit Facility.

Off-Balance Sheet Arrangements. Alcoa Corporation is party to certain contingent off-balance sheet arrangements including guarantees, letters of credit, and surety bonds. See Part II Item 8 of this Form 10-K in Note S to the Consolidated Financial Statements for additional information.

Debt. As of December 31, 2021, Alcoa Corporation had three outstanding Notes maturing at varying times. A summary of the Notes and other long-term debt is shown below. See Part II Item 8 of this Form 10-K in Note M to the Consolidated Financial Statements for additional information related to the Company's debt.

December 31,	**2021**	**2020**
6.75% Notes, due 2024	$ –	$ 750
7.00% Notes, due 2026	–	500
5.500% Notes, due 2027	750	750
6.125% Notes, due 2028	500	500
4.125% Notes, due 2029	500	–
Other	5	6
Unamortized discounts and deferred financing costs	(28)	(41)
Total	1,727	2,465
Less: amount due within one year	1	2
Long-term debt, less amount due within one year	$ 1,726	$ 2,463

Ratings. Alcoa Corporation's cost of borrowing and ability to access the capital markets are affected not only by market conditions but also by the short- and long-term debt ratings assigned to Alcoa Corporation's debt by the major credit rating agencies.

On December 9, 2021, Fitch Ratings (Fitch) upgraded its rating for Alcoa Corporation's long-term debt to BBB- from BB+. Additionally, Fitch affirmed the current outlook as stable.

On December 17, 2021, Standard and Poor's Global Ratings (S&P) affirmed the BB+ rating of Alcoa's long-term debt and revised the outlook to positive.

Dividend. On October 14, 2021, the Company announced the initiation of a quarterly cash dividend on its common stock. The Board of Directors declared the first quarterly cash dividend of $0.10 per share of the Company's common stock, paid on November 19, 2021 to stockholders of record as of the close of business on October 29, 2021. The details of any future cash dividend declaration, including the amount of such dividend and the timing and establishment of the record and payment dates, will be determined by the Board of Directors. The decision of whether to pay future cash dividends and the amount of any such dividends will be based on the Company's financial position, results of operations, cash flows, capital requirements, business conditions, the requirements of applicable law, and any other factors the Board of Directors may deem relevant.

Common Stock Repurchase Program. On October 17, 2018, Alcoa Corporation's Board of Directors approved a common stock repurchase program under which the Company may purchase shares of its outstanding common stock up to an aggregate transactional value of $200, depending on cash availability, market conditions, and other factors. On October 14, 2021, Alcoa Corporation's Board of Directors approved a new common stock repurchase program under which the Company may purchase shares of its outstanding common stock up to an aggregate transactional value of $500, depending on cash availability, market conditions, and other factors.

Repurchases under these programs may be made using a variety of methods, which may include open market purchases, privately negotiated transactions, or pursuant to a Rule 10b5-1 plan. These programs do not have predetermined expiration dates. Alcoa Corporation intends to retire repurchased shares of common stock.

In the fourth quarter of 2021, the Company repurchased 3,184,300 shares of its common stock for $150; the shares were immediately retired. These purchases exhausted the remaining dollar value of shares that were available for repurchase under the Board of Directors' October 17, 2018 authorization. The Company has remaining authorization to repurchase up to a total of $500, in the aggregate, of its outstanding shares of common stock, under the new share repurchase program approved in 2021.

Investing Activities

Cash provided from investing activities was $565 in 2021 compared with cash used for investing activities of $167 in 2020.

In 2021, the source of cash was primarily attributable to proceeds from the sale of assets of $966, primarily the Warrick Rolling Mill, Rockdale, and Eastalco site sales, partially offset by $390 in capital expenditures, composed of $356 in sustaining projects and $34 in return-seeking projects. In 2020, the use of cash was primarily attributable to capital expenditures of $353, composed of $318 in sustaining projects and $35 in return-seeking projects, partially offset by proceeds from the sale of assets of $198, primarily from the Gum Springs waste treatment facility.

In 2022, Alcoa expects capital expenditures to be approximately $450 related to sustaining capital projects and approximately $75 related to growth projects. The timing and amount of capital expenditures may fluctuate as a result of the Company's normal operations.

Material Cash Commitments

As discussed above, the Company relies primarily on operating cash flows to fund its cash commitments and management believes its operating cash flows, cash on hand, and liquidity options will be adequate to fund its cash needs. As of December 31, 2021, a summary of Alcoa Corporation's outstanding material cash commitments is as follows:

	Total	2022	2023-2024	2025-2026	Thereafter
Operating activities:					
Energy-related purchase obligations	$ 14,470	$ 1,946	$ 2,508	$ 2,278	$ 7,738
Raw material purchase obligations	7,143	1,653	793	931	3,766
Other purchase obligations	896	287	259	152	198
Interest related to total debt	602	93	185	185	139
Other postretirement benefit payments	480	60	110	100	210
Estimated minimum required pension funding	310	80	115	115	–
Operating leases	117	41	42	17	17
Layoff and other restructuring payments	93	50	43	–	–
Deferred revenue arrangements	44	8	16	16	4
Uncertain tax positions	6	–	–	–	6
Financing activities:					
Long-term debt and Short-term borrowings	1,830	76	2	1	1,751
Investing activities:					
Equity contributions	53	53	–	–	–
Totals	$ 26,044	$ 4,347	$ 4,073	$ 3,795	$ 13,829

Purchase obligations – Energy-related purchase obligations consist primarily of electricity and natural gas contracts with expiration dates ranging from 1 year to 26 years. Raw material obligations consist mostly of bauxite (relates to AWAC's bauxite mine interests in Guinea and Brazil), caustic soda, alumina, aluminum fluoride, calcined petroleum coke, and cathode blocks with expiration dates ranging from less than 1 year to 14 years. Other purchase obligations consist principally of freight for bauxite and alumina with expiration dates ranging from 1 to 11 years. Many of these purchase obligations contain variable pricing components, and, as a result, actual cash payments may differ from the estimates provided in the preceding table. In accordance with the terms of several of these supply contracts, obligations may be reduced as a result of an interruption to operations, such as a plant curtailment or a force majeure event.

Interest related to total debt – Interest is based on interest rates in effect as of December 31, 2021 and is calculated on debt with maturities that extend to 2029.

Pension and Other postretirement benefits – Estimated minimum required pension funding and other postretirement benefit payments are based on actuarial estimates using current assumptions for, among others, discount rates, long-term rate of return on plan assets, rate of compensation increases, and/or health care cost trend rates. Actual payments may differ based on changes in assumptions. Alcoa Corporation has determined that it is not practicable to present pension funding and other postretirement benefit payments beyond 2026 and 2031, respectively.

On April 1, 2021, the Company used the net proceeds from the issuance of the notes being offered, together with cash on hand, to contribute $500 to its U.S. defined benefit pension plans applicable to salaried and hourly employees.

The Company also adopted the relief provisions allowable under the law related to single-employer pensions enacted under the American Rescue Plan, which was signed into law on March 11, 2021. As a result of the American Rescue Plan and the $500 unscheduled contribution, Alcoa's minimum required contribution to defined benefit pension plans were significantly reduced.

The $500 U.S. pension contribution in April was added to the Company's pre-funding balance, the current balance of which is more than sufficient to cover the U.S. portion of the minimum obligations presented above. Under ERISA regulations, a plan sponsor that establishes a pre-funding balance by making discretionary contributions to a U.S. defined benefit pension plan may elect to apply all or a portion of this balance toward its minimum required contribution obligations to the related plan in future years. Management made such election related to the Company's U.S. plans for 2021 and intends to make similar elections for 2022 and future years. The contractual obligations above include the estimated minimum required pension funding for which those elections are expected to be made: 2022 $65; 2023-2024 $100; and, 2025-2026 $105.

Layoff and other restructuring – Layoff and other restructuring payments expected to be paid within one year primarily relate to employee and take-or-pay contractual obligations related to the curtailed San Ciprián smelter, take-or-pay contractual obligations, and severance related to closed and curtailed aluminum facilities in Washington. Layoff and other restructuring payments expected to be paid beyond one year primarily relate to employee and take-or-pay contractual obligations related to the curtailed San Ciprián smelter.

Deferred revenue arrangements – Deferred revenue arrangements require Alcoa Corporation to deliver alumina to a certain customer over the specified contract period (through 2027). While this obligation is not expected to result in cash payments, it is included in the preceding table as the Company would have such an obligation if the specified product deliveries could not be made.

Uncertain tax positions – Uncertain tax positions taken or expected to be taken on an income tax return may result in additional payments to tax authorities. The amount in the preceding table includes interest and penalties accrued related to such positions as of December 31, 2021. The total amount of uncertain tax positions is included in the Thereafter column as the Company is not able to reasonably estimate the timing of potential future payments. If a tax authority agrees with the tax position taken or expected to be taken or the applicable statute of limitations expires, then additional payments will not be necessary.

Long-term debt and Short-term borrowings – Total debt amounts in the preceding table represent the principal amounts of all outstanding long-term debt, which have maturities that extend to 2029.

Returns to stockholders – Alcoa Corporation's Board of Directors authorized common stock repurchase programs under which the Company may purchase shares of its outstanding common stock up to an aggregate transactional value of $700, depending on various factors. As of December 31, 2021, there is remaining authorization to repurchase up to a total of $500, in the aggregate, of its outstanding shares of common stock. The program does not have a predetermined expiration date. Accordingly, amounts have not been included in the preceding table. See Liquidity and Capital section for more information.

Equity-method investments – Equity contributions are related to the joint venture, ELYSIS™ Limited Partnership (ELYSIS™). The Company contributed $23 (C$30) toward its investment commitment in ELYSIS™ through December 31, 2021 and expects to contribute $53 (C$67) in 2022. See Part II Item 8 of this Form 10-K in Note H to the Consolidated Financial Statements for additional information.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

The preparation of the Company's Consolidated Financial Statements in accordance with GAAP requires management to make certain estimates based on judgments and assumptions regarding uncertainties that affect the amounts reported in the Consolidated Financial Statements and disclosed in the Notes to the Consolidated Financial Statements. Areas that require such estimates include the review of properties, plants, and equipment and goodwill for impairment, and accounting for each of the following: asset retirement and environmental obligations; litigation matters; pension plans and other postretirement benefits obligations; derivatives and hedging activities; and income taxes.

Management uses historical experience and all available information to make these estimates; actual results may differ from those used to prepare the Company's Consolidated Financial Statements at any given time. Despite these inherent limitations, management believes that the amounts recorded in the financial statements related to these items are based on its best estimates and judgments using all relevant information available at the time.

A summary of the Company's significant accounting policies is included in Part II Item 8 of this Form 10-K in Note B to the Consolidated Financial Statements.

Properties, Plants, and Equipment. Properties, plants, and equipment are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of such assets (asset group) may not be recoverable, including in the period when assets have met the criteria to be classified as held for sale. The model used to determine recoverability of an asset or asset group would leverage the model that management uses for planning and strategic review of the entire business, including related inputs and assumptions. Management's impairment assessment process is described in Part II Item 8 of this Form 10-K in Note B to the Consolidated Financial Statements. Refer to Part II Item 8 of this Form 10-K in Note K to the Consolidated Financial Statements for more information regarding properties, plants, and equipment.

Goodwill. Goodwill is reviewed for impairment annually (in the fourth quarter) or more frequently if indicators of impairment exist or if a decision is made to sell or exit a business. A significant amount of judgment is involved in determining if an indicator of impairment has occurred. Such indicators may include, among others, deterioration in general economic conditions, negative developments in equity and credit markets, adverse changes in the markets in which an entity operates, increases in input costs that have a negative effect on earnings and cash flows, or a trend of negative or declining cash flows over multiple periods. The fair value that could be realized in an actual transaction may differ from that used to evaluate goodwill for impairment.

Under the qualitative impairment test, management considers a number of factors in its assessment, such as: general economic conditions, equity and credit markets, industry and market conditions, and earnings and cash flow trends.

Under the quantitative impairment test, management uses a discounted cash flow (DCF) model to estimate the current fair value of its reporting units. A number of significant assumptions and estimates are involved in the application of the DCF model to forecast operating cash flows, including markets and market share, sales volumes and prices, production costs, production capability, tax rates, capital spending, discount rate, and working capital changes. The model used for the goodwill impairment test leverages the model, including related inputs and assumptions, that management uses for planning and strategic review of the entire business.

Management will test goodwill on a qualitative or quantitative basis. Refer to Part II Item 8 of this Form 10-K in Note B to the Consolidated Financial Statements for more information regarding management's impairment assessment process.

Management performed a quantitative assessment for the Bauxite reporting unit in 2021. As a result of the assessment, the estimated fair value of the Bauxite reporting unit was substantially in excess of its carrying value, resulting in no impairment. The impact on the estimated fair value of an increase in the discount rate of 1% would not result in a change in the conclusions reached, the estimated fair value would remain substantially in excess of carrying value.

Additionally, management performed a qualitative assessment for the Alumina reporting unit in 2021 and determined that it was not more likely than not that the fair value of the reporting unit was less than its carrying value. Management last performed a quantitative impairment test for the Alumina reporting unit in 2019. At the time of the quantitative assessment, the estimated fair value of the Alumina reporting unit was substantially in excess of its carrying value, resulting in no impairment.

Further, in all years presented, there have been no triggering events that necessitated an impairment test for either the Bauxite or Alumina reporting units. Refer to Part II Item 8 of this Form 10-K in Note L to the Consolidated Financial Statements for more information regarding goodwill.

Asset Retirement and Environmental Obligations. Estimates are used to record environmental remediation and asset retirement obligation (ARO) reserves based on the best available information at the time of recognition. Several assumptions are used to estimate the costs required to demolish, environmentally remediate, or reclaim the site, including:

- Engineering estimates and benchmarks to other similar projects;
- Mining area to be reclaimed and estimated restoration costs;
- Volume of regulated materials to be removed (asbestos, PCB fluids, spent potlining);
- Disposition of materials;
- Extent of contamination based on available data;
- Scope of remediation to mitigate human health or environmental risks and/or to meet likely regulatory requirements; and,
- Commercial availability and pricing for off-site treatment or disposal applications.

As the site is demolished, remediated, or reclaimed, the assumptions and estimates used to record the reserve may change to account for:

- Actual site conditions that require more or less remediation or reclamation;
- Legislation that becomes more or less stringent;
- Regulative authorities requiring updates to final design prior to completion;
- Alternative disposal methods for waste;
- Technological changes which allow remediation to be more efficient;
- Market factors; and,

- Variances in work that is atypical from prior work experience.

Changes to the estimates may result in material changes to the reserve that may require an increase to or a reversal of a previously recorded reserve. Historically, the Company has not had material changes in established reserves. Refer to Part II Item 8 of this Form 10-K in Note R and Note S to the Consolidated Financial Statements for more information regarding current reserves.

Litigation Matters. For asserted claims and assessments, liabilities are recorded when an unfavorable outcome of a matter is deemed to be probable and the loss is reasonably estimable. Management determines the likelihood of an unfavorable outcome based on many factors such as, among others, the nature of the matter, available defenses and case strategy, progress of the matter, views and opinions of legal counsel and other advisors, applicability and success of appeals processes, and the outcome of similar historical matters. Once an unfavorable outcome is deemed probable, management weighs the probability of estimated losses, and the most reasonable loss estimate is recorded. If an unfavorable outcome of a matter is deemed to be reasonably possible, then the matter is disclosed, and no liability is recorded. With respect to unasserted claims or assessments, management must first determine that the probability that an assertion will be made is likely, then, a determination as to the likelihood of an unfavorable outcome and the ability to reasonably estimate the potential loss is made. Legal matters are reviewed on a continuous basis to determine if there has been a change in management's judgment regarding the likelihood of an unfavorable outcome or the estimate of a potential loss. Refer to Part II Item 8 of this Form 10-K in Note B to the Consolidated Financial Statements for more information regarding management's litigation matters policy.

Pension and Other Postretirement Benefits. Liabilities and expenses for pension and other postretirement benefits are determined using actuarial methodologies and incorporate significant assumptions, including the interest rate used to discount the future estimated liability, the expected long-term rate of return on plan assets, and several assumptions relating to the employee workforce (salary increases, health care cost trend rates, retirement age, and mortality).

The yield curve model used to develop the discount rate parallels the plans' projected cash flows and has a weighted average duration of 12 years. The underlying cash flows of the high-quality corporate bonds included in the model exceed the cash flows needed to satisfy the Company's plan obligations multiple times. If a deep market of high-quality corporate bonds does not exist in a country, then the yield on government bonds plus a corporate bond yield spread is used. The impact on the combined pension and other postretirement liabilities of a change in the weighted average discount rate of 1/4 of 1% would be approximately $147 and either a charge or credit of approximately $1 to pretax earnings in the following year.

The expected long-term rate of return on plan assets is generally applied to a five-year market-related value of plan assets (a four-year average or the fair value at the plan measurement date is used for certain non-U.S. plans). The process used by management to develop this assumption is one that relies on forward-looking investment returns by asset class. Management incorporates expected future investment returns on current and planned asset allocations using information from various external investment managers and consultants, as well as management's own judgment. A change in the assumption for the weighted average expected long-term rate of return on plan assets of 1/4 of 1% would impact pretax earnings by approximately $9 for 2022.

Mortality rate assumptions are based on mortality tables and future improvement scales published by third parties, such as the Society of Actuaries, and consider other available information including historical data as well as studies and publications from reputable sources.

Refer to Part II Item 8 of this Form 10-K in Note O to the Consolidated Financial Statements for more information regarding pension and other postretirement benefits including accounting impacts of current year actions.

Derivatives and Hedging. To calculate the fair value of certain derivatives, management uses discounted cash flow (DCF) and other simulation models that consider the following inputs and assumptions: quoted market prices (e.g., aluminum prices on the 10-year London Metal Exchange (LME) forward curve and energy prices), information concerning time premiums and volatilities for certain option type embedded derivatives and regional premiums for aluminum contracts, aluminum and energy prices beyond those quoted in the market, and the estimated credit spread between Alcoa and the counterparty. The quoted market prices used in the valuation models are dependent on market fundamentals, the relationship between supply and demand at any point in time, seasonal conditions, inventories, and interest rates. For periods beyond the term of quoted market prices, management estimates the price of aluminum by extrapolating the 10-year LME forward curve and estimates the Midwest premium based on recent transactions.

Changes in estimates can have a material impact on the derivative valuations. Refer to Part II Item 8 of this Form 10-K in Note P to the Consolidated Financial Statements for more information regarding derivatives and hedging and related activity during the period.

Income Taxes. Valuation allowances are recorded to reduce deferred tax assets when it is more likely than not (greater than 50%) that a tax benefit will not be realized. In evaluating the need for a valuation allowance, management applies judgment in assessing all available positive and negative evidence and considers all potential sources of taxable income, including income available in carryback periods, future reversals of taxable temporary differences, projections of taxable income, and income from tax planning strategies. Positive evidence includes factors such as a history of profitable operations, projections of future profitability within the carryforward period, including from tax planning strategies, and Alcoa Corporation's experience with similar operations. Existing favorable contracts and the ability to sell products into established markets are additional positive evidence. Negative evidence includes items such as cumulative losses, projections of future losses, or carryforward periods that are not long enough to allow for the utilization of a deferred tax asset based on existing projections of income. In certain jurisdictions, deferred tax assets related to cumulative losses exist without a valuation allowance where in management's judgment the weight of the positive evidence more than offsets the negative evidence of the cumulative losses. Upon changes in facts and circumstances, management may conclude that deferred tax assets for which no valuation allowance is currently recorded may not be realized, resulting in a future charge to establish a valuation allowance. Financial information utilized in this analysis leverages the same financial information, including related inputs and assumptions, that management uses for planning and strategic review of the entire business.

Tax benefits related to uncertain tax positions taken or expected to be taken on a tax return are recorded when such benefits meet a more likely than not threshold. Otherwise, these tax benefits are recorded when a tax position has been effectively settled, which means that the statute of limitations has expired, or the appropriate taxing authority has completed their examination even though the statute of limitations remains open.

Changes in estimates can have a material impact on the deferred taxes and uncertain tax positions. Refer to Part II Item 8 of this Form 10-K in Note Q to the Consolidated Financial Statements for more information regarding income taxes and deferred tax assets and related activity during the period.

RELATED PARTY TRANSACTIONS

Alcoa Corporation buys products from and sells products to various related companies, consisting of entities in which Alcoa Corporation retains a 50% or less equity interest, at negotiated prices between the two parties. These transactions were not material to the financial position or results of operations of Alcoa Corporation for all periods presented.

RECENTLY ADOPTED ACCOUNTING GUIDANCE

See Part II Item 8 of this Form 10-K in Note B to the Consolidated Financial Statements under caption Recently Adopted Accounting Guidance.

RECENTLY ISSUED ACCOUNTING GUIDANCE

See Part II Item 8 of this Form 10-K in Note B to the Consolidated Financial Statements under caption Recently Issued Accounting Guidance.

B1. CONSOLIDATED FINANCIAL STATEMENTS OF ALCOA FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2022

ALCOA CORPORATION AND SUBSIDIARIES
STATEMENT OF CONSOLIDATED OPERATIONS

(in millions, except per-share amounts)

For the year ended December 31,	**2022**	**2021**	**2020**
Sales (E)	$ 12,451	$ 12,152	$ 9,286
Cost of goods sold (exclusive of expenses below)	10,212	9,153	7,969
Selling, general administrative, and other expenses	204	227	206
Research and development expenses	32	31	27
Provision for depreciation, depletion, and amortization	617	664	653
Restructuring and other charges, net (D)	696	1,128	104
Interest expense (U)	106	195	146
Other (income) expenses, net (U)	(118)	(445)	8
Total costs and expenses	11,749	10,953	9,113
Income before income taxes	702	1,199	173
Provision for income taxes (Q)	664	629	187
Net income (loss)	38	570	(14)
Less: Net income attributable to non-controlling interest	161	141	156
Net (loss) income attributable to Alcoa Corporation	(123)	429	(170)
Earnings per share attributable to Alcoa Corporation common shareholders (F):			
Basic	$ (0.68)	$ 2.30	$ (0.91)
Diluted	$ (0.68)	$ 2.26	$ (0.91)

The accompanying notes are an integral part of the consolidated financial statements.

ALCOA CORPORATION AND SUBSIDIARIES
STATEMENT OF CONSOLIDATED COMPREHENSIVE INCOME
(in millions)

	Alcoa Corporation			Non-controlling interest			Total		
For the year ended December 31,	**2022**	**2021**	**2020**	**2022**	**2021**	**2020**	**2022**	**2021**	**2020**
Net (loss) income	$ (123)	$ 429	$ (170)	$ 161	$ 141	$ 156	$ 38	$ 570	$ (14)
Other comprehensive income (loss), net of tax (G):									
Change in unrecognized net actuarial loss and prior service cost/benefit related to pension and other postretirement benefits	944	1,654	(254)	8	54	(11)	952	1,708	(265)
Foreign currency translation adjustments	(71)	(229)	(225)	(103)	(93)	(10)	(174)	(322)	(235)
Net change in unrecognized gains/losses on cash flow hedges	180	(388)	(176)	2	–	(21)	182	(388)	(197)
Total Other comprehensive income (loss), net of tax	1,053	1,037	(655)	(93)	(39)	(42)	960	998	(697)
Comprehensive income (loss)	$ 930	$ 1,466	$ (825)	$ 68	$ 102	$ 114	$ 998	$ 1,568	$ (711)

The accompanying notes are an integral part of the consolidated financial statements.

ALCOA CORPORATION AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEET
(in millions)

December 31,	**2022**	**2021**
Assets		
Current assets:		
Cash and cash equivalents (P)	$ 1,363	$ 1,814
Receivables from customers	778	757
Other receivables	131	127
Inventories (J)	2,427	1,956
Fair value of derivative instruments (P)	134	14
Prepaid expenses and other current assets	417	358
Total current assets	5,250	5,026
Properties, plants, and equipment, net (K)	6,493	6,623
Investments (H)	1,122	1,199
Deferred income taxes (Q)	296	506
Fair value of derivative instruments (P)	2	7
Other non-current assets (U)	1,593	1,664
Total Assets	$ 14,756	$ 15,025
Liabilities		
Current liabilities:		
Accounts payable, trade	$ 1,757	$ 1,674
Accrued compensation and retirement costs	335	383
Taxes, including income taxes	230	374
Fair value of derivative instruments (P)	200	274
Other current liabilities	481	517
Long-term debt due within one year (M & P)	1	1

December 31,	2022	2021
Total current liabilities	3,004	3,223
Long-term debt, less amount due within one year (M & P)	1,806	1,726
Accrued pension benefits (O)	213	417
Accrued other postretirement benefits (O)	480	650
Asset retirement obligations (R)	711	622
Environmental remediation (S)	226	265
Fair value of derivative instruments (P)	1,026	1,048
Non-current income taxes (Q)	215	191
Other non-current liabilities and deferred credits (U)	486	599
Total liabilities	8,167	8,741
Contingencies and commitments (S)		
Equity		
Alcoa Corporation shareholders' equity:		
Common stock (N)	2	2
Additional capital	9,183	9,577
Accumulated deficit	(570)	(315)
Accumulated other comprehensive loss (G)	(3,539)	(4,592)
Total Alcoa Corporation shareholders' equity	5,076	4,672
Non-controlling interest (A)	1,513	1,612
Total equity	6,589	6,284
Total Liabilities and Equity	$ 14,756	$ 15,025

The accompanying notes are an integral part of the consolidated financial statements.

ALCOA CORPORATION AND SUBSIDIARIES
STATEMENT OF CONSOLIDATED CASH FLOWS
(in millions)

For the year ended December 31,	2022	2021	2020
Cash from Operations			
Net income (loss)	$ 38	$ 570	$ (14)
Adjustments to reconcile net income (loss) to cash from operations:			
Depreciation, depletion, and amortization	617	664	653
Deferred income taxes (Q)	219	147	(26)
Equity loss (earnings), net of dividends (H)	4	(138)	20
Restructuring and other charges, net (D)	696	1,128	104
Net loss (gain) from investing activities – asset sales (U)	10	(354)	(173)
Net periodic pension benefit cost (O)	54	47	138
Stock-based compensation (N)	40	39	25
Premium paid on early redemption of debt	–	43	–
(Gain) loss on mark-to-market derivative financial contracts	(44)	(24)	5
Other	53	49	29
Changes in assets and liabilities, excluding effects of divestitures and foreign currency translation adjustments:			
(Increase) decrease in receivables	(59)	(414)	16
(Increase) decrease in inventories (J)	(547)	(639)	122
Decrease (increase) in prepaid expenses and other current assets	44	(41)	17
Increase in accounts payable, trade	189	354	25
Decrease in accrued expenses	(173)	(38)	(153)
(Decrease) increase in taxes, including income taxes	(152)	301	119
Pension contributions (O)	(17)	(579)	(343)
Increase in non-current assets	(87)	(160)	(82)
Decrease in non-current liabilities	(63)	(35)	(88)
Cash provided from operations	822	920	394

For the year ended December 31,	2022	2021	2020
Financing Activities			
Additions to debt (original maturities greater than three months) (M)	4	495	739
Payments on debt (original maturities greater than three months) (M)	(1)	(1,294)	(1)
Proceeds from the exercise of employee stock options (N)	22	25	1
Repurchase of common stock (N)	(500)	(150)	–
Dividends paid on Alcoa common stock (N)	(72)	(19)	–
Payments related to tax withholding on stock-based compensation awards	(19)	(1)	(1)
Financial contributions for the divestiture of businesses (C)	(33)	(17)	(38)
Contributions from non-controlling interest (A)	214	21	24
Distributions to non-controlling interest	(379)	(215)	(207)
Other	(4)	(3)	(3)
Cash (used for) provided from financing activities	(768)	(1,158)	514
Investing Activities			
Capital expenditures	(480)	(390)	(353)
Proceeds from the sale of assets and businesses (C)	5	966	198
Additions to investments (H)	(32)	(11)	(12)
Sale of investments (H)	10	–	–
Other	2	–	–
Cash (used for) provided from investing activities	(495)	565	(167)
Effect of exchange rate changes on cash and cash equivalents and restricted cash	(9)	(13)	(14)
Net change in cash and cash equivalents and restricted cash	(450)	314	727
Cash and cash equivalents and restricted cash at beginning of year	1,924	1,610	883
Cash and cash equivalents and restricted cash at end of year	$ 1,474	$ 1,924	$ 1,610

The accompanying notes are an integral part of the consolidated financial statements.

ALCOA CORPORATION AND SUBSIDIARIES
STATEMENT OF CHANGES IN CONSOLIDATED EQUITY
(in millions)

	Alcoa Corporation shareholders					
	Common stock	Additional capital	Retained (deficit) earnings	Accumulated other comprehensive (loss) income	Non-controlling interest	Total equity
Balance at December 31, 2019	$ 2	$ 9,639	$ (555)	$ (4,974)	$ 1,774	$ 5,886
Net (loss) income	–	–	(170)	–	156	(14)
Other comprehensive loss (G)	–	–	–	(655)	(42)	(697)
Stock-based compensation (N)	–	25	–	–	–	25
Common stock issued:						
Compensation plans (N)	–	1	–	–	–	1
Contributions	–	–	–	–	24	24
Distributions	–	–	–	–	(207)	(207)
Other	–	(2)	–	–	–	(2)
Balance at December 31, 2020	2	9,663	(725)	(5,629)	1,705	5,016
Net income	–	–	429	–	141	570
Other comprehensive income (loss) (G)	–	–	–	1,037	(39)	998
Stock-based compensation (N)	–	39	–	–	–	39
Common stock issued:						
Compensation plans (N)	–	25	–	–	–	25
Repurchase of common stock (N)	–	(150)	–	–	–	(150)
Dividends paid on Alcoa common stock ($0.10 per share) (N)	–	–	(19)	–	–	(19)
Contributions	–	–	–	–	21	21
Distributions	–	–	–	–	(215)	(215)
Other	–	–	–	–	(1)	(1)
Balance at December 31, 2021	2	9,577	(315)	(4,592)	1,612	6,284
Net (loss) income	–	–	(123)	–	161	38
Other comprehensive income (loss) (G)	–	–	–	1,053	(93)	960
Stock-based compensation (N)	–	40	–	–	–	40
Common stock issued:						
Compensation plans (N)	–	3	–	–	–	3
Repurchase of common stock (N)	–	(440)	(60)	–	–	(500)
Dividends paid on Alcoa common stock ($0.10 per share) (N)	–	–	(72)	–	–	(72)
Contributions	–	–	–	–	214	214
Distributions	–	–	–	–	(379)	(379)
Other	–	3	–	–	(2)	1
Balance at December 31, 2022	$ 2	$ 9,183	$ (570)	$ (3,539)	$ 1,513	$ 6,589

The accompanying notes are an integral part of the consolidated financial statements.

ALCOA CORPORATION AND SUBSIDIARIES
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
(dollars in millions, except per-share amounts; metric tons in thousands (kmt))

A. BASIS OF PRESENTATION

Alcoa Corporation (or the Company) is a vertically integrated aluminum company comprised of bauxite mining, alumina refining, aluminum production (smelting and casting), and energy generation. Through direct and indirect ownership, the Company has 27 operating locations in nine countries around the world, situated primarily in Australia, Brazil, Canada, Iceland, Norway, Spain, and the United States.

Alcoa Corporation became an independent, publicly traded company on November 1, 2016, following its separation (the Separation Transaction) from its former parent company, Alcoa Inc. References herein to "ParentCo" refer to Alcoa Inc. and its consolidated subsidiaries through October 31, 2016, at which time it was renamed Arconic Inc. (Arconic) and since has been subsequently renamed Howmet Aerospace Inc.

Basis of Presentation. The Consolidated Financial Statements of Alcoa Corporation are prepared in conformity with accounting principles generally accepted in the United States of America (GAAP). In accordance with GAAP, certain situations require management to make estimates based on judgments and assumptions, which may affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements. They also may affect the reported amounts of revenues and expenses during the reporting periods. Management uses historical experience and all available information to make these estimates. Management regularly evaluates the judgments and assumptions used in its estimates, and results could differ from those estimates upon future events and their effects or new information. Certain amounts in previously issued financial statements were reclassified to conform to the current period presentation.

Principles of Consolidation. The Consolidated Financial Statements of the Company include the accounts of Alcoa Corporation and companies in which Alcoa Corporation has a controlling interest, including those that comprise the Alcoa World Alumina & Chemicals (AWAC) joint venture (see below). Intercompany transactions have been eliminated. The equity method of accounting is used for investments in affiliates and other joint ventures over which the Company has significant influence but does not have effective control. Investments in affiliates in which Alcoa Corporation cannot exercise significant influence are accounted at cost less any impairment, a measurement alternative in accordance with GAAP.

AWAC is an unincorporated global joint venture between Alcoa Corporation and Alumina Limited and consists of several affiliated operating entities, which own, have an interest in, or operate the bauxite mines and alumina refineries within the Company's Bauxite and Alumina segments (except for the Poços de Caldas mine and refinery, portions of the São Luís refinery and investment in Mineração Rio do Norte S.A. (MRN) until its sale in April 2022, all in Brazil) and a portion (55%) of the Portland smelter (Australia) within the Company's Aluminum segment. Alcoa Corporation owns 60% and Alumina Limited owns 40% of these individual entities, which are consolidated by the Company for financial reporting purposes and include Alcoa of Australia Limited (AofA), Alcoa World Alumina LLC (AWA), Alcoa World Alumina Brasil Ltda. (AWAB), and Alúmina Española, S.A. (Española). Alumina Limited's interest in the equity of such entities is reflected as Non-controlling interest on the accompanying Consolidated Balance Sheet.

Management evaluates whether an Alcoa Corporation entity or interest is a variable interest entity and whether the Company is the primary beneficiary. Consolidation is required if both of these criteria are met. Alcoa Corporation does not have any variable interest entities requiring consolidation.

Related Party Transactions. Alcoa Corporation buys products from and sells products to various related companies, consisting of entities in which the Company retains a 50% or less equity interest, at negotiated prices between the two parties. These transactions were not material to the financial position or results of operations of Alcoa Corporation for all periods presented.

B. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Cash Equivalents. Cash equivalents are highly liquid investments purchased with an original maturity of three months or less.

Restricted Cash. Restricted cash is included with Cash and cash equivalents when reconciling the Cash and cash equivalents and restricted cash at beginning of year and Cash and cash equivalents and restricted cash at end of year on the accompanying Statement of Consolidated Cash Flows. Current restricted cash amounts are reported in Prepaid expenses and other current assets on the accompanying Consolidated Balance Sheet. Non-current restricted cash amounts are reported in Other non-current assets on the accompanying Consolidated Balance Sheet (see Note U for a reconciliation of Cash and cash equivalents and restricted cash).

Inventory Valuation. Inventories are carried at the lower of cost or net realizable value, with the cost of inventories principally determined under the average cost method.

Properties, Plants, and Equipment. Properties, plants, and equipment are recorded at cost. Interest related to the construction of qualifying assets is capitalized as part of the construction costs. Depreciation is recorded principally on the straight-line method over the estimated useful lives of the assets. Depreciation is recorded on temporarily idled facilities until such time management approves a permanent closure. The following table details the weighted average useful lives of structures and machinery and equipment by type of operation (numbers in years):

	Structures	Machinery and equipment
Bauxite mining	33	17
Alumina refining	29	29
Aluminum smelting and casting	37	22
Energy generation	33	24

Repairs and maintenance are charged to expense as incurred while costs for significant improvements that add productive capacity or that extend the useful life are capitalized. Gains or losses from the sale of assets are generally recorded in Other (income) expenses, net.

Properties, plants, and equipment are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of such assets (asset group) may not be recoverable. Recoverability of assets is determined by comparing the estimated undiscounted net cash flows of the operations related to the assets (asset group) to their carrying amount. An impairment loss would be recognized when the carrying amount of the assets (asset group) exceeds the fair value. The amount of the impairment loss to be recorded is calculated as the excess of the carrying value of the assets (asset group) over their fair value, with fair value determined using the best information available, which generally is a discounted cash flow (DCF) model. The determination of what constitutes an asset group, the associated estimated undiscounted net cash flows, and the estimated useful lives of assets also require significant judgments.

Leases. The Company determines whether an arrangement is a lease at the inception of the arrangement based on the terms and conditions in the contract. A contract contains a lease if there is an identified asset which the Company has the right to control. Lease right-of-use (ROU) assets are included in Properties, plants, and equipment with the corresponding operating lease liabilities included within Other current liabilities and Other non-current liabilities and deferred credits.

Operating lease ROU assets and liabilities are recognized at the lease commencement date based on the present value of lease payments over the lease term. The Company uses its incremental borrowing rate at the commencement date in determining the present value of lease payments unless a rate is implicit in the lease. Lease terms include options to extend the lease when it is reasonably certain that those options will be exercised. Leases with an initial term of 12 months or less, including anticipated renewals, are not recorded on the Consolidated Balance Sheet.

The Company made a policy election not to record any non-lease components of a lease agreement in the lease liability. Variable lease payments are not presented as part of the ROU asset or liability recorded at the inception of a contract. Lease expense for operating lease payments is recognized on a straight-line basis over the lease term.

Equity Investments. Alcoa invests in a number of privately-held companies, primarily through joint ventures and consortia, which are accounted for using the equity method. The equity method is applied in situations where the Company has the ability to exercise significant influence, but not control, over the investee. Management reviews equity investments for impairment whenever certain indicators are present suggesting that the carrying value of an investment is not recoverable.

Deferred Mining Costs. Alcoa incurs deferred mining costs during the development stage of a mine life cycle. Such costs include the construction of access and haul roads, detailed drilling and geological analysis to further define the grade and quality of the known bauxite, and overburden removal costs. These costs relate to sections of the related mines where the Company is currently extracting bauxite or preparing for production in the near term. These sections are outlined and planned incrementally and generally are mined over periods ranging from one to five years, depending on specific mine plans. The amount of geological drilling and testing necessary to determine the economic viability of the bauxite deposit being mined is such that the reserves are considered to be proven. Deferred mining costs are amortized on a units-of-production basis and included in Other non-current assets on the accompanying Consolidated Balance Sheet.

Goodwill and Other Intangible Assets. Goodwill is not amortized but is reviewed for impairment annually (in the fourth quarter) or more frequently if indicators of impairment exist or if a decision is made to sell or exit a business.

Goodwill is allocated among and evaluated for impairment at the reporting unit level, which is defined as an operating segment or one level below an operating segment. The Company has four reporting units, of which two are included in the Aluminum segment (smelting/casting and energy generation). The remaining two reporting units are the Bauxite and Alumina segments. Of these four reporting units, only Bauxite and Alumina contain goodwill (see Note L).

Goodwill is tested for impairment by assessing qualitative factors to determine whether it is more likely than not (greater than 50%) that the fair value of the reporting unit is less than its carrying amount or performing a quantitative assessment using a discounted cash flow model. If the qualitative assessment indicates a possible impairment, then a quantitative impairment test is performed to determine the fair value of the reporting unit using a discounted cash flow method. Otherwise, no further analysis is required.

Under the quantitative assessment, the evaluation of impairment involves comparing the current fair value of each reporting unit to its carrying value, including goodwill. In the event the estimated fair value of a reporting unit is less than the carrying value, an impairment loss equal to the excess of the reporting unit's carrying value over its fair value not to exceed the total amount of goodwill applicable to that reporting unit would be recognized.

Alcoa's policy for its annual review of goodwill is to perform the quantitative impairment test for each of its two reporting units that contain goodwill at least once during every three-year period.

Intangible assets with finite useful lives are amortized generally on a straight-line basis over the periods benefited. The following table details the weighted average useful lives of software and other intangible assets by type of operation (numbers in years):

	Software	Other intangible assets
Bauxite mining	3	–
Alumina refining	7	25
Aluminum smelting and casting	3	40
Energy generation	3	29

Asset Retirement Obligations. Alcoa recognizes asset retirement obligations (AROs) related to legal obligations associated with the standard operation of bauxite mines, alumina refineries, and aluminum smelters. These AROs consist primarily of costs associated with mine reclamation, closure of bauxite residue areas, spent pot lining and regulated waste materials disposal, and landfill closure. Additionally, costs are recorded as AROs upon management's decision to permanently close and demolish certain structures and for any significant lease restoration obligations. The fair values of these AROs are recorded on a discounted basis at the time the obligation is incurred and accreted over time for the change in present value; related accretion is recorded as a component of Cost of goods sold. Additionally, the Company capitalizes asset retirement costs by increasing the carrying amount of the related long-lived assets and depreciating these assets over their remaining useful life. Certain conditional asset retirement obligations related to alumina refineries, aluminum smelters, and energy generation facilities have not been recorded in the Consolidated Financial Statements due to uncertainties surrounding the ultimate settlement date. The fair value of these asset retirement obligations will be recorded when a reasonable estimate of the ultimate settlement date can be made. Subsequent adjustments to estimates of previously established AROs for current operations are capitalized by increasing the carrying amount of the related long-lived assets and depreciating these assets over their remaining useful life. Adjustments to estimates of AROs for closed locations are charged to Restructuring and other charges, net on the accompanying Statement of Consolidated Operations (see Note R).

Environmental Matters. Environmental related expenditures for current operations are expensed as a component of Cost of goods sold or capitalized, as appropriate. Expenditures relating to existing conditions caused by past operations, generally for closed locations which will not contribute to future revenues, are charged to Restructuring and other charges, net. Liabilities are recorded when remediation costs are probable and can be reasonably estimated. In instances where the Company has ongoing monitoring and maintenance responsibilities, it is Alcoa's policy to maintain a reserve equal to five years of expected costs. The liability is continuously reviewed and adjusted to reflect current remediation progress, rate and pricing changes, actual volumes of material requiring management, changes to the original assumptions regarding how the site was to be remediated, and other factors that may be relevant, including changes in technology or regulations. The estimates may also include costs related to other potentially responsible parties to the extent that Alcoa has reason to believe such parties will not fully pay their proportionate share.

Litigation Matters. For asserted claims and assessments, liabilities are recorded when an unfavorable outcome of a matter is deemed to be probable and the loss is reasonably estimable. With respect to unasserted claims or assessments, liabilities are recorded when the probability that an assertion will be made is likely, an unfavorable outcome of the matter is deemed to be probable, and the loss is reasonably estimable. Legal matters are reviewed on a continuous basis to determine if there has been a change in management's judgment regarding the likelihood of an unfavorable outcome or the estimate of a potential loss. Legal costs, which are primarily for general litigation, environmental compliance, tax disputes, and general corporate matters, are expensed as incurred.

Revenue Recognition. The Company recognizes revenue when it satisfies a performance obligation(s) in accordance with the provisions of a customer order or contract. This is achieved when control of the product has been transferred to the customer, which is generally determined when title, ownership, and risk of loss pass to the customer, all of which occurs upon shipment or delivery of the product. The shipping terms vary across all businesses and depend on the product, the country of origin, and the type of transportation. Accordingly, the sale of Alcoa's products to its customers represent single performance obligations for which revenue is recognized at a point in time, except for the Company's Energy product division in which the customer simultaneously receives and consumes electricity (see Note E). Revenue is based on the consideration the Company expects to receive in exchange for its products. Returns and other adjustments have not been material. Based on the foregoing, no significant judgment is required to determine when control of a product has been transferred to a customer.

The Company considers shipping and handling activities as costs to fulfill the promise to transfer the related products. As a result, customer payments of shipping and handling costs are recorded as a component of revenue. Taxes collected (e.g., sales, use, value added, excise) from its customers related to the sale of its products are remitted to governmental authorities and excluded from Sales.

Cost of goods sold. The Company includes the following in Cost of goods sold: operating costs of our three segments, excluding depreciation, depletion, and amortization, but including all production related costs: raw materials consumed; purchases of metal for consumption or trade; conversion costs, such as labor, materials, and utilities; equity earnings of certain investments integral to the Company's supply chain; and plant administrative expenses. Also included in Cost of goods sold are: costs related to the Transformation function, which focuses on the management of expenses and obligations of previously closed operations; pension and other postretirement benefit service cost for employees maintaining closed locations; and other costs not included in the operating costs of the segments.

Selling, general administrative, and other expenses. The Company includes the costs of corporate-wide functional support in Selling, general administrative, and other expenses. Such costs include: executive; sales; marketing; strategy; operations administration; finance; information technology; legal; human resources; and government affairs and communications.

Stock-Based Compensation. Compensation expense for employee equity grants is recognized using the non-substantive vesting period approach, in which the expense is recognized ratably over the requisite service period based on the grant date fair value. Forfeitures are accounted for as they occur. The fair value of performance stock units containing a market condition is valued using a Monte Carlo valuation model. There were no stock options granted in 2022 or 2021. In 2020, the fair value of stock options was estimated on the date of grant using a lattice pricing model. Determining the fair value at the grant date requires judgment, including estimates for the average risk-free interest rate, dividend yield, volatility, annual forfeiture rate, and exercise behavior. These assumptions may differ significantly between grant dates because of changes in the actual results of these inputs that occur over time.

Refer to Note N for more information regarding stock-based compensation.

Pension and Other Postretirement Benefits. Alcoa sponsors several defined benefit pension plans and health care postretirement benefit plans. The Company recognizes on a plan-by-plan basis the net funded status of these pension and postretirement benefit plans as either an asset or a liability on its Consolidated Balance Sheet. The net funded status represents the difference between the fair value of each plan's assets and the benefit obligation of the respective plan. The benefit obligation represents the present value of the estimated future benefits the Company currently expects to pay to plan participants based on past service. Unrecognized gains and losses related to the plans are deferred in Accumulated other comprehensive loss on the Consolidated Balance Sheet until amortized into net income.

The plan assets and benefit obligations are measured at the end of each year or more frequently, upon the occurrence of certain events such as a significant plan amendment, settlement, or curtailment. For interim plan remeasurements, it is the Company's policy to record the related accounting impacts within the same quarter as the triggering event.

Liabilities and expenses for pension and other postretirement benefits are determined using actuarial methodologies and incorporate significant assumptions, including the interest rate used to discount the future estimated liability, the expected long-term rate of return on plan assets, and several assumptions relating to the employee workforce (salary increases, health care cost trend rates, retirement age, and mortality).

The yield curve model used to develop the discount rate parallels the plans' projected cash flows and has a weighted average duration of 11 years. The underlying cash flows of the high-quality corporate bonds included in the model exceed the cash flows needed to satisfy the Company's plan obligations multiple times. If a deep market of high-quality corporate bonds does not exist in a country, then the yield on government bonds plus a corporate bond yield spread is used.

The expected long-term rate of return on plan assets is generally applied to a five-year market-related value of plan assets (a four-year average or the fair value at the plan measurement date is used for certain non-U.S. plans). The process used by management to develop this assumption is one that relies on forward-looking investment returns by asset class. Management incorporates expected future investment returns on current and planned asset allocations using information from various external investment managers and consultants, as well as management's own judgment.

Mortality rate assumptions are based on mortality tables and future improvement scales published by third parties, such as the Society of Actuaries, and consider other available information including historical data as well as studies and publications from reputable sources.

A change in one or a combination of these assumptions, or the effects of actual results differing from assumptions, could have a material impact on Alcoa's projected benefit obligation. These changes or differences are recorded in Accumulated other comprehensive loss and are amortized into net income as a component of the net periodic benefit cost (income) over the average future working lifetime or average remaining life expectancy, as appropriate, of the plan's participants.

One-time accounting impacts, such as curtailment and settlement losses (gains), are recognized immediately and are reclassified from Accumulated other comprehensive loss to Restructuring and other charges, net on the accompanying Statement of Consolidated Operations.

Refer to Note O for more information regarding pension and other postretirement benefits including accounting impacts of current year actions.

Derivatives and Hedging. Derivatives are held for purposes other than trading and are part of a formally documented risk management program.

Alcoa accounts for hedges of firm customer commitments for aluminum as fair value hedges. The fair values of the derivatives and changes in the fair values of the underlying hedged items are reported as assets and liabilities in the Consolidated Balance Sheet. Changes in the fair values of these derivatives and underlying hedged items generally offset and are recorded each period in Sales, consistent with the underlying hedged item.

The Company accounts for hedges of foreign currency exposures and certain forecasted transactions as cash flow hedges. The fair values of the derivatives are recorded as assets and liabilities in the Consolidated Balance Sheet. The changes in the fair values of these derivatives are recorded in Other comprehensive income (loss) and are reclassified to Sales, Cost of goods sold, or Other (income) expenses, net in the period in which earnings are impacted by the hedged items or in the period that the transaction no longer qualifies as a cash flow hedge. These contracts cover the same periods as known or expected exposures, generally not exceeding five years.

If no hedging relationship is designated, the derivative is marked to market through Other (income) expenses, net.

Cash flows from derivatives are recognized in the Statement of Consolidated Cash Flows in a manner consistent with the underlying transactions.

Income Taxes. The provision for income taxes is determined using the asset and liability approach of accounting for income taxes. Under this approach, the provision for income taxes represents income taxes paid or payable (or received or receivable) for the current year plus the change in deferred taxes during the year. Deferred taxes represent the future tax consequences expected to occur when the reported amounts of assets and liabilities are recovered or paid, result from differences between the financial and tax bases of Alcoa's assets and liabilities and are adjusted for changes in tax rates and tax laws when enacted.

Valuation allowances are recorded to reduce deferred tax assets when it is more likely than not (greater than 50%) that a tax benefit will not be realized. In evaluating the need for a valuation allowance, management applies judgement in assessing all available positive and negative evidence and considers all potential sources of taxable income. Deferred tax assets for which no valuation allowance is recorded may not be realized upon changes in facts and circumstances, resulting in a future charge to establish a valuation allowance. Existing valuation allowances are re-examined under the same standards of positive and negative evidence. If it is determined that it is more likely than not that a deferred tax asset will be realized, the appropriate amount of the valuation allowance, if any, is released. Deferred tax assets and liabilities are also re-measured to reflect changes in underlying tax rates due to law changes and the granting and lapse of tax holidays.

Tax benefits related to uncertain tax positions taken or expected to be taken on a tax return are recorded when such benefits meet a more likely than not threshold. Otherwise, these tax benefits are recorded when a tax position has been effectively settled, which means that the statute of limitation has expired or the appropriate taxing authority has completed their examination even though the statute of limitations remains open. Interest and penalties related to uncertain tax positions are recognized as part of the provision for income taxes and are accrued in the period that such interest and penalties would be applicable under relevant tax law until such time that the related tax benefits are recognized.

Foreign Currency. The local currency is the functional currency for Alcoa's significant operations outside the United States, except for certain operations in Canada and Iceland, and a holding and trading company in the Netherlands, where the U.S. dollar is used as the functional currency. The determination of the functional currency for Alcoa's operations is made based on the appropriate economic and management indicators. Where local currency is the functional currency, assets and liabilities are translated into U.S. dollars using year-end exchange rates and income and expenses are translated using the average exchange rates for the reporting period. Unrealized foreign currency translation gains and losses are deferred in Accumulated other comprehensive loss on the Consolidated Balance Sheet.

Recently Adopted Accounting Guidance. In March 2020 and January 2021, the FASB issued ASU No. 2020-04 and ASU No. 2021-01, respectively. Together, the ASUs provide temporary optional expedients and exceptions to the U.S. GAAP guidance on contract modifications and hedge accounting to ease the financial reporting burdens related to the expected market transition from the London Interbank Offered Rate (LIBOR) and other interbank offered rates to alternative reference rates. The Company adopted this guidance in 2022, and there was no material impact on the Company's financial statements.

Recently Issued Accounting Guidance. In September 2022, the FASB issued ASU 2022-04 which requires a buyer in a supplier finance program to disclose qualitative and quantitative information about its supplier finance programs, including the key terms of the program, the amount of obligations outstanding at the end of the reporting period, a description of where those obligations are presented in the balance sheet, and a roll-forward of such amounts during the annual period. The new guidance is effective for fiscal years beginning after December 15, 2022, including interim periods within those fiscal years, except for roll-forward information, which is effective for fiscal years beginning after December 15, 2023. Early adoption is permitted. The adoption of this guidance will provide enhanced disclosures regarding these programs and will not have a material impact on the Company's financial statements.

C. DIVESTITURES

Rockdale Site

During the fourth quarter of 2021, the Company completed the sale of land and industrial assets at the previously closed Rockdale smelter site in the state of Texas in a transaction valued at $240. Upon closing of the transaction, the Company received $230 in cash and recorded a net gain of $202 in Other (income) expenses, net (pre- and after-tax; see Note U) on the Statement of Consolidated Operations.

Eastalco Site

During the second quarter of 2021, the Company completed the sale of land at the previously closed Eastalco smelter site in the state of Maryland in a transaction valued at $100. Upon closing of the transaction, the Company received $94 in cash and recorded a gain of $90 in Other (income) expenses, net ($90 pre- and $89 after-tax; see Note U) on the Statement of Consolidated Operations.

Warrick Rolling Mill

In November 2020, Alcoa entered into an agreement to sell its rolling mill located at Warrick Operations (Warrick Rolling Mill), an integrated aluminum manufacturing site near Evansville, Indiana (Warrick Operations), to Kaiser Aluminum Corporation (Kaiser).

In March 2021, Alcoa completed the sale for total consideration of approximately $670, which included the assumption of $69 in other postretirement benefit liabilities. The Company recorded a net gain of $30 in Other (income) expenses, net (pre- and after-tax, see Note U) on the Statement of Consolidated Operations. Upon the closing of the transaction, the Company recorded estimated liabilities for future site separation commitments and remaining transaction costs associated with the sales agreement. The Company recorded a charge of $8 in 2022 in Other (income) expenses, net related to additional costs of existing site separation commitments. In 2022, the Company spent $37 against the reserve. The remaining balance of $46 at December 31, 2022 is expected to be spent in 2023.

In connection with the transaction, Alcoa and Kaiser entered into a market-based metal supply agreement. The remaining Warrick Operations results are included within the Aluminum segment.

Gum Springs Waste Treatment Business

During the first quarter of 2020, the Company sold Elemental Environmental Solutions LLC (EES), a wholly-owned Alcoa subsidiary that operated the waste processing facility in Gum Springs, Arkansas, to a global environmental firm in a transaction valued at $250. Related to this transaction, the Company received $200 in cash and recorded a gain of $181 (pre- and after-tax; see Note U). Further, an additional $50 is held in escrow to be paid to Alcoa if certain post-closing conditions are satisfied, which would result in additional gain being recorded.

D. RESTRUCTURING AND OTHER CHARGES, NET

Restructuring and other charges, net were comprised of the following:

	2022	2021	2020
Settlements and/or curtailments related to retirement benefits (O)	$ 632	$ 977	$ 58
Severance and employee termination costs	1	1	16
Loss on divestitures	79	–	–
Asset impairments	58	75	2
Asset retirement obligations (R)	34	23	2
Environmental remediation (S)	21	15	1
Other	(7)	82	36
Reversals of previously recorded charges	(122)	(45)	(11)
Restructuring and other charges, net	$ 696	$ 1,128	$ 104

Severance and employee termination costs were recorded based on approved detailed action plans submitted by the operating locations that specified positions to be eliminated, benefits to be paid under existing severance plans, union contracts or statutory requirements, and the expected timetable for completion of the plans.

2022 Actions. In 2022 Alcoa Corporation recorded Restructuring and other charges, net, of $696 which were primarily comprised of the following components:

- Non-cash settlement charges related to pension benefits (see Note O):
  - $635 related to the purchase of group annuity contracts to transfer approximately $1,000 of pension obligations and assets associated with defined benefit pension plans for approximately 4,400 United States retirees and beneficiaries, as well as lump sum settlements;

- Charges related to portfolio actions:
  - $79 for the agreement reached with the workers of the divested Avilés and La Coruña facilities to settle various legal disputes related to the 2019 divestiture (see Note S);
  - $58 for an asset impairment related to the sale of the Company's interest in MRN (see Note H);
  - $29 related to the closure of the previously curtailed magnesium smelter facility in Addy (Washington) (see below);
- Other charges and credits:
  - $26 to record additional environmental and asset retirement related reserves at previously closed sites (see Note R and Note S);
  - $7 net credit for revaluation of adjustments to take-or-pay contract reserves related to the closed Wenatchee (Washington) and curtailed Intalco (Washington) smelters;
- Reversals:
  - $83 for the release of a valuation allowance on Brazil value added taxes (VAT) (see Note Q); and,
  - $34 due to lower costs for demolition and remediation at previously closed sites (see Note S).

In July 2022, Alcoa made the decision to permanently close the previously curtailed magnesium smelter in Addy (Washington). The facility has been fully curtailed since 2001. The Company recorded a charge of $29 to establish reserves for environmental and demolition obligations in Restructuring and other charges, net on the Statement of Consolidated Operations in the third quarter of 2022. Associated cash outlays are expected to be paid over the next three to five years.

2021 Actions. In 2021 Alcoa Corporation recorded Restructuring and other charges, net, of $1,128 which were comprised of the following components:

- Non-cash settlement charges related to pension and certain other postretirement benefits (see Note O):
  - $858 related to the purchase of group annuity contracts to transfer approximately $1,500 of pension obligations and assets associated with defined benefit pension plans for approximately 14,000 United States retirees and beneficiaries, as well as lump sum settlements;
  - $63 related to the purchase of a group annuity contract to transfer approximately $55 of pension obligations and assets associated with a Suriname pension plan for approximately 800 retirees and beneficiaries;
  - $47 related to lump sum settlements;
  - Net $9 related to the settlement and curtailment of certain other postretirement benefits resulting from the sale of the Warrick Rolling Mill;
- Charges related to portfolio actions taken as part of the Company's ongoing strategic review (see details below):
  - $80 related to the closure of the previously curtailed aluminum smelter facility in Wenatchee (Washington);
  - $62 related to the agreement reached with the workers at the San Ciprián (Spain) aluminum smelter to curtail smelting capacity;
  - $27 related to the closure of the previously curtailed anode facility in Lake Charles (Louisiana);
- Other charges:
  - $13 for additional take-or-pay contract costs related to the curtailed Wenatchee (Washington) and Intalco (Washington) smelters;
  - $11 to record additional environmental and asset retirement related reserves (see Note R and Note S);
  - $3 for several other insignificant items;

- Reversals:
  - $6 for a take-or-pay energy-related obligation at the Alumar smelter no longer required due to the announced restart;
  - $17 related to the divestiture of the Avilés and La Coruña entities (see below); and,
  - $22 due to lower costs for demolition and remediation related to previously established reserves (see Note R and Note S).

In December 2021, the Company announced the two-year curtailment of 228 kmt of smelting capacity at the San Ciprián (Spain) aluminum smelter. The temporary curtailment, which began at the end of January 2022, was the result of an agreement reached with the workers at the site to suspend production due to exorbitant energy prices in Spain. Under the terms of the agreement, the Company is responsible for certain employee and contractual obligations during the curtailment period. As a result, the Company recorded charges of $62 in the fourth quarter of 2021 in Restructuring and other charges, net on the Statement of Consolidated Operations to establish the related reserve. In 2022, cash payments of $26 were made to reduce the reserve. Additionally, in connection with the agreement, the Company committed to restart the smelter beginning in January of 2024 and has restricted cash of $103 to be made available in the future to cover $68 in capital improvements at the site and $35 in smelter restart costs. Restricted cash is included in Prepaid expenses and other current assets and Other non-current assets on the Consolidated Balance Sheet (see Note U). The San Ciprián smelter continues to incur operating costs for the casthouse as well as resources to maintain and improve the smelter for restart.

During the fourth quarter of 2021, as part of the Company's ongoing strategic portfolio review, the Company announced the permanent closure of the Wenatchee (Washington) aluminum smelter. The smelter has been fully curtailed since 2015. Charges related to the closure totaled $90 in the fourth quarter of 2021 and included a charge of $10 for the write down of remaining inventories to net realizable value recorded in Cost of goods sold on the Statement of Consolidated Operations and a charge of $80 recorded in Restructuring and other charges, net on the Statement of Consolidated Operations. The restructuring charges were comprised of: $30 to write-off the remaining net book value of various assets; $23 of asset impairments; $21 to establish reserves related to environmental and demolition obligations; $5 related to take-or-pay contractual obligations; and $1 of severance and employee termination costs from the separation of approximately 10 employees. Cash outlays related to demolition and environmental related activities are expected to be spread over approximately 5 years.

During the third quarter of 2021, as part of the Company's ongoing strategic portfolio review, the Company announced the decision to permanently close the previously curtailed anode facility in Lake Charles (Louisiana). The anode facility within the Lake Charles site has been fully curtailed since 2015. The Company recorded charges of $27 in the third quarter of 2021, which were recorded in Restructuring and other charges, net on the Statement of Consolidated Operations, comprised of asset impairments of $22 and cash-based charges for closure and asset retirement obligations of $5. The closure was completed in September 2022. The decision to permanently close the facility was made as part of the Company's on-going portfolio review. The Company's petroleum coke calciner located at the same site in Lake Charles remains in operation, unaffected by the closure of the anode facility.

2020 Actions. In 2020, Alcoa Corporation recorded Restructuring and other charges, net, of $104 which were comprised of the following components: $59 related to settlements and curtailments of certain pension and other postretirement benefits (see Note O); $28 (net) for costs related to the curtailment of the Intalco (Washington) smelter; $20 for additional contract costs related to the then curtailed Wenatchee (Washington) smelter; and several other insignificant items.

In April 2020, as part of the Company's portfolio review, Alcoa Corporation announced the curtailment of the remaining 230 kmt of uncompetitive smelting capacity at the Intalco (Washington) smelter amid declining market conditions. The full curtailment, which included 49 kmt of earlier-curtailed capacity, was completed during the third quarter of 2020. The $28 net restructuring charge recorded during 2020 was comprised of $13 for severance and employee termination costs from the separation of approximately 685 employees, $16 for contract termination costs, and a net curtailment gain of $1 related to the U.S. hourly defined benefit pension and retiree life plans (see Note O). Additional contract termination costs related to take-or-pay agreements may recur during the curtailment period.

Alcoa Corporation does not include Restructuring and other charges, net in the results of its reportable segments. The impact of allocating such charges to segment results would have been as follows:

	2022	2021	2020
Bauxite	$ 58	$ –	$ 1
Alumina	(85)	1	5
Aluminum	82	184	53
Segment total	55	185	59
Corporate	641	943	45
Total Restructuring and other charges, net	$ 696	$ 1,128	$ 104

Activity and reserve balances for restructuring charges were as follows:

	Severance and employee termination costs	Other costs	Total
Balances at December 31, 2019	$ 35	$ 102	$ 137
Restructuring charges, net	16	36	52
Cash payments	(41)	(79)	(120)
Reversals and other	(4)	(2)	(6)
Balances at December 31, 2020	6	57	63
Restructuring charges, net	1	80	81
Cash payments	(4)	(25)	(29)
Reversals and other	–	(22)	(22)
Balances at December 31, 2021	3	90	93
Restructuring charges, net	1	73	74
Cash payments	(2)	(37)	(39)
Reversals and other	(1)	(10)	(11)
Balances at December 31, 2022	$ 1	$ 116	$ 117

The activity and reserve balances include only Restructuring and other charges, net that impact the reserves for Severance and employee termination costs and Other costs. Restructuring and other charges, net that affected other liability accounts such as Environmental remediation (see Note S), Asset retirement obligations (see Note R), and Accrued pension benefits and Accrued other postretirement benefits (see Note O) are excluded from the above activity and balances. Reversals and other include reversals of previously recorded liabilities and foreign currency translation impacts.

The current portion of the reserve balance is reflected in Other current liabilities on the Consolidated Balance Sheet and the non-current portion of the reserve balance is reflect in Other non-current liabilities and deferred credits on the Consolidated Balance Sheet. The non-current portion of the reserve was $3 and $43 at December 31, 2022 and 2021, respectively.

E. SEGMENT AND RELATED INFORMATION

Segment Information

Alcoa Corporation is a producer of bauxite, alumina, and aluminum products. The Company has three operating and reportable segments, which are organized by product on a global basis: Bauxite, Alumina, and Aluminum. Segment performance under Alcoa Corporation's management reporting system is evaluated based on a number of factors; however, the primary measure of performance is the Adjusted EBITDA (Earnings before interest, taxes, depreciation, and amortization) of each segment. The Company calculates Segment Adjusted EBITDA as Total sales (third-party and intersegment) minus the following items: Cost of goods sold; Selling, general administrative, and other expenses; and Research and development expenses. Alcoa Corporation's Adjusted EBITDA may not be comparable to similarly titled measures of other companies. The chief operating decision maker function regularly reviews the financial information, including Sales and Adjusted EBITDA, of these three operating segments to assess performance and allocate resources. Beginning in January 2023, the Company changed its operating segments by combining the Bauxite and Alumina segments, and will report its financial results in the following two segments: (i) Alumina, and (ii) Aluminum (see Note V).

Segment assets include, among others, customer receivables (third-party and intersegment), inventories, properties, plants, and equipment, and equity investments. The accounting policies of the segments are the same as those described in the Summary of Significant Accounting Policies (see Note B). Transactions among segments are established based on negotiation among the parties. Differences between segment totals and Alcoa Corporation's consolidated totals for line items not reconciled are in Corporate.

The following are detailed descriptions of Alcoa Corporation's reportable segments:

Bauxite. This segment represents the Company's global bauxite mining operations. A portion of this segment's production represents the offtake from equity method investments in Brazil (prior to the MRN sale in April 2022) and Guinea, as well as AWAC's share of bauxite production related to an equity investment in Saudi Arabia. The bauxite mined by this segment is sold primarily to internal customers within the Alumina segment; a portion of the bauxite is sold to external customers. Bauxite mined by this segment and used internally is transferred to the Alumina segment at negotiated terms that are intended to approximate market prices; sales to third-parties are conducted on a contract basis. Generally, this segment's sales are transacted in U.S. dollars while costs and expenses are transacted in the local currency of the respective operations, which are the Australian dollar and the Brazilian real. Most of the operations that comprise the Bauxite segment are part of AWAC (see Principles of Consolidation in Note A).

Alumina. This segment represents the Company's worldwide refining system, which processes bauxite into alumina. The alumina produced by this segment is sold primarily to internal and external aluminum smelter customers; a portion of the alumina is sold to external customers who process it into industrial chemical products. Approximately two-thirds of Alumina's production is sold under supply contracts to third parties worldwide, while the remainder is used internally by the Aluminum segment. Alumina produced by this segment and used internally is transferred to the Aluminum segment at prevailing market prices. A portion of this segment's third- party sales are completed through the use of alumina traders. Generally, this segment's sales are transacted in U.S. dollars while costs and expenses are transacted in the local currency of the respective operations, which are the Australian dollar, the Brazilian real, and the euro. Most of the operations that comprise the Alumina segment are part of AWAC (see Principles of Consolidation in Note A). This segment also includes AWAC's 25.1% ownership interest in a mining and refining joint venture company in Saudi Arabia (see Note H).

Aluminum. This segment consists of the Company's (i) worldwide smelting and casthouse system, which processes alumina into primary aluminum, and (ii) portfolio of energy assets in Brazil, Canada, and the United States.

Aluminum's combined smelting and casting operations produce primary aluminum products, nearly all of which are sold to external customers and traders. The smelting operations produce molten primary aluminum, which is then formed by the casting operations into either common alloy ingot (e.g., t-bar, sow, standard ingot) or into value-add ingot products (e.g., foundry, billet, rod, and slab). A variety of external customers purchase the primary aluminum products for use in fabrication operations, which produce products primarily for the transportation, building and construction, packaging, wire, and other industrial markets. Results from the sale of aluminum powder and scrap are also included in this segment, as well as the impacts of embedded aluminum derivatives (see Note P) related to energy supply contracts.

The energy assets supply power to external customers in Brazil and the United States, as well as internal customers in the Aluminum segment (Canadian smelters and Warrick (Indiana) smelter) and, to a lesser extent, the Alumina segment (Brazilian refineries).

On March 31, 2021, Alcoa completed the sale of its rolling mill located at Warrick Operations (Warrick Rolling Mill) an integrated aluminum manufacturing site near Evansville, Indiana (Warrick Operations), to Kaiser Aluminum Corporation (Kaiser) (see Note C). Results from the Warrick Rolling Mill are included in this segment through the first quarter of 2021. Alcoa continues to own and operate the site's aluminum smelter and the power plant. On July 1, 2022, Alcoa curtailed one of the three operating smelting potlines (54 kmt) at its Warrick Operations site due to operational challenges stemming from labor shortages in the region.

Generally, this segment's aluminum sales are transacted in U.S. dollars while costs and expenses of this segment are transacted in the local currency of the respective operations, which are the U.S. dollar, the euro, the Norwegian krone, the Icelandic króna, the Canadian dollar, the Brazilian real, and the Australian dollar.

This segment also includes Alcoa Corporation's 25.1% ownership interest in a smelting joint venture company in Saudi Arabia (see Note H).

The operating results, capital expenditures, and assets of Alcoa Corporation's reportable segments were as follows:

	Bauxite	Alumina	Aluminum	Total
2022				
Sales:				
Third-party sales	$ 204	$ 3,520	$ 8,735	$ 12,459
Intersegment sales	680	1,754	27	2,461
Total sales	$ 884	$ 5,274	$ 8,762	$ 14,920
Segment Adjusted EBITDA	$ 82	$ 701	$ 1,492	$ 2,275
Supplemental information:				
Depreciation, depletion, and amortization	$ 130	$ 182	$ 283	$ 595
Equity (loss) income	–	(39)	48	9
2021				
Sales:				
Third-party sales	$ 236	$ 3,139	$ 8,766	$ 12,141
Intersegment sales	711	1,586	18	2,315
Total sales	$ 947	$ 4,725	$ 8,784	$ 14,456
Segment Adjusted EBITDA	$ 172	$ 1,002	$ 1,879	$ 3,053
Supplemental information:				
Depreciation, depletion, and amortization	$ 153	$ 198	$ 289	$ 640
Equity loss	–	4	116	120

	Bauxite	Alumina	Aluminum	Total
2020				
Sales:				
Third-party sales	$ 272	$ 2,627	$ 6,365	$ 9,264
Intersegment sales	941	1,268	12	2,221
Total sales	$ 1,213	$ 3,895	$ 6,377	$ 11,485
Segment Adjusted EBITDA	$ 495	$ 497	$ 325	$ 1,317
Supplemental information:				
Depreciation, depletion, and amortization	$ 135	$ 172	$ 322	$ 629
Equity loss	–	(23)	(7)	(30)
2022				
Assets:				
Capital expenditures	$ 104	$ 216	$ 153	$ 473
Equity investments	188	234	685	1,107
Total assets	1,474	4,447	6,358	12,279
2021				
Assets:				
Capital expenditures	$ 95	$ 178	$ 107	$ 380
Equity investments	234	270	678	1,182
Total assets	1,430	4,385	6,251	12,066

The following tables reconcile certain segment information to consolidated totals:

	2022	2021	2020
Sales:			
Total segment sales	$ 14,920	$ 14,456	$ 11,485
Elimination of intersegment sales	(2,461)	(2,315)	(2,221)
Other	(8)	11	22
Consolidated sales	$ 12,451	$ 12,152	$ 9,286

	2022	2021	2020
Net (loss) income attributable to Alcoa Corporation:			
Total Segment Adjusted EBITDA	$ 2,275	$ 3,053	$ 1,317
Unallocated amounts:			
Transformation[1]	(66)	(44)	(45)
Intersegment eliminations	143	(101)	(8)
Corporate expenses[2]	(128)	(129)	(102)
Provision for depreciation, depletion, and amortization	(617)	(664)	(653)
Restructuring and other charges, net (D)	(696)	(1,128)	(104)
Interest expense (U)	(106)	(195)	(146)
Other income (expenses), net (U)	118	445	(8)
Other[3]	(221)	(38)	(78)
Consolidated income before income taxes	702	1,199	173
Provision for income taxes (Q)	(664)	(629)	(187)
Net income attributable to non-controlling interest	(161)	(141)	(156)
Consolidated net (loss) income attributable to Alcoa Corporation	$ (123)	$ 429	$ (170)

(1) Transformation includes, among other items, the Adjusted EBITDA of previously closed operations.

(2) Corporate expenses are composed of general administrative and other expenses of operating the corporate headquarters and other global administrative facilities, as well as research and development expenses of the corporate technical center.

(3) Other includes certain items that are not included in the Adjusted EBITDA of the reportable segments.

December 31,	2022	2021
Assets:		
Total segment assets	$ 12,279	$ 12,066
Elimination of intersegment receivables	(197)	(261)
Unallocated amounts:		
Cash and cash equivalents	1,363	1,814
Corporate fixed assets, net	364	374
Corporate goodwill	141	140
Deferred income taxes	296	506
Pension assets	146	164
Other	364	222
Consolidated assets	$ 14,756	$ 15,025

Product Information

Alcoa Corporation has four product divisions and one divested product division as follows:

Bauxite – Bauxite is a reddish clay rock that is mined from the surface of the earth's terrain. This ore is the basic raw material used to produce alumina and is the primary source of aluminum.

Alumina – Alumina is an oxide that is extracted from bauxite and is the basic raw material used to produce primary aluminum. This product can also be consumed for non-metallurgical purposes, such as industrial chemical products.

Primary aluminum – Primary aluminum is metal in the form of a common alloy ingot or a value-add ingot (e.g., foundry, billet, rod, and slab). These products are sold primarily to customers, that produce products for the transportation, building and construction, packaging, wire, and other industrial markets, and traders.

Energy – Energy is the generation of electricity, which is sold in the wholesale market to traders, large industrial consumers, distribution companies, and other generation companies.

Flat-rolled aluminum – Flat-rolled aluminum is metal in the form of sheet, which is sold primarily to customers that produce beverage and food cans, including body, tab, and end stock. As noted above, the Company sold the Warrick Rolling Mill in the first quarter of 2021 which represented the Company's only Flat-rolled aluminum asset. The results of the Warrick Rolling Mill are included in this product division through the first quarter of 2021.

The following table represents the general commercial profile of the Company's Bauxite, Alumina, and Primary aluminum product divisions (see text below table for Energy):

Product division	Pricing components	Shipping terms[3]	Payment terms[4]
Bauxite	Negotiated	FOB/CIF	LC Sight
Alumina:			
Smelter-grade	API[1]/spot/fixed	FOB/CIF	LC Sight/CAD/Net 30 days
Non-metallurgical	Negotiated	FOB/CIF	Net 30 days
Primary aluminum:			
Common alloy ingot	LME + Regional premium[2]	DAP/CIF	Net 30 to 45 days
Value-add ingot	LME + Regional premium + Product premium[2]	DAP/CIF	Net 30 to 45 days

(1) API (Alumina Price Index) is a pricing mechanism that is calculated by the Company based on the weighted average of a prior month's daily spot prices published by the following three indices: CRU Metallurgical Grade Alumina Price, Platts Metals Daily Alumina PAX Price, and FastMarkets Metal Bulletin Non-Ferrous Metals Alumina Index.

(2) LME (London Metal Exchange) is a globally recognized exchange for commodity trading, including aluminum. The LME pricing component represents the underlying base metal component, based on quoted prices for aluminum on the exchange. The regional premium represents the incremental price over the base LME component that is associated with the physical delivery of metal to a particular region (e.g., the Midwest premium for metal sold in the United States). The product premium represents the incremental price for receiving physical metal in a particular shape or alloy.

(3) CIF (cost, insurance, and freight) means that the Company pays for these items until the product reaches the buyer's designated destination point related to transportation by vessel. DAP (delivered at place) means the same as CIF related to all methods of transportation. FOB (free on board) means that the Company pays for costs, insurance, and freight until the product reaches the seller's designated shipping point.

(4) The net number of days means that the customer is required to remit payment to the Company for the invoice amount within the designated number of days. LC Sight is a letter of credit that is payable immediately (usually within five to ten business days) after a seller meets the requirements of the letter of credit (i.e. shipping documents that evidence the seller performed its obligations as agreed to with a buyer). CAD (cash against documents) is a payment arrangement in which a seller instructs a bank to provide shipping and title documents to the buyer at the time the buyer pays in full the accompanying bill of exchange.

For the Company's Energy product division, sales of electricity are based on current market prices. Electricity is provided to customers on demand through a national or regional power grid; the customer simultaneously receives and consumes the electricity. Payment terms are generally within 10 days related to the previous 30 days of electricity consumption.

The following table details Alcoa Corporation's Third-party sales by product division:

	2022	2021	2020
Sales:			
Primary aluminum	$ 8,887	$ 8,420	$ 5,190
Alumina	3,478	3,125	2,624
Flat-rolled aluminum[(1)]	–	320	1,115
Energy	201	286	141
Bauxite	168	207	238
Other[(2)]	(283)	(206)	(22)
	$ 12,451	$ 12,152	$ 9,286

(1) Flat-rolled aluminum represented sales of the Warrick Rolling Mill through the sale of the facility on March 31, 2021 (see Note C).

(2) Other includes realized gains and losses related to embedded derivative instruments designated as cash flow hedges of forward sales of aluminum (see Note P).

Geographic Area Information

Geographic information for Third-party sales was as follows (based upon the country where the point of sale originated):

	2022	2021	2020
Sales:			
United States[(1)]	$ 5,462	$ 5,290	$ 4,246
Netherlands[(2)]	3,031	2,644	–
Australia	2,742	2,092	1,884
Spain[(3)]	618	1,465	2,766
Brazil	527	610	346
Canada	1	11	31
Other	70	40	13
	$ 12,451	$ 12,152	$ 9,286

(1) Sales of a portion of the alumina from refineries in Australia and Brazil and most of the aluminum from smelters in Canada occurred in the United States. Additionally, sales of aluminum off-take related to an interest in the Saudi Arabia joint venture (see Note H) occurred in the United States beginning at the end of the third quarter of 2021.

(2) Sales of the aluminum produced from smelters in Iceland and Norway occurred in the Netherlands beginning at the end of the first quarter of 2021.

(3) Sales of the aluminum produced from smelters in Iceland and Norway occurred in Spain through most of the first quarter of 2021 and in the Netherlands thereafter. Sales of aluminum off-take related to an interest in the Saudi Arabia joint venture (see Note H), occurred in Spain through most of the third quarter of 2021 and in the United States thereafter.

Geographic information for long-lived assets was as follows (based upon the physical location of the assets):

December 31,	**2022**	**2021**
Long-lived assets:		
Australia	$ 1,944	$ 2,091
Brazil	1,298	1,118
Iceland	1,002	1,048
Canada	919	958
United States	830	874
Norway	304	338
Spain	194	193
Other	2	3
	$ 6,493	$ 6,623

F. EARNINGS PER SHARE

Basic earnings per share (EPS) amounts are computed by dividing Net (loss) income attributable to Alcoa Corporation by the average number of common shares outstanding. Diluted EPS amounts assume the issuance of common stock for all potentially dilutive share equivalents outstanding.

The share information used to compute basic and diluted EPS attributable to Alcoa Corporation common shareholders was as follows (shares in millions):

	2022	2021	2020
Average shares outstanding – basic Effect of dilutive securities:	181	186	186
Stock options	–	–	–
Stock units	–	4	–
Average shares outstanding – diluted	181	190	186

In 2022, basic average shares outstanding and diluted average shares outstanding were the same because the effect of potential shares of common stock was anti-dilutive. Had Alcoa generated net income in 2022, three million common share equivalents related to five million outstanding stock units and stock options combined would have been included in diluted average shares outstanding for the period.

In 2021, options to purchase less than two hundred thousand shares of common stock outstanding as of December 31, 2021 at a weighted average exercise price of $38.67 per share were not included in the computation of diluted EPS because the exercise prices of these options were greater than the annual average market price of Alcoa Corporation's common stock.

In 2020, basic average shares outstanding and diluted average shares outstanding were the same because the effect of potential shares of common stock was anti-dilutive. Had Alcoa generated net income in 2020, one million common share equivalents related to five million outstanding stock units and stock options combined would have been included in diluted average shares outstanding for the respective period. Options to purchase two million shares of common stock outstanding at December 31, 2020 had a weighted average exercise price of $26.85 per share which was greater than the annual average market price per share of Alcoa Corporation's common stock.

G. ACCUMULATED OTHER COMPREHENSIVE LOSS

The following table details the activity of the three components that comprise Accumulated other comprehensive loss for both Alcoa Corporation's shareholders and non-controlling interest:

	Alcoa Corporation			Non-controlling interest		
	2022	2021	2020	2022	2021	2020
Pension and other postretirement benefits (O)						
Balance at beginning of period	$ (882)	$ (2,536)	$ (2,282)	$ (13)	$ (67)	$ (56)
Other comprehensive (loss):						
Unrecognized net actuarial gain (loss) and prior service cost/benefit	263	550	(545)	7	30	(19)
Tax (expense) benefit	(42)	(37)	31	–	(6)	3
Total Other comprehensive income (loss) before reclassifications, net of tax	221	513	(514)	7	24	(16)
Amortization of net actuarial loss and prior service cost/benefit[1]	723	1,144	269	1	30	6
Tax expense[2]	–	(3)	(9)	–	–	(1)
Total amount reclassified from Accumulated other comprehensive loss, net of tax[6]	723	1,141	260	1	30	5
Total Other comprehensive income (loss)	944	1,654	(254)	8	54	(11)
Balance at end of period	$ 62	$ (882)	$ (2,536)	$ (5)	$ (13)	$ (67)
Foreign currency translation						
Balance at beginning of period	$ (2,614)	$ (2,385)	$ (2,160)	$ (937)	$ (844)	$ (834)
Other comprehensive loss	(71)	(229)	(225)	(103)	(93)	(10)
Balance at end of period	$ (2,685)	$ (2,614)	$ (2,385)	$ (1,040)	$ (937)	$ (844)

	Alcoa Corporation			Non-controlling interest		
	2022	2021	2020	2022	2021	2020
Cash flow hedges (P)						
Balance at beginning of period	$ (1,096)	$ (708)	$ (532)	$ (1)	$ (1)	$ 20
Other comprehensive loss:						
Net change from periodic revaluations	(119)	(782)	(345)	2	(2)	(36)
Tax benefit	43	140	74	–	1	10
Total Other comprehensive (loss) income before reclassifications, net of tax	(76)	(642)	(271)	2	(1)	(26)
Net amount reclassified to earnings:						
Aluminum contracts[3]	316	288	66	–	–	–
Financial contracts[4]	–	2	15	–	1	6
Foreign exchange contracts[3]	(5)	(3)	20	–	–	–
Interest rate contracts[5]	5	8	5	–	1	–
Sub-total	316	295	106	–	2	6
Tax expense[2]	(60)	(41)	(11)	–	(1)	(1)
Total amount reclassified from Accumulated other comprehensive loss, net of tax[6]	256	254	95	–	1	5
Total Other comprehensive income (loss)	180	(388)	(176)	2	–	(21)
Balance at end of period	$ (916)	$ (1,096)	$ (708)	$ 1	$ (1)	$ (1)
Total Accumulated other comprehensive loss	$ (3,539)	$ (4,592)	$ (5,629)	$ (1,044)	$ (951)	$ (912)

(1) These amounts were included in the computation of net periodic benefit cost for pension and other postretirement benefits. The amounts related to settlements and/or curtailments of certain pension and other postretirement benefits for Alcoa Corporation include $633, $952, and $55 for the years ended December 31, 2022, 2021, and 2020, respectively. The amounts related to settlements and/or curtailments of certain pension and other postretirement benefits for Non-controlling interest include ($1), $25, and $3 for the years ended December 31, 2022, 2021, and 2020, respectively (see Note O).

(2) These amounts were reported in Provision for income taxes on the accompanying Statement of Consolidated Operations.

(3) These amounts were reported in Sales on the accompanying Statement of Consolidated Operations.

(4) These amounts were reported in Cost of goods sold on the accompanying Statement of Consolidated Operations.

(5) These amounts were included in Other (income) expenses, net on the accompanying Statement of Consolidated Operations.

(6) A positive amount indicates a corresponding charge to earnings and a negative amount indicates a corresponding benefit to earnings.

H. INVESTMENTS

December 31,	2022	2021
Equity investments	$ 1,112	$ 1,189
Other investments	10	10
	$ 1,122	$ 1,199

Equity Investments. The following table summarizes information of Alcoa Corporation's equity investments as of December 31, 2022 and 2021. In 2022, 2021, and 2020, Alcoa Corporation received $127, $50, and $44, respectively, in dividends from these equity investments. Each of the investees either owns the facility listed or has an ownership interest in an entity that owns the facility listed:

Investee	Country	Nature of investment	Income Statement Location of Equity Earnings	Ownership interest
Ma'aden Aluminum Company	Saudi Arabia	Aluminum smelter and casthouse	Other (income) expenses, net	25.1%
Ma'aden Bauxite and Alumina Company	Saudi Arabia	Bauxite mine and alumina refinery	Other (income) expenses, net	25.1%
Halco Mining, Inc.	Guinea	Bauxite mine	Cost of goods sold	45%
Energética Barra Grande S.A.	Brazil	Hydroelectric generation facility	Cost of goods sold	42.18%
Pechiney Reynolds Quebec, Inc.	Canada	Aluminum smelter	Cost of goods sold	50%
Consorcio Serra do Facão	Brazil	Hydroelectric generation facility	Cost of goods sold	34.97%
Mineração Rio do Norte S.A. [(1)]	Brazil	Bauxite mine	Cost of goods sold	18.2%
Manicouagan Power Limited Partnership	Canada	Hydroelectric generation facility	Cost of goods sold	40%
Elysis™ Limited Partnership	Canada	Aluminum smelting technology	Other (income) expenses, net	48.235%

(1) On April 30, 2022, Alcoa completed the sale of its 18.2% interest in Mineração Rio do Norte S.A. to South32 Minerals S.A.

Saudi Arabia Joint Venture – Alcoa Corporation and Ma'aden have a 30-year (from December 2009) joint venture shareholders agreement (automatic extension for an additional 20 years, unless the parties agree otherwise or unless earlier terminated) setting forth the terms for the development, construction, ownership, and operation of an integrated aluminum complex in Saudi Arabia. The project developed by the joint venture consists of a bauxite mine from the Al Ba'itha bauxite deposit in the northern part of Saudi Arabia, an alumina refinery, a primary aluminum smelter, and an aluminum rolling mill.

The joint venture is owned 74.9% by Ma'aden and 25.1% by Alcoa Corporation and originally consisted of three separate companies as follows: the bauxite mine and alumina refinery (MBAC), the smelter (MAC), and the rolling mill (MRC). In June 2019, Alcoa Corporation and Ma'aden amended the joint venture agreement that governs the operations of each of the three companies that comprise the joint venture. Under the terms of the agreement, Alcoa Corporation transferred its 25.1% interest in MRC to Ma'aden and, as a result, has no further direct or indirect equity interest in MRC. In accordance with the June 2019 amended joint venture agreement, Ma'aden's put option and Alcoa Corporation's call option, relating to additional interests in the joint venture, were exercisable for a period of six months after October 1, 2021. On March 31, 2022, Ma'aden's and Alcoa's put and call options, respectively, expired with neither party exercising their options.

The results for the joint venture for the year ended December 31, 2022 include a charge related to a dispute with an industrial utility for periods in 2021 and 2022 that progressed in early 2023. Alcoa's share of this charge is $21 which is included in Other (income) expenses, net on the Statement of Consolidated Operations for the year ended December 31, 2022. As of December 31, 2022 and 2021, the carrying value of Alcoa's investment in this joint venture was $710 and $687, respectively.

ELYSIS Limited Partnership – In June 2018, Alcoa Corporation, Rio Tinto Alcan Inc. (Rio Tinto), and Investissement Québec, a company wholly-owned by the Government of Québec, Canada, launched the ELYSIS Limited Partnership (ELYSIS). The purpose of this partnership is to advance larger scale development and commercialization of its patent-protected technology that produces oxygen and eliminates all direct greenhouse gas emissions from the traditional aluminum smelting process. Alcoa and Rio Tinto plc, as general partners, each own a 48.235% stake in ELYSIS, and the Québec provincial government, as a limited partner, owns a 3.53% stake. The federal government of Canada and Apple Inc., as well as the Québec provincial government, are providing initial financing to the partnership.

Through December 31, 2022, the Company has contributed $55 (C$71) toward its investment commitment in ELYSIS. The Company's basis in the investment has been reduced to zero for its share of losses incurred to date. As a result, the Company has $69 in unrecognized losses as of December 31, 2022 that will be recognized upon additional contributions into the partnership.

The following table summarizes the profit and loss data for the respective periods ended December 31, as it relates to Alcoa Corporation's equity investments. Information shown for the Saudi Arabia Joint Venture for all periods presented includes the combined balances for MAC and MBAC. The investments are grouped based on the nature of the investment. The Mining investments are part of the Bauxite segment, while the Energy and Other investments are primarily part of the Aluminum segment.

	Saudi Arabia Joint Venture	Mining	Energy	Other
2022				
Sales	$ 3,317	$ 763	$ 252	$ 488
Cost of goods sold	2,696	488	120	445
Net income (loss)	42	110	109	(75)
Equity in net income (loss) of affiliated companies, before reconciling adjustments	11	39	41	(36)
Other	(7)	(2)	(3)	15
Alcoa Corporation's equity in net income (loss) of affiliated companies	4	37	38	(21)
2021				
Sales	$ 3,127	$ 794	$ 264	$ 404
Cost of goods sold	2,083	571	135	365
Net income (loss)	495	30	114	(42)
Equity in net income (loss) of affiliated companies, before reconciling adjustments	124	18	45	(20)
Other	(8)	5	(1)	25
Alcoa Corporation's equity in net income of affiliated companies	116	23	44	5
2020				
Sales	$ 2,279	$ 841	$ 238	$ 316
Cost of goods sold	1,829	543	107	283
Net (loss) income	(108)	46	74	(24)
Equity in net (loss) income of affiliated companies, before reconciling adjustments	(27)	23	31	(11)
Other	(7)	(1)	2	14
Alcoa Corporation's equity in net (loss) income of affiliated companies	(34)	22	33	3

The following table summarizes the balance sheet data for the respective periods ended December 31, as it relates to Alcoa Corporation's equity investments.

	Saudi Arabia Joint Venture	Mining [1]	Energy	Other
2022				
Current assets	$ 1,769	$ 5	$ 114	$ 134
Non-current assets	6,993	363	301	757
Current liabilities	1,255	3	13	114
Non-current liabilities	4,314	24	26	84
2021				
Current assets	$ 1,748	$ 142	$ 96	$ 246
Non-current assets	7,330	852	316	755
Current liabilities	956	158	17	95
Non-current liabilities	5,018	331	27	73

[1] The assets and liabilities of MRN were excluded from the December 31, 2022 balances in the table above due to the sale of Alcoa's interest in the investment.

On February 15, 2022, the Company signed an agreement to sell its share of its investment in MRN in Brazil for $10 to South32 Minerals S.A. Related to this transaction, the Company recorded an asset impairment of $58 in the first quarter of 2022 in Restructuring and other charges, net on the Statement of Consolidated Operations. On April 30, 2022, Alcoa completed the sale of its investment in MRN. An additional $30 in cash could be paid to the Company in the future if certain post-closing conditions related to future MRN mine development are satisfied.

I. RECEIVABLES

On October 25, 2019, a wholly-owned subsidiary of the Company entered into a $120 three-year revolving credit facility agreement secured by certain customer receivables. Alcoa Corporation guaranteed the performance obligations of the wholly-owned subsidiary under the facility; however no assets (other than the receivables) were pledged as collateral.

On April 20, 2020, the Company amended this agreement converting it to a Receivables Purchase Agreement to sell up to $120 of the receivables previously secured by the credit facility without recourse on a revolving basis. The unsold portion of the specified receivable pool is pledged as collateral to the purchasing bank to secure the sold receivables.

On November 8, 2021, the Company terminated the Receivables Purchase Agreement. No receivables were sold under this agreement.

On January 31, 2023, a wholly-owned subsidiary of the Company entered into a one-year Receivables Purchase Agreement to sell up to $150 of certain customer receivables without recourse on a revolving basis. The unsold portion of the specified receivable pool is pledged as collateral to the purchasing bank to secure the sold receivables. Alcoa Corporation will guarantee the performance obligations of the wholly-owned subsidiary under the facility; however no assets (other than the receivables) will be pledged as collateral.

J. INVENTORIES

December 31,	2022	2021
Finished goods	$ 385	$ 529
Work-in-process	350	257
Bauxite and alumina	584	376
Purchased raw materials	923	619
Operating supplies	185	175
	$ 2,427	$ 1,956

The Finished goods, Work-in-process and Bauxite and alumina balances as of December 31, 2021 reported above reflect an adjustment related to a misclassification of an intercompany profit reserve previously presented in Work-in-process. This resulted in an increase in Work-in-process of $172 and reductions of $9 and $163 in Finished goods and Bauxite and alumina, respectively. This adjustment had no impact on the total Inventories balance as of December 31, 2021.

K. PROPERTIES, PLANTS, AND EQUIPMENT, NET

December 31,	2022	2021
Land and land rights, including mines	$ 253	$ 264
Structures (by type of operation):		
Bauxite mining	1,234	1,148
Alumina refining	2,281	2,400
Aluminum smelting and casting	3,265	3,298
Energy generation	354	339
Other	346	340
	7,480	7,525
Machinery and equipment (by type of operation):		
Bauxite mining	569	565
Alumina refining	3,658	3,946
Aluminum smelting and casting	5,813	5,877
Energy generation	851	836
Other	461	452
	11,352	11,676
	19,085	19,465
Less: accumulated depreciation, depletion, and amortization	13,112	13,130
	5,973	6,335
Construction work-in-progress	520	288
	$ 6,493	$ 6,623

L. GOODWILL AND OTHER INTANGIBLE ASSETS

Goodwill, which is included in Other non-current assets on the accompanying Consolidated Balance Sheet, was as follows:

December 31,	2022	2021
Bauxite	$ 2	$ 2
Alumina	2	2
Aluminum	–	–
Corporate[(1)]	141	140
	$ 145	$ 144

(1) The carrying value of Corporate's goodwill is net of accumulated impairment losses of $742 as of both December 31, 2022 and 2021. As of December 31, 2022, the $141 of goodwill reflected in Corporate is allocated to two of Alcoa Corporation's three reportable segments ($48 to Bauxite and $93 to Alumina) for purposes of impairment testing (see Note B). This goodwill is reflected in Corporate for segment reporting purposes because it is not included in management's assessment of performance by the two reportable segments. Changes in the carrying amount of goodwill were attributable to foreign currency translation as of December 31, 2022 and 2021.

Management performed a quantitative assessment for the Bauxite and Alumina reporting units in 2022. The estimated fair values of the Bauxite and Alumina reporting units in both assessments were substantially in excess of the reporting units' carrying values, resulting in no impairment.

Other intangible assets, which are included in Other non-current assets on the accompanying Consolidated Balance Sheet, were as follows:

	2022			2021		
December 31,	Gross carrying amount	Accumulated amortization	Net carrying amount	Gross carrying amount	Accumulated amortization	Net carrying amount
Computer software	$ 206	$ (202)	$ 4	$ 214	$ (204)	$ 10
Patents and licenses	25	(9)	16	25	(9)	16
Other intangibles	20	(11)	9	19	(10)	9
Total other intangible assets	$ 251	$ (222)	$ 29	$ 258	$ (223)	$ 35

Computer software consists primarily of software costs associated with the enterprise business solution within Alcoa to drive common systems among all businesses.

Amortization expense related to the intangible assets in the table above for the years ended December 31, 2022, 2021, and 2020 was $7, $11, and $9, respectively, and is expected to be approximately $10 annually from 2023 to 2027.

M. DEBT

Short-term borrowings.

December 31,	2022	2021
Short-term borrowings	$ –	$ 75

Short-term borrowings are reported in Other current liabilities on the accompanying Consolidated Balance Sheet.

Long-Term Debt.

December 31,	2022	2021
5.500% Notes, due 2027	$ 750	$ 750
6.125% Notes, due 2028	500	500
4.125% Notes, due 2029	500	500
Other	84	5
Unamortized discounts and deferred financing costs	(27)	(28)
Total	1,807	1,727
Less: amount due within one year	1	1
Long-term debt, less amount due within one year	$ 1,806	$ 1,726

The principal amount of long-term debt maturing in each of the next five years is: $1 in 2023, $80 in 2024, $1 in each of 2025 and 2026, and $750 in 2027. At December 31, 2022, Other includes $79 related to a term loan that was extended to 2024.

144A Debt.

2029 Notes. In March 2021, Alcoa Nederland Holding B.V. (ANHBV), a wholly-owned subsidiary of Alcoa Corporation, completed a Rule 144A (U.S. Securities Act of 1933, as amended) debt issuance for $500 aggregate principal amount of 4.125% Senior Notes due 2029 (the 2029 Notes) with the following terms:

- Net proceeds were approximately $493, reflecting a discount to the initial purchasers as well as issuance costs. The discount, as well as costs to complete the financing, were deferred and are being amortized to interest expense over the term;

- Interest is paid semi-annually in March and September, which commenced September 30, 2021;

- Indenture contains customary affirmative and negative covenants, see below;

- Option to redeem on at least 10 days, but not more than 60 days, prior notice to the holders under multiple scenarios, including, in whole or in part, at any time, or from time to time after March 31, 2024, at a redemption price up to 102.063% of the principal amount, plus any accrued and unpaid interest; and,

- Subject to repurchase upon the occurrence of a change in control repurchase event (as defined in the indenture) at a repurchase price in cash equal to 101% of the aggregate principal amount of the notes repurchased, plus any accrued and unpaid interest.

The Company used the net proceeds of the 2029 Notes, together with cash on hand, to contribute $500 to its U.S. defined benefit pension plans applicable to salaried and hourly employees on April 1, 2021 (see Note O), to redeem in full $750 aggregate principal amount of the Company's outstanding 6.75% Senior Notes due 2024 (the 2024 Notes) on April 7, 2021, and to pay transaction-related fees and expenses.

2027 Notes. In July 2020, ANHBV completed a Rule 144A debt issuance for $750 aggregate principal amount of 5.500% Senior Notes due 2027 (the 2027 Notes) with the following terms:

- Net proceeds were approximately $736, reflecting a discount to the initial purchasers as well as issuance costs. The discount, as well as costs to complete the financing, were deferred and are being amortized to interest expense over the term;

- Interest is paid semi-annually in June and December, which commenced on December 15, 2020;

- Indenture contains customary affirmative and negative covenants, see below;
- Option to redeem on at least 15 days, but not more than 60 days, prior notice to the holders under multiple scenarios, including, in whole or in part, at any time, or from time to time after June 15, 2023, at a redemption price up to 102.750% of the principal amount, plus any accrued and unpaid interest; and,
- Subject to repurchase upon the occurrence of a change in control repurchase event (as defined in the indenture) at a repurchase price in cash equal to 101% of the aggregate principal amount of the notes repurchased, plus any accrued and unpaid interest.

The Company used the net proceeds of the 2027 Notes for general corporate purposes, including adding cash to its balance sheet.

2028 Notes. In May 2018, ANHBV completed a Rule 144A debt issuance for $500 aggregate principal amount of 6.125% Senior Notes due 2028 (the 2028 Notes) with the following terms:

- Net proceeds were approximately $492, reflecting a discount to the initial purchasers as well as issuance costs. The discount, as well as costs to complete the financing, were deferred and are being amortized to interest expense over the term;
- Interest is paid semi-annually in November and May, which commenced November 15, 2018;
- Indenture contains customary affirmative and negative covenants, see below;
- Option to redeem on at least 30 days, but not more than 60 days, prior notice to the holders under multiple scenarios, including, in whole or in part, at any time, or from time to time after May 2023, at a redemption price up to 103.063% of the principal amount, plus any accrued and unpaid interest; and,
- Subject to repurchase upon the occurrence of a change in control repurchase event (as defined in the indenture) at a repurchase price in cash equal to 101% of the aggregate principal amount of the notes repurchased, plus any accrued and unpaid interest.

The Company used the net proceeds of the 2028 Notes, together with cash on hand, to make discretionary contributions to certain U.S. defined benefit pension plans.

The indentures of the 2027 Notes, 2028 Notes, and 2029 Notes contain customary affirmative and negative covenants, such as limitations on liens, limitations on sale and leaseback transactions, and a prohibition on a reduction in the ownership of AWAC entities below an agreed level. The negative covenants in the indentures are less extensive than those in the Revolving Credit Facility (see below). For example, the indentures do not include a limitation on restricted payments, such as repurchases of common stock and dividends to stockholders.

The 2027 Notes, the 2028 Notes, and the 2029 Notes are senior unsecured obligations of ANHBV and do not entitle the holders to any registration rights pursuant to a registration rights agreement. ANHBV does not intend to file a registration statement with respect to resales of or an exchange offer for the notes. The notes are guaranteed on a senior unsecured basis by Alcoa Corporation and its subsidiaries that are guarantors under the Facility (the ''subsidiary guarantors'' and, together with Alcoa Corporation, the ''guarantors''). Each of the subsidiary guarantors will be released from their guarantees upon the occurrence of certain events, including the release of such guarantor from its obligations as a guarantor under the Facility.

The 2027 Notes, the 2028 Notes, and the 2029 Notes rank equally in right of payment with each other and with all of ANHBV'S existing and future senior unsecured indebtedness; rank senior in right of payment to any future subordinated obligations of ANHBV; and are effectively subordinated to ANHBV's existing and future secured indebtedness, including under the Facility, to the extent of the value of property and assets securing such indebtedness. The guarantees of the notes rank equally in right of payment with each other and with all the guarantors' existing and future senior unsecured indebtedness; rank senior in right of payment to any future subordinated obligations of the guarantors; and are effectively subordinated to the guarantors' existing and future secured indebtedness, including under the Facility, to the extent of the value of property and assets securing such indebtedness.

Redemption events. On April 7, 2021, the Company redeemed in full $750 aggregate principal amount notes due in 2024 at a redemption price equal to 103.375% of the principal amount, plus accrued and unpaid interest. The issuance of the 2029 Notes and this redemption were determined to be an issuance of new debt and an extinguishment of existing debt. As a result, the Company recorded a loss of $32 on the extinguishment of debt in the second quarter of 2021 in Interest expense, which was comprised of the redemption premium and the write-off of deferred financing fees and unamortized debt issuance costs. The cash flows related to the transaction were classified as financing cash flows.

On September 30, 2021, the Company redeemed in full $500 aggregate principal amount notes due in 2026 at a redemption price equal to 103.5% of the principal amount, plus accrued and unpaid interest. As a result, the Company recorded a loss of $22 on the extinguishment of debt in the third quarter of 2021 in Interest expense, which was comprised of the redemption premium and the write-off of deferred financing fees and unamortized debt issuance costs. The cash flows related to the transaction were classified as financing cash flows.

Credit Facilities.

Revolving Credit Facility

On June 27, 2022, Alcoa Corporation and Alcoa Nederland Holding B.V. (ANHBV), a wholly owned subsidiary of Alcoa Corporation and the borrower, entered into an amendment and restatement agreement (the Third Amendment and Restatement) (as amended and restated, the Revolving Credit Facility) that provides additional flexibility to the Company and ANHBV by (i) extending the maturity date of the Revolving Credit Facility from November 2023 to June 2027, (ii) reducing the aggregate commitments under the facility from $1,500 to $1,250, (iii) releasing the collateral package that had previously secured the Revolving Credit Facility, which will continue so long as certain credit ratings are maintained, (iv) increasing the maximum leverage ratio from 2.75 to 1.00 to 3.25 to 1.00, which increases following material acquisitions for four consecutive fiscal quarters following an acquisition, (v) providing a debt to capitalization ratio not to exceed 0.60 to 1.00 to replace the maximum leverage ratio upon a ratings upgrade to investment grade by Moody's Investor Service (Moody's) or Standard and Poor's Global Ratings (S&P), and (vi) providing flexibility for dividends and other restricted payments, to make investments, and to incur additional indebtedness. The Revolving Credit Facility implements a sustainability adjustment to the applicable margin and commitment fee that may result in a positive or negative adjustment based on two of the Company's existing sustainability metrics.

If Alcoa Corporation or ANHBV, as applicable, fails to have a rating of at least Ba1 from Moody's and BB+ from S&P, then the Company would be required to execute all security documents to re-secure collateral under the Revolving Credit Facility.

On July 26, 2022, Moody's upgraded the rating of ANHBV's senior unsecured notes to Baa3 (investment grade) from Ba1 and set the current outlook to stable.

In addition to the financial covenants, the Revolving Credit Facility includes several customary affirmative and negative covenants (applicable to Alcoa Corporation and certain subsidiaries described as restricted), that, subject to certain exceptions, include limitations on (among other things): indebtedness, liens, investments, sales of assets, restricted payments, entering into restrictive agreements, a covenant prohibiting reductions in the ownership of AWAC entities, and certain other specified restricted subsidiaries of Alcoa Corporation, below an agreed level. The Revolving Credit Facility also contains customary events of default, including failure to make payments under the Revolving Credit Facility, cross-default and cross-judgment default, and certain bankruptcy and insolvency events.

As of December 31, 2022, the Company was in compliance with all financial covenants. There were no borrowings outstanding at December 31, 2022 and 2021, and no amounts were borrowed during 2022 and 2021 under the Revolving Credit Facility.

Alcoa Norway ANS

On October 2, 2019, Alcoa Norway ANS, a wholly-owned subsidiary of Alcoa Corporation, entered into a one-year, multicurrency revolving credit facility agreement for NOK 1.3 billion (approximately $149) which was fully and unconditionally guaranteed on an unsecured basis by Alcoa Corporation. The maturity date of the facility was subsequently extended by one year.

On April 8, 2020, Alcoa Norway ANS drew $100 against this facility. Repayment of the drawn amount, including interest accrued at 2.93%, occurred upon maturity on June 29, 2020.

In September 2021, Alcoa Norway ANS made the decision not to extend the maturity of the facility allowing it to expire, effective October 4, 2021. During 2021, no amounts were drawn related to this credit facility. In all periods, Alcoa Norway ANS was in compliance with related covenants.

N. PREFERRED AND COMMON STOCK

Preferred Stock. Alcoa Corporation is authorized to issue 100,000,000 shares of preferred stock at a par value of $0.01 per share. At December 31, 2022 and 2021, the Company had no issued preferred stock.

Common Stock. Alcoa Corporation is authorized to issue 750,000,000 shares of common stock at a par value of $0.01 per share. As of December 31, 2022 and 2021, Alcoa Corporation had 176,969,091 and 184,099,748, respectively, issued and outstanding shares of common stock.

Under its employee stock-based compensation plan, the Company issued shares of 1,434,543 in 2022, 1,305,979 in 2021, and 397,903 in 2020. The Company issues new shares to satisfy the exercise of stock options and the conversion of stock units. As of December 31, 2022, 22,028,804 shares of common stock were available for issuance.

Share Repurchase

In October 2021, Alcoa Corporation's Board of Directors approved a common stock repurchase program under which the Company may purchase shares of its outstanding common stock up to an aggregate transactional value of $500, depending on cash availability, market conditions, and other factors.

In July 2022, Alcoa Corporation announced that its Board of Directors approved an additional common stock repurchase program under which the Company may purchase shares of its outstanding common stock up to an aggregate transactional value of $500, depending on the Company's continuing analysis of market, financial, and other factors (the New Repurchase Program).

In 2022, the Company repurchased 8,565,200 shares of its common stock for $500, which fully exhausted the October 2021 authorization; the shares were immediately retired. As of the date of this report, the Company is currently authorized to repurchase up to a total of $500, in the aggregate, of its outstanding shares of common stock under the New Repurchase Program. Repurchases under this program may be made using a variety of methods, which may include open market purchases, privately negotiated transactions, or pursuant to a Rule 10b5-1 plan. This program may be suspended or discontinued at any time and does not have a predetermined expiration date. Alcoa Corporation intends to retire repurchased shares of common stock.

In 2021, the Company repurchased 3,184,300 shares of its common stock for $150; the shares were immediately retired. No shares were repurchased in 2020.

Dividend

Dividends on common stock are subject to authorization by Alcoa Corporation's Board of Directors.

In October 2021, the Company announced the initiation of a quarterly cash dividend on its common stock and the Board of Directors declared the first quarterly cash dividend of $0.10 per share of the Company's common stock. Dividends paid totaled $19 in 2021.

Quarterly dividends paid were $0.10 per share in 2022, totaling $72.

The Company did not declare any dividends in 2020.

The details of any future cash dividend declaration, including the amount of such dividend and the timing and establishment of the record and payment dates, will be determined by the Board of Directors. The decision of whether to pay future cash dividends and the amount of any such dividends will be based on the Company's financial position, results of operations, cash flows, capital requirements, business conditions, the requirements of applicable law, and any other factors the Board of Directors may deem relevant.

Stock-based Compensation

Restricted stock units are generally granted in either January or February each calendar year to eligible employees (the Company's Board of Directors also receive certain stock units; however, these amounts are not material). Time-based restricted stock units (RSUs) generally cliff vest on the third anniversary of the award grant date. The Company also grants performance restricted stock units (PRSUs), which are subject to performance conditions. Prior to 2021, stock options were historically granted at the closing market price of Alcoa Corporation's common stock on the date of grant and grade vested over a three-year service period (1/3 each year) with a ten-year contractual term. As of January 1, 2021, the Company no longer grants stock options.

The final number of PRSUs earned is dependent on Alcoa Corporation's achievement of certain targets over a three-year measurement period for grants. For PRSUs granted in 2020, the award was earned after the end of the measurement period of January 1, 2020 through December 31, 2022 based on performance against four measures: (1) the Company's total shareholder return measured against the ranked total shareholder return of the Standard & Poor's Metals and Mining Select Industry Index components; (2) a pre-established return-on-equity target; (3) an improvement in proportional net debt; and (4) a reduction in carbon intensity in both refining (through reduced carbon dioxide emissions) and smelting (through increased production from renewable energy) operations. For PRSUs granted in 2021, the award will be earned after the end of the measurement period of January 1, 2021 through December 31, 2023 based on performance against four measures: (1) the Company's total shareholder return measured against the ranked total shareholder return of the Standard & Poor's Metals and Mining Select Industry Index components; (2) a pre-established return-on-equity target; (3) an improvement in proportional net debt; and (4) a reduction in carbon intensity in both refining (through reduced carbon dioxide emissions) and smelting (through increased production from renewable energy) operations. For PRSUs granted in 2022, the award will be earned after the end of the measurement period of January 1, 2022 through December 31, 2024 based on performance against three measures: (1) the Company's total shareholder return measured against the ranked total shareholder return of the Standard & Poor's Metals and Mining Select Industry Index components; (2) a pre-established return-on-equity target; and (3) a reduction in carbon intensity in both refining (through reduced carbon dioxide emissions) and smelting (through increased production from renewable energy) operations.

In 2022, 2021, and 2020, Alcoa Corporation recognized stock-based compensation expense of $40, $39, and $25, respectively, of which approximately 85% to 100% was related to stock units in each period. There was no stock-based compensation expense capitalized in 2022, 2021, or 2020.

Stock-based compensation expense is based on the grant date fair value of the applicable equity grant. For both RSUs and PRSUs, the fair value was equivalent to the closing market price per share of Alcoa Corporation's common stock on the date of grant in the respective periods. For stock units with a market condition, the fair value was estimated on the date of grant using a Monte Carlo simulation model, which generated a result of $126.86, $39.88, and $21.43 per unit in 2022, 2021, and 2020, respectively. The Monte Carlo simulation model uses certain assumptions to estimate the fair value of a market-based stock unit, including volatility (65.25%, 60.19%, and 41.65% in 2022, 2021, and 2020, respectively, for the Company) and a risk-free interest rate (1.71%, 0.22%, and 1.38% in 2022, 2021, and 2020, respectively), to estimate the probability of satisfying market conditions. For stock options, the fair value was estimated on the date of grant using a lattice pricing model, which generated a result of $6.12 per option in 2020. There were no stock options granted in 2022 and 2021. The lattice pricing model uses several assumptions to estimate the fair value of a stock option, including an average risk-free interest rate, dividend yield, volatility, annual forfeiture rate, exercise behavior, and contractual life.

The activity for stock units and stock options during 2022 was as follows:

	Stock units		Stock options	
	Number of units	Weighted average FMV per unit	Number of options	Weighted average exercise price
Outstanding, January 1, 2022	4,702,546	$ 22.23	910,420	$ 29.61
Granted	624,441	67.50	–	–
Exercised	–	–	(686,097)	31.50
Converted	(1,056,571)	30.07	–	–
Expired or forfeited	(100,726)	26.63	(3,727)	21.13
Performance share adjustment	436,525	18.00	–	–
Outstanding, December 31, 2022	4,606,215	26.08	220,596	23.88

The number of Converted units includes 308,125 shares withheld to meet the Company's statutory tax withholding requirements related to the income earned by the employees as a result of vesting in the units.

As of December 31, 2022, the 220,596 outstanding stock options had a weighted average remaining contractual life of 5.23 years and a total intrinsic value of $5. Additionally, 131,546 of the total outstanding stock options were fully vested and exercisable and had a weighted average remaining contractual life of 4.75 years, a weighted average exercise price of $29.02, and a total intrinsic value of $2 as of December 31, 2022. Cash received from stock option exercises was $22, $25, and $1 in 2022, 2021, and 2020, respectively. The total intrinsic value of stock options exercised during 2022, 2021, and 2020 was $22, $17, and $0, respectively. The total fair value of stock units converted during 2022, 2021 and 2020 was $32, $19 and $17, respectively.

At December 31, 2022, there was $34 (pretax) of combined unrecognized compensation expense related to non-vested grants of both stock units and stock options. This expense is expected to be recognized over a weighted average period of 1.77 years.

O. PENSION AND OTHER POSTRETIREMENT BENEFITS

Defined Benefit Plans

Alcoa sponsors several defined benefit pension plans covering certain employees in the U.S. and foreign locations. Pension benefits generally depend on length of service, job grade, and remuneration. Substantially all benefits are paid through pension trusts that are sufficiently funded to ensure that all plans can pay benefits to retirees as they become due. Most salaried and non-bargaining hourly U.S. employees hired after March 1, 2006 and most bargaining hourly U.S. employees hired after January 1, 2020 participate in a defined contribution plan instead of a defined benefit plan.

The Company also maintains health care postretirement benefit plans covering certain eligible U.S. retired employees and certain retirees from foreign locations. Generally, the medical plans are unfunded and pay a percentage of medical expenses, reduced by deductibles and other coverage. The Company retains the right, subject to existing agreements, to change or eliminate these benefits. All salaried and certain non-bargaining hourly U.S. employees hired after January 1, 2002 and certain bargaining hourly U.S. employees hired after July 1, 2010 are not eligible for postretirement health care benefits.

As of January 1, 2022, the pension benefit plans and the other postretirement benefit plans covered an aggregate of approximately 22,000 and approximately 22,000 participants, respectively.

2022 Plan Actions. In 2022, management initiated the following actions to certain pension plans:

Action #1 – In the third quarter of 2022, settlement accounting and related plan remeasurements were triggered within Alcoa's U.S. pension plans as a result of the Company's purchase of group annuity contracts to transfer the obligation to pay the remaining retirement benefits of approximately 4,400 retirees and beneficiaries from its U.S. defined benefit pension plans. The transfer of approximately $1,000 in both plan obligations and plan assets was completed in August 2022. As a result, Alcoa recorded a $5 increase to Accrued pension benefits and a $27 increase to Other non-current assets and recognized a non-cash settlement loss of $617 (pre- and after-tax) in Restructuring and other charges, net on the Statement of Consolidated Operations.

Action #2 – In the third quarter of 2022, settlement accounting and related plan remeasurements were triggered within Alcoa's U.S. pension plans as a result of participants electing lump sum payments. Alcoa recognized a non-cash settlement loss of $11 (pre- and after-tax) in Restructuring and other charges, net on the Statement of Consolidated Operations.

Action #3 – In the third quarter of 2022, settlement accounting and a related plan remeasurement was triggered within Alcoa's U.S. salaried pension plan as a result of participants electing lump sum payments. Alcoa recorded a $23 increase to Accrued pension benefits and a $12 decrease to Other non-current assets and recognized a non-cash settlement loss of $1 (pre- and after- tax) in Restructuring and other charges, net on the Statement of Consolidated Operations.

Action #4 – In the third quarter of 2022, settlement accounting and a related plan remeasurement was triggered within Alcoa's Australian pension plan as a result of participants electing lump sum payments. Alcoa recorded a $21 increase to Other non-current assets and recognized a non-cash settlement gain of $3 (pre- and after-tax) in Restructuring and other charges, net on the Statement of Consolidated Operations.

Action #5 – In the fourth quarter of 2022, settlement accounting was triggered within Alcoa's U.S. pension plans as a result of participants electing lump sum payments. Alcoa recorded a $3 increase to Accrued pension benefits and recognized a non-cash settlement loss of $6 (pre- and after-tax) in Restructuring and other charges, net on the Statement of Consolidated Operations.

The following table presents certain information and the financial impacts of these actions on the accompanying Consolidated Financial Statements:

Action #	Number of affected plan participants	Weighted average discount rate as of prior plan remeasurement date	Plan remeasurement date	Weighted average discount rate as of plan remeasurement date	Increase to accrued pension benefits liability[1]	Increase (decrease) to other non-current assets[1]	Settlement loss (gain)[2]
1	~4,400	2.90%	July 31, 2022	4.63%	$ 5	$ 27	$ 617
2	~45	2.90%	July 31, 2022	4.63%	–	–	11
3	~5	4.57%	September 30, 2022	5.71%	23	(12)	1
4	~25	2.46%	September 30, 2022	4.99%	–	21	(3)
5	~20	N/A	December 31, 2022	N/A	3	–	6
	~4,495				$ 31	$ 36	$ 632

(1) Actions 1-4 caused interim plan remeasurements, including an update to the discount rates used to determine the benefit obligations of the affected plans. These amounts include impacts due to interim plan remeasurements.

(2) These amounts represent the net actuarial loss (gain) and were reclassified from Accumulated other comprehensive loss to Restructuring and other charges, net (see Note D) on the accompanying Statement of Consolidated Operations.

2021 Plan Actions. In 2021, management initiated the following actions to certain pension and other postretirement benefit plans:

Action #1 – On March 31, 2021, Alcoa completed the sale of the Warrick Rolling Mill to Kaiser Aluminum Corporation for total consideration of $670, which included the assumption of $69 in other postretirement benefit liabilities. Approximately 1,150 employees at the rolling operations, which includes the casthouse, hot mill, cold mills, and coating and slitting lines, became employees of Kaiser. As a result, the affected plan was remeasured, including an update to the discount rate used to determine the benefit obligation of the plan. Accrued other postretirement benefits reflects a decrease of $40 related to the remeasurement in addition to the $69 assumed by Kaiser. Further, Alcoa recognized a curtailment gain of $17 (pre- and after-tax) and a settlement loss of $26 (pre- and after-tax).

Action #2 – In the second quarter of 2021, settlement accounting and a related plan remeasurement was triggered within Alcoa's U.S. salaried pension plan as a result of a high number of participants electing lump sum payments. This includes former employees of the Warrick Rolling Mill, as well as other Alcoa employees making this election at retirement. Alcoa recorded a $90 decrease to Accrued pension benefits related to this remeasurement and recognized a settlement loss of $39 (pre- and after-tax).

Action #3 – In the third quarter of 2021, settlement accounting and a related plan remeasurement was triggered within Alcoa's U.S. salaried pension plan as a result of participants electing lump sum payments. Alcoa recorded a $7 increase to Accrued pension benefits related to this remeasurement and recognized a settlement loss of $7 (pre- and after-tax).

Action #4 – In the third quarter of 2021, settlement accounting and a related plan remeasurement was triggered within Alcoa's Australian pension plan as a result of participants electing lump sum payments. Alcoa recorded a $38 decrease to Accrued pension benefits related to this remeasurement and recognized a settlement loss of $1 (pre- and after-tax).

Action #5 – In the fourth quarter of 2021, the Company purchased a group annuity contract to transfer the obligation to pay the remaining retirement benefits of approximately 800 retirees and deferred vested participants from one of its Suriname pension plans to an insurance company. The transfer of $55 in both plan obligations and plan assets were completed on October 19, 2021. As a result, the Company recorded a settlement loss of $63 (pre- and after-tax) in Restructuring and other charges, net on the Statement of Consolidated Operations in the fourth quarter of 2021.

Action #6 – In the fourth quarter of 2021, settlement accounting and related plan remeasurements were triggered within Alcoa's U.S. pension plans as a result of the Company purchasing group annuity contracts to transfer the obligation to pay remaining retirement benefits of approximately 14,000 retirees and beneficiaries from its U.S. defined benefit pension plans and transferred approximately $1,540 in both plan obligations and plan assets. The transfers were completed on November 23, 2021 and December 16, 2021. As a result, the Company recorded a $84 decrease to Accrued pension benefits related to this remeasurement and recognized a non-cash settlement loss of $848 (pre- and after-tax) in Restructuring and other charges, net on the Statement of Consolidated Operations in the fourth quarter of 2021.

Action #7 – In the fourth quarter of 2021, settlement accounting and related plan remeasurements were triggered within Alcoa's U.S. pension plans as a result of participants electing lump sum payments (and the group annuity contracts discussed in Action 6 above). Alcoa recorded a $1 decrease to Accrued pension benefits related to this remeasurement and recognized a settlement loss of $10 (pre- and after-tax).

The following table presents certain information and the financial impacts of these actions on the accompanying Consolidated Financial Statements:

Action #	Number of affected plan participants	Weighted average discount rate as of prior plan remeasurement date	Plan remeasurement date	Weighted average discount rate as of plan remeasurement date	Increase (decrease) to accrued pension benefits liability	Decrease to accrued other postretirement benefits liability	Curtailment gain[(1)]	Settlement loss[(1)]
1	~840	2.45%	March 31, 2021	3.06%	$ –	$ (106)	$ (17)	$ 26
2	~120	2.38%	June 30, 2021	2.71%	(90)	–	–	39
3	~20	2.71%	September 30, 2021	2.74%	7	–	–	7
4	~20	1.34%	September 30, 2021	1.53%	(38)	–	–	1
5	~800	N/A	N/A	N/A	N/A	–	–	63
6	~14,000	2.59%	November 30, 2021	2.79%	(84)	–	–	848
7	~60	2.59%	November 30, 2021	2.79%	(1)	–	–	10
					$ (206)	$ (106)	$ (17)	$ 994

(1) These amounts primarily represent the accelerated amortization of a portion of the existing prior service benefit for curtailments and net actuarial loss for settlements and were reclassified from Accumulated other comprehensive loss to Restructuring and other charges, net (see Note D) on the accompanying Statement of Consolidated Operations.

2020 Plan Actions. In 2020, management initiated the following actions to certain pension and other postretirement benefit plans:

Action #1 – In February 2020, the Company entered into a new, six-year collective bargaining agreement with the Union of Professional and Office Workers of the Alcoa Smelter of Baie-Comeau in Canada. Under the agreement, all unionized office employees that are participants in one of the Company's defined benefit pension plans ceased accruing retirement benefits for future service effective January 1, 2021. This change affected approximately 20 employees, who were transitioned to a target benefit plan, where the funding risk is assumed by the employees. The Company will contribute approximately 12% of these participants' eligible earnings to the new plan on an annual basis. Participants already collecting benefits or who terminated with a vested benefit under the defined benefit pension plan were not affected by these changes.

Action #2 – In February 2020, the Company notified all non-unionized hourly employees of Aluminerie de Deschambault, who are participants in one of the Company's defined benefit pension plans, that they will cease accruing retirement benefits for future service effective January 1, 2021. This change affected approximately 430 employees, who were transitioned to a to a member-funded pension plan, where the funding risk is assumed by the employees. The Company will contribute approximately 12% of these participants' eligible earnings to the new plan on an annual basis. Participants already collecting benefits or who terminated with a vested benefit under the defined benefit pension plan were not affected by these changes.

Action #3 – In April 2020, as part of the Company's portfolio review, Alcoa announced that it will curtail the remaining capacity at its Intalco smelter in Ferndale, Washington amid declining market conditions. The full curtailment was completed during the third quarter of 2020, and the workforce was reduced by approximately 685 people. As a result, curtailment accounting was triggered in the U.S. hourly defined benefit pension and retiree life plans (3a and 3b in the below table, respectively).

Action #4 – In September 2020, the Company and the United Steelworkers jointly notified certain U.S. retirees that their medical and prescription drug coverage will be provided through an insured group Medicare Advantage and Prescription Drug plan and will include an increase to participant contributions, effective January 1, 2021. These changes affected approximately 8,600 participants. Although the plan change and related remeasurement increased the other postretirement benefit liability by $74, the plan change lowered the Company's expected cash requirements for the program over the next five years.

Action #5 – In October 2020, the Company offered lump sum buyouts to specific participants in its U.S. defined benefit pension plans. As a result, the Company paid approximately $33 from plan assets on December 31, 2020 to approximately 430 participants, was relieved of the corresponding pension obligation of $35, and recognized a settlement loss of $44 (pre- and after- tax).

Action #6 – On November 30, 2020, Alcoa announced an agreement to sell the Warrick Rolling Mill to Kaiser. The sale closed on March 31, 2021. Approximately 1,170 employees at the rolling operations, which includes the casthouse, hot mill, cold mills, and coating and slitting lines, will become employees of Kaiser once the transaction is complete. As a result, Alcoa recognized a pension curtailment loss of $5 (pre- and after-tax) in the fourth quarter of 2020.

The following table presents certain information and the financial impacts of these actions on the accompanying Consolidated Financial Statements:

Action #	Number of affected plan participants	Weighted average discount rate as of December 31, 2019	Plan remeasurement date	Weighted average discount rate as of plan remeasurement date	Increase (decrease) to accrued pension benefits liability[1]	Increase to accrued other postretirement benefits liability[1]	Curtailment loss (gain)[2]	Settlement loss[2]
1	~20	3.15%	January 31, 2020	2.75%	$ 18	$ –	$ 1	$ –
2	~430	3.20%	January 31, 2020	2.75%	28	–	2	–
3a	~300	3.25%	April 30, 2020	2.92%	156	–	1	–
3b	~600	3.75%	April 30, 2020	3.44%	–	–	(2)	–
4	~8,600	3.11%	August 31, 2020	2.65%	–	74	–	–
5	~430	N/A	December 31, 2020	N/A	(2)	–	–	44
6	~900	N/A	December 31, 2020	N/A	5	–	5	–
	~11,280				$ 205	$ 74	$ 7	$ 44

(1) Actions 1-4 caused interim plan remeasurements, including an update to the discount rates used to determine the benefit obligations of the affected plans. These amounts include impacts due to interim plan remeasurements.

(2) These amounts primarily represent the accelerated amortization of a portion of the existing prior service benefit for curtailments and net actuarial loss for settlements and were reclassified from Accumulated other comprehensive loss to Restructuring and other charges, net (see Note D) on the accompanying Statement of Consolidated Operations.

Obligations and Funded Status

December 31,	Pension benefits 2022	Pension benefits 2021	Other postretirement benefits 2022	Other postretirement benefits 2021
Change in benefit obligation				
Benefit obligation at beginning of year	$ 4,594	$ 6,904	$ 710	$ 892
Service cost	13	22	4	4
Interest cost	107	120	15	15
Actuarial gains	(803)	(305)	(140)	(78)
Settlements	(1,090)	(1,763)	–	–
Benefits paid, net of participants' contributions	(211)	(362)	(53)	(56)
Medicare Part D subsidy receipts	–	–	–	2
Divestitures	–	–	–	(69)
Foreign currency translation impact	(92)	(22)	–	–
Benefit obligation at end of year	$ 2,518	$ 4,594	$ 536	$ 710
Change in plan assets				
Fair value of plan assets at beginning of year	$ 4,306	$ 5,356	$ –	$ –
Actual return on plan assets	(528)	513	–	–
Employer contributions	18	581	–	–
Participant contributions	4	5	–	–
Benefits paid	(204)	(356)	–	–
Administrative expenses	(6)	(4)	–	–
Settlements	(1,090)	(1,763)	–	–
Annuity purchase premium refund	22	–	–	–
Foreign currency translation impact	(88)	(26)	–	–
Fair value of plan assets at end of year	$ 2,434	$ 4,306	$ –	$ –
Funded status	$ (84)	$ (288)	$ (536)	$ (710)
Less: Amounts attributed to joint venture partners	(6)	(25)	–	–
Net funded status	$ (78)	$ (263)	$ (536)	$ (710)

December 31,	Pension benefits 2022	Pension benefits 2021	Other postretirement benefits 2022	Other postretirement benefits 2021
Amounts recognized in the Consolidated Balance Sheet consist of:				
Non-current assets	$ 146	$ 164	$ –	$ –
Current liabilities	(11)	(10)	(55)	(60)
Non-current liabilities	(213)	(417)	(481)	(650)
Net amount recognized	$ (78)	$ (263)	$ (536)	$ (710)
Amounts recognized in Accumulated Other Comprehensive Loss consist of:				
Net actuarial loss	$ 1,016	$ 1,877	$ 95	$ 253
Prior service cost (benefit)	2	2	(111)	(125)
Total, before tax effect	1,018	1,879	(16)	128
Less: Amounts attributed to joint venture partners	27	38	–	–
Net amount recognized, before tax effect	$ 991	$ 1,841	$ (16)	$ 128
Other Changes in Plan Assets and Benefit Obligations Recognized in Other Comprehensive Income (Loss) consist of:				
Net actuarial benefit	$ (141)	$ (527)	$ (140)	$ (74)
Amortization of accumulated net actuarial loss	(720)	(1,159)	(18)	(47)
Amortization of prior service benefit	–	–	14	31
Total, before tax effect	(861)	(1,686)	(144)	(90)
Less: Amounts attributed to joint venture partners	(11)	(19)	–	–
Net amount recognized, before tax effect	$ (850)	$ (1,667)	$ (144)	$ (90)

At December 31, 2022, the benefit obligation, fair value of plan assets, and funded status for U.S. pension plans were $1,113, $1,064, and ($49), respectively. At December 31, 2021, the benefit obligation, fair value of plan assets, and funded status for U.S. pension plans were $2,712, $2,681, and ($31), respectively.

Pension Plan Benefit Obligations

	Pension benefits	
	2022	2021
The aggregate projected benefit obligation and accumulated benefit obligation for all defined benefit pension plans was as follows:		
Projected benefit obligation	$ 2,518	$ 4,594
Accumulated benefit obligation	2,453	4,438
The aggregate projected benefit obligation and fair value of plan assets for pension plans with projected benefit obligations in excess of plan assets was as follows:		
Projected benefit obligation	1,465	3,031
Fair value of plan assets	1,232	2,579
The aggregate accumulated benefit obligation and fair value of plan assets for pension plans with accumulated benefit obligations in excess of plan assets was as follows:		
Accumulated benefit obligation	1,458	2,918
Fair value of plan assets	1,232	2,579

Components of Net Periodic Benefit Cost

	Pension benefits[1]			Other postretirement benefits		
	2022	2021	2020	2022	2021	2020
Service cost	$ 13	$ 22	$ 54	$ 4	$ 4	$ 5
Interest cost[2]	104	116	164	15	15	19
Expected return on plan assets[2]	(151)	(281)	(292)	–	–	–
Recognized net actuarial loss[2]	88	190	212	18	21	20
Amortization of prior service cost (benefit)[2]	–	–	–	(14)	(14)	(15)
Settlements[3]	632	968	51	–	26	–
Curtailments[4]	–	–	9	–	(17)	(2)
Net periodic benefit cost[5]	$ 686	$ 1,015	$ 198	$ 23	$ 35	$ 27

(1) In 2022, 2021, and 2020, net periodic benefit cost for U.S pension plans was $698, $962, and $154, respectively.

(2) These amounts were reported in Other (income) expenses, net on the accompanying Statement of Consolidated Operations.

(3) These amounts were reported in Restructuring and other charges, net on the accompanying Statement of Consolidated Operations (see Note D). In 2022 and 2021, settlements were due to management actions (see Plan Actions above). In 2020, settlements were due to management actions ($44) (see Plan Actions above) and payment of additional lump sum benefits ($7).

(4) These amounts were reported in Restructuring and other charges, net on the accompanying Statement of Consolidated Operations (see Note D). In 2021 and 2020, curtailments were due to management actions (see Plan Actions above).

(5) Amounts attributed to joint venture partners are not included.

Assumptions. Liabilities and expenses for pension and other postretirement benefits are determined using actuarial methodologies and incorporate significant assumptions, including the interest rate used to discount the future estimated liability, the expected long-term rate of return on plan assets, and several assumptions relating to the employee workforce (salary increases, health care cost trend rates, retirement age, and mortality).

Weighted average assumptions used to determine benefit obligations for pension and other postretirement benefit plans were as follows:

December 31,	**2022**	**2021**
Discount rate – pension plans	5.41%	2.99%
Discount rate – other postretirement benefit plans	5.54	2.82
Rate of compensation increase – pension plans	3.21	3.11

The yield curve model used to develop the discount rate parallels the plans' projected cash flows and has a weighted average duration of 11 years. The underlying cash flows of the high-quality corporate bonds included in the model exceed the cash flows needed to satisfy the Company's plan obligations multiple times. If a deep market of high-quality corporate bonds does not exist in a country, then the yield on government bonds plus a corporate bond yield spread is used.

Weighted average assumptions used to determine net periodic benefit cost for pension and other postretirement benefit plans were as follows:

	2022	2021	2020
Discount rate – pension plans	2.66%	1.91%	3.02%
Discount rate – other postretirement benefit plans	2.46	1.99	2.84
Expected long-term rate of return on plan assets – pension plans	4.94	5.66	6.28
Rate of compensation increase – pension plans	3.11	2.58	3.25

For 2022, 2021, and 2020, the expected long-term rate of return used by management was based on the prevailing and planned strategic asset allocations, as well as estimates of future returns by asset class. For 2023, management anticipates that 6.21% will be the weighted average expected long-term rate of return.

Assumed health care cost trend rates for U.S. other postretirement benefit plans were as follows (non-U.S. plans are not material):

	2022	2021	2020
Health care cost trend rate assumed for next year	7.0%	5.5%	5.5%
Rate to which the cost trend rate gradually declines	5.0%	4.5%	4.5%
Year that the rate reaches the rate at which it is assumed to remain	2028	2026	2026

The assumed health care cost trend rate is used to measure the expected cost of gross eligible charges covered by the Company's other postretirement benefit plans. For 2023, a 7.0% trend rate will be used, reflecting management's best estimate of the change in future health care costs covered by the plans.

Plan Assets. Alcoa's pension plan weighted average target and actual asset allocations at December 31, 2022 and 2021, by asset class, were as follows:

	Target asset allocation		Plan assets at December 31,	
Asset class	**2022**	**2021**	**2022**	**2021**
Equities	20%	25%	29%	28%
Fixed income	65	65	57	64
Other investments	15	10	14	8
Total	100%	100%	100%	100%

The principal objectives underlying the investment of the pension plan assets are to ensure that the Company can properly fund benefit obligations as they become due under a broad range of potential economic and financial scenarios, maximize the long-term investment return with an acceptable level of risk based on such obligations, and broadly diversify investments across and within various asset classes to protect asset values against adverse movements. Investment risk is controlled by rebalancing to target allocations on a periodic basis and ongoing monitoring of investment manager performance.

The portfolio includes an allocation to investments in long-duration corporate credit and government debt, public and private market equities, intermediate duration corporate credit and government debt, global-listed infrastructure, high-yield bonds and bank loans, real estate, and securitized credit.

In late 2022, management began restructuring the asset portfolios of certain non-U.S. pension plans. The new strategy will increase the amount and duration of the fixed income asset portfolios to reduce exposure to interest rates and will be substantially implemented by the end of the first quarter in 2023.

Investment practices comply with the requirements of applicable laws and regulations in the respective jurisdictions, including the Employee Retirement Income Security Act of 1974 (ERISA) in the United States.

The following section describes the valuation methodologies used by the trustees to measure the fair value of pension plan assets. For plan assets measured at net asset value, this refers to the net asset value of the investment on a per share basis (or its equivalent) as a practical expedient. Otherwise, an indication of the level in the fair value hierarchy in which each type of asset is generally classified is provided (see Note P for the definition of fair value and a description of the fair value hierarchy).

Equities – These securities consist of: (i) direct investments in the stock of publicly traded U.S. and non-U.S. companies and are valued based on the closing price reported in an active market on which the individual securities are traded (generally classified in Level 1); (ii) the plans' share of commingled funds that are invested in the stock of publicly traded companies and are valued at net asset value; and (iii) direct investments in long/short equity hedge funds and private equity (limited partnerships and venture capital partnerships) and are valued at net asset value.

Fixed income – These securities consist of: (i) U.S. government debt and are generally valued using quoted prices (included in Level 1); (ii) cash and cash equivalents invested in publicly-traded funds and are valued based on the closing price reported in an active market on which the individual securities are traded (generally classified in Level 1); (iii) publicly traded U.S. and non-U.S. fixed interest obligations (principally corporate bonds and debentures) and are valued through consultation and evaluation with brokers in the institutional market using quoted prices and other observable market data (included in Level 2); and (iv) cash and cash equivalents invested in institutional funds and are valued at net asset value.

Other investments – These investments include, among others: (i) real estate investment trusts valued based on the closing price reported in an active market on which the investments are traded (included in Level 1); (ii) the plans' share of commingled funds that are invested in real estate partnerships and are valued at net asset value; (iii) direct investments in private real estate (includes limited partnerships) and are valued at net asset value; and (iv) absolute return strategy funds and are valued at net asset value.

The fair value methods described above may not be indicative of net realizable value or reflective of future fair values. Additionally, while Alcoa believes the valuation methods used by the plans' trustees are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different fair value measurement at the reporting date.

The following table presents the fair value of pension plan assets classified under either the appropriate level of the fair value hierarchy or net asset value:

December 31, 2022	Level 1	Level 2	Level 3	Net Asset Value	Total
Equities:					
Equity securities	$ 71	$ –	$ –	$ 480	$ 551
Long/short equity hedge funds	–	–	–	8	8
Private equity	–	–	–	145	145
	$ 71	$ –	$ –	$ 633	$ 704
Fixed income:					
Intermediate and long-duration government/credit	$ 390	$ 426	$ –	$ 420	$ 1,236
Cash and cash equivalent funds	38	–	–	118	156
Other	–	–	–	–	–
	$ 428	$ 426	$ –	$ 538	$ 1,392
Other investments:					
Real estate	$ 20	$ –	$ –	$ 282	$ 302
Other	–	–	–	28	28
	$ 20	$ –	$ –	$ 310	$ 330
Total[(1)]	$ 519	$ 426	$ –	$ 1,481	$ 2,426

December 31, 2021	Level 1	Level 2	Level 3	Net Asset Value	Total
Equities:					
Equity securities	$ 210	$ –	$ –	$ 671	$ 881
Long/short equity hedge funds	–	–	–	4	4
Private equity	–	–	–	281	281
	$ 210	$ –	$ –	$ 956	$ 1,166
Fixed income:					
Intermediate and long-duration government/credit	$ 827	$ 1,027	$ –	$ 651	$ 2,505
Cash and cash equivalent funds	64	–	–	172	236
Other	–	–	–	–	–
	$ 891	$ 1,027	$ –	$ 823	$ 2,741
Other investments:					
Real estate	$ 63	$ –	$ –	$ 263	$ 326
Other	–	–	–	31	31
	$ 63	$ –	$ –	$ 294	$ 357
Total[2]	$ 1,164	$ 1,027	$ –	$ 2,073	$ 4,264

(1) As of December 31, 2022, the total fair value of pension plan assets excludes a net receivable of $8, which primarily represents securities not yet settled plus interest and dividends earned on various investments.

(2) As of December 31, 2021, the total fair value of pension plan assets excludes a net receivable of $42, which primarily represents securities not yet settled plus interest and dividends earned on various investments.

Funding and Cash Flows. It is Alcoa's policy to fund amounts for defined benefit pension plans sufficient to meet the minimum requirements set forth in applicable country benefits laws and tax laws, including ERISA for U.S. plans. From time to time, the Company contributes additional amounts as deemed appropriate.

In 2022, 2021, and 2020, cash contributions to Alcoa's defined benefit pension plans were $17, $579, and $343.

During 2020, the Company initially deferred approximately $200 in pension contributions under provisions in the U.S. Government's Coronavirus Aid, Relief, and Economic Security (CARES) Act. With ample cash on hand and having achieved its objective to hold cash during uncertain times in 2020, the Company made a $250 pension contribution to its U.S. pension plans in late December to cover both the deferred contributions due on January 4, 2021 and a discretionary prepayment. During 2021, Alcoa made $500 in unscheduled contributions to certain U.S. defined benefit pension plans. The additional contributions were discretionary in nature and were funded with net proceeds from a March 2021 debt issuance (see Note M) plus available cash on hand. There were no discretionary contributions made in 2022.

Alcoa's minimum required contribution to defined benefit pension plans in 2023 is estimated to be $75, of which approximately $55 is for U.S. plans. Under ERISA regulations, a plan sponsor that establishes a pre-funding balance by making discretionary contributions to a U.S. defined benefit pension plan may elect to apply all or a portion of this balance toward its minimum required contribution obligations to the related plan in future years. In 2023, management intends to make such election related to the Company's U.S. plans.

Benefit payments expected to be paid to pension and other postretirement benefit plan participants are as follows:

Year ending December 31,	Pension benefits	Other postretirement benefits
2023	$ 195	$ 55
2024	190	55
2025	190	50
2026	190	50
2027	195	45
2028 through 2032	915	210
	$ 1,875	$ 465

Defined Contribution Plans

The Company sponsors savings and investment plans in several countries, primarily in Australia and the United States. In the United States, employees may contribute a portion of their compensation to the plans, and Alcoa matches a specified percentage of these contributions in equivalent form of the investments elected by the employee. Also, the Company makes contributions to a retirement savings account based on a percentage of eligible compensation for certain U.S. employees that are not able to participate in Alcoa's defined benefit pension plans. The Company's expenses related to all defined contribution plans were $71 in 2022, $72 in 2021, and $73 in 2020.

Member-funded Pension Plans

The Company contributes to member-funded pension plans for the employees of Aluminerie de Bécancour Inc. and Aluminerie de Deschambault in Canada. Alcoa makes contributions to the plans based on a percentage of the employees' eligible compensation. The Company's expenses related to the member-funded pension plans were $17 in 2022, $17 in 2021, and $10 in 2020.

Target Benefit Plan

The Company contributes to a target benefit plan for the employees of Baie-Comeau in Canada. Alcoa makes contributions to the plan based on a percentage of the employees' eligible compensation. The Company's expenses related to the target benefit plan were $9 in 2022, and $9 in 2021.

P. DERIVATIVES AND OTHER FINANCIAL INSTRUMENTS

Fair Value. The Company follows a fair value hierarchy to measure its assets and liabilities. As of December 31, 2022 and 2021, respectively, the assets and liabilities measured at fair value on a recurring basis were primarily derivative instruments. In addition, the Company measures its pension plan assets at fair value (see Note O). Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The fair value hierarchy distinguishes between (i) market participant assumptions developed based on market data obtained from independent sources (observable inputs) and (ii) an entity's own assumptions about market participant assumptions developed based on the best information available in the circumstances (unobservable inputs). The fair value hierarchy consists of three broad levels, which gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3). The three levels of the fair value hierarchy are described below:

- Level 1 – Unadjusted quoted prices in active markets that are accessible at the measurement date for identical, unrestricted assets or liabilities;

- Level 2 – Inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly, including quoted prices for similar assets or liabilities in active markets; quoted prices for identical or similar assets or liabilities in markets that are not active; inputs other than quoted prices that are observable for the asset or liability (e.g., interest rates); and inputs that are derived principally from or corroborated by observable market data by correlation or other means; and,

- Level 3 – Inputs that are both significant to the fair value measurement and unobservable.

Derivatives. Alcoa Corporation is exposed to certain risks relating to its ongoing business operations, including the risks of changing commodity prices, foreign currency exchange rates and interest rates. Alcoa Corporation's commodity and derivative activities include aluminum, energy, foreign exchange, and interest rate contracts, which are held for purposes other than trading. They are used to mitigate uncertainty and volatility, and to cover underlying exposures. While Alcoa does not generally enter into derivative contracts to mitigate the risk associated with changes in aluminum price, the Company may do so in isolated cases to address discrete commercial or operational conditions. Alcoa is not involved in trading activities for energy, weather derivatives, or other non-exchange commodities.

Alcoa Corporation's commodity and derivative activities are subject to the management, direction, and control of the Strategic Risk Management Committee (SRMC), which consists of at least three members, including the chief executive officer, the chief financial officer, and the chief commercial officer. The remaining member(s) are other officers and/or employees of the Company as the chief executive officer may designate from time to time. The SRMC meets on a periodic basis to review derivative positions and strategy and reports to the Audit Committee of Alcoa Corporation's Board of Directors on the scope of its activities.

Alcoa Corporation's aluminum and foreign exchange contracts are predominately classified as Level 1 under the fair value hierarchy. All of the Level 1 contracts are designated as either fair value or cash flow hedging instruments (except as described below). Alcoa Corporation also has several derivative instruments classified as Level 3 under the fair value hierarchy, which are either designated as cash flow hedges or undesignated. Alcoa includes the changes in its equity method investee's Level 2 derivatives in Accumulated other comprehensive loss.

The following tables present the detail for Level 1 and 3 derivatives (see additional Level 3 information in further tables below):

	2022		2021	
Balance at December 31,	**Assets**	**Liabilities**	**Assets**	**Liabilities**
Level 1 derivative instruments	$ 84	$ 14	$ 19	$ 29
Level 3 derivative instruments	52	1,212	2	1,293
Total	$ 136	$ 1,226	$ 21	$ 1,322
Less: Current	134	200	14	274
Non-current	$ 2	$ 1,026	$ 7	$ 1,048

	2022		2021	
Year ended December 31,	**Unrealized loss recognized in Other comprehensive loss**	**Realized loss reclassed from Other comprehensive loss to earnings**	**Unrealized loss recognized in Other comprehensive loss**	**Realized loss reclassed from Other comprehensive loss**
Level 1 derivative instruments	$ 116	$ 35	$ (28)	$ (10)
Level 3 derivative instruments	(247)	(345)	(759)	(279)
Non-controlling and equity interest (Level 2)	12	(6)	5	(6)
Total	$ (119)	$ (316)	$ (782)	$ (295)

The 2022 realized gain of $35 on Level 1 cash flow hedges was comprised of a $40 gain recognized in Sales and a $5 loss recognized in Cost of goods sold. The 2021 realized loss of $10 on Level 1 cash flow hedges was comprised of a $7 loss recognized in Sales and a $3 loss recognized in Cost of goods sold.

The following table presents the outstanding quantities of derivative instruments classified as Level 1:

	Classification	December 31, 2022	December 31, 2021
Aluminum (in kmt)	Commodity buy forwards	176	166
Aluminum (in kmt)	Commodity sell forwards	337	485
Foreign currency (in millions of euro)	Foreign exchange buy forwards	60	92
Foreign currency (in millions of Norwegian krone)	Foreign exchange buy forwards	302	–
Foreign currency (in millions of Brazilian real)	Foreign exchange buy forwards	1,008	1,318
Foreign currency (in millions of Brazilian real)	Foreign exchange sell forwards	7	–

Alcoa routinely uses Level 1 aluminum derivative instruments to manage exposures to changes in the fair value of firm commitments for the purchases or sales of aluminum. Additionally, Alcoa uses Level 1 aluminum derivative instruments to manage exposures to changes in the LME associated with the Alumar (Brazil) restart (April 2022 through December 2023) and the San Ciprián (Spain) strike (expired October 2022). As a result of a delay with the Alumar restart, it became probable that certain of the original forecasted transactions would not occur by the end of the originally specified time period and Alcoa dedesignated certain aluminum sell forwards. The Company reclassified the related unrealized gain of $20 included in Accumulated other comprehensive loss to Sales during the year ended December 31, 2022. In conjunction with the dedesignations, the Company entered into aluminum buy forwards in 2022 for the same volume and periods which were also not designated. The unrealized and realized gains and losses on the aluminum buy and sell forwards that are not designated will offset resulting in no impact to Alcoa's earnings.

Alcoa Corporation uses Level 1 foreign exchange forward contracts to mitigate the risk of foreign exchange exposure related to euro power purchases in Norway (expires December 2026), krone capital expenditures in Norway (expires June 2025), and U.S. dollar alumina and aluminum sales in Brazil (expires December 2024).

Derivative instruments classified as Level 3 in the fair value hierarchy represent those in which management has used at least one significant unobservable input in the valuation model. Alcoa Corporation uses a discounted cash flow model to fair value all Level 3 derivative instruments. Inputs in the valuation models for Level 3 derivative instruments are composed of the following: (i) quoted market prices (e.g., aluminum prices on the 10-year LME forward curve and energy prices), (ii) significant other observable inputs (e.g., information concerning time premiums and volatilities for certain option type embedded derivatives and regional premiums for aluminum contracts), and (iii) unobservable inputs (e.g., aluminum and energy prices beyond those quoted in the market, and estimated credit spread between Alcoa and the counterparty). For periods beyond the term of quoted market prices for aluminum, Alcoa Corporation estimates the price of aluminum by extrapolating the 10-year LME forward curve. For periods beyond the term of quoted market prices for the Midwest premium, management estimates the Midwest premium based on recent transactions. Where appropriate, valuations are adjusted for various factors such as liquidity, bid/offer spreads, and credit considerations. Such adjustments are generally based on available market evidence (Level 2). In the absence of such evidence, management's best estimate is used (Level 3). If a significant input that is unobservable in one period becomes observable in a subsequent period, the related asset or liability would be transferred to the appropriate classification (Level 1 or 2) in the period of such change (there were no such transfers in the periods presented). There were no sales or settlements of Level 3 derivative instruments in the periods presented.

Level 3 derivative instruments outstanding as of December 31, 2022 are described in the table below:

Description	Designation	Contract Termination	Unobservable Inputs Impacting Valuation	Sensitivity to Inputs
Power contracts				
Embedded derivative that indexes the price of power to the LME price of aluminum plus the Midwest premium	Cash flow hedge of forward sales of aluminum	March 2026 December 2029 February 2036	LME price, Midwest premium and MWh per year	Increase in LME price and/or the Midwest premium results in a higher cost of power and an increase to the derivative liability
Embedded derivative that indexes the price of power to the LME price of aluminum	Cash flow hedge of forward sales of aluminum	September 2027	LME price and MWh per year	Increase in LME price results in a higher cost of power and an increase to the derivative liability
Embedded derivative that indexes the price of power to the credit spread between the Company and the counterparty	Not designated	October 2028	Estimated credit spread	Wider credit spread results in a higher cost of power and increase in the derivative liability
Financial contracts				
Hedge power prices	Not designated	June 2026	LME price and power price	Lower prices in the power market or higher LME prices result in an increase in the derivative liability
Hedge power prices	Cash flow hedge of forward sales of power	March 2023	Power price	Higher prices in the power market results in an increase in the derivative liability

In December 2022, Alcoa entered into a financial contract (Financial contract, below) with a counterparty to hedge power price exposure through March 31, 2023. The Financial contract is designated as a cash flow hedge of future sales of power. Unrealized gains and losses are recognized in Accumulated other comprehensive loss on the accompanying Consolidated Balance Sheet, and realized gains and losses are recognized in Cost of goods sold on the accompanying Statement of Consolidated Operations.

In addition to the instruments presented above, Alcoa had a financial contract that expired in July 2021 that hedged the anticipated power requirements at one of its smelters and was designated as a cash flow hedge of future purchases of electricity. In March 2021, Alcoa entered into four financial contracts (Financial contracts (undesignated), below) with three counterparties to hedge the anticipated power requirements at this smelter for the period from August 1, 2021 through June 30, 2026. A fifth financial contract (undesignated) was entered into in November 2021, with an effective date of September 30, 2022 through June 30, 2026. Two of these financial contracts include LME-linked pricing components and do not qualify for hedge accounting treatment. Management elected not to apply hedge accounting treatment for the other three financial contracts. Unrealized and realized gains and losses on these financial contracts are included in Other (income) expenses, net on the accompanying Statement of Consolidated Operations.

At December 31, 2022, the outstanding Level 3 instruments are associated with eight smelters. At December 31, 2022 and 2021, the power contracts with embedded derivatives designated as cash flow hedges hedge forecasted aluminum sales of 1,683 kmt and 1,905 kmt, respectively.

The following table presents quantitative information related to the significant unobservable inputs described above for Level 3 derivative instruments (megawatt hours in MWh):

	December 31, 2022	Unobservable input	Unobservable input range	
Asset Derivatives				
Financial contracts (undesignated)	$ 32	Interrelationship of forward energy price, LME forward price and the Consumer Price Index	Electricity (per MWh) LME (per mt)	2023: $56.79 2023: $75.71 2023: $2,350 2023: $2,406
Financial contract	20	Interrelationship of forward energy price and the contract price	Electricity (per MWh)	2023: $196.85
Total asset derivatives	$ 52			

	December 31, 2022	Unobservable input	Unobservable input range	
Liability Derivatives				
Power contract	$ 237	MWh of energy needed to produce the forecasted mt of aluminum	LME (per mt)	2023: $2,350 2027: $2,791
			Electricity	Rate of 4 million MWh per year
Power contracts	975	MWh of energy needed to produce the forecasted mt of aluminum	LME (per mt)	2023: $2,350 2029: $2,886 2036: $3,182
			Midwest premium (per pound)	2023: $0.240 2029: $0.265 2036: $0.265
			Electricity	Rate of 18 million MWh per year
Power contract	–	MWh of energy needed to produce the forecasted mt of aluminum	LME	2023: $2,350 2023: $2,372
			Midwest premium	2023: $0.240 2023: $0.253
			Electricity	Rate of 2 million megawatt hours per year
Power contract (undesignated)	–	Estimated spread between the 30-year debt yield of Alcoa and the counterparty	Credit spread	1.10%: 30-year debt yield spread 6.63%: Alcoa (estimated) 5.53%: counterparty
Total liability derivatives	$ 1,212			

The fair values of Level 3 derivative instruments recorded in the accompanying Consolidated Balance Sheet were as follows:

	December 31, 2022	December 31, 2021
Asset Derivatives		
Derivatives designated as hedging instruments:		
Current – financial contract	$ 20	$ –
Total derivatives designated as hedging instruments	$ 20	$ –
Derivatives not designated as hedging instruments:		
Current – financial contracts	$ 32	$ 2
Total derivatives not designated as hedging instruments	$ 32	$ 2
Total asset derivatives	$ 52	$ 2
Liability Derivatives		
Derivatives designated as hedging instruments:		
Current – power contracts	$ 195	$ 262
Non-current – power contracts	1,017	1,028
Total derivatives designated as hedging instruments	$ 1,212	$ 1,290
Derivatives not designated as hedging instruments:		
Current – embedded credit derivative	$ –	$ 1
Non-current – embedded credit derivative	–	2
Total derivatives not designated as hedging instruments	$ –	$ 3
Total liability derivatives	$ 1,212	$ 1,293

The following table shows the net fair values of the Level 3 derivative instruments at December 31, 2022 and the effect on these amounts of a hypothetical change (increase or decrease of 10%) in the market prices or rates that existed as of December 31, 2022:

	Fair value asset (liability)	Index change of +/-10%
Power contracts	$ (1,212)	$ 329
Embedded credit derivative	–	–
Financial contracts	52	6

The following tables present a reconciliation of activity for Level 3 derivative instruments:

	Assets	Liabilities	
2022	**Financial contracts**	**Power contracts**	**Embedded credit derivative**
January 1, 2022			
Total gains or losses included in:	$ 2	$ 1,290	$ 3
Sales (realized)	–	(345)	–
Other income, net (unrealized)	171	–	(3)
Other comprehensive (income) loss (unrealized)	20	267	–
Settlements and other	(141)	–	–
December 31, 2022	$ 52	$ 1,212	$ –
Change in unrealized gains or losses included in earnings for derivative instruments held at December 31, 2022:			
Other income, net	$ 171	$ –	$ (3)

	Assets		Liabilities	
2021	Financial contract	Power contracts	Financial contract	Embedded credit derivative
January 1, 2021	$ –	$ 814	$ 1	$ 23
Total gains or losses included in:				
Sales (realized)	–	(277)	–	–
Cost of goods sold (realized)	(6)	–	(8)	–
Other (income) expenses, net (unrealized/realized)	7	–	–	(20)
Other comprehensive loss (unrealized)	–	753	6	–
Other	1	–	1	–
December 31, 2021	$ 2	$ 1,290	$ –	$ 3
Change in unrealized gains or losses included in earnings for derivative instruments held at December 31, 2021:				
Other (income) expenses, net	$ 5	$ –	$ (1)	$ (19)

Derivatives Designated As Hedging Instruments – Cash Flow Hedges

Assuming market rates remain constant with the rates at December 31, 2022, a realized loss of $195 related to power contracts is expected to be recognized in Sales over the next 12 months.

Material Limitations

The disclosures with respect to commodity prices and foreign currency exchange risk do not consider the underlying commitments or anticipated transactions. If the underlying items were included in the analysis, the gains or losses on the futures contracts may be offset. Actual results will be determined by several factors that are not under Alcoa Corporation's control and could vary significantly from those factors disclosed.

Alcoa Corporation is exposed to credit loss in the event of nonperformance by counterparties on the above instruments, as well as credit or performance risk with respect to its hedged customers' commitments. Alcoa Corporation does not anticipate nonperformance by any of these parties. Contracts are with creditworthy counterparties and are further supported by cash, treasury bills, or irrevocable letters of credit issued by carefully chosen banks. In addition, various master netting arrangements are in place with counterparties to facilitate settlement of gains and losses on these contracts.

Other Financial Instruments. The carrying values and fair values of Alcoa Corporation's other financial instruments were as follows:

December 31,	2022 Carrying value	2022 Fair value	2021 Carrying value	2021 Fair value
Cash and cash equivalents	$ 1,363	$ 1,363	$ 1,814	$ 1,814
Restricted cash	111	111	110	110
Short-term borrowings	–	–	75	75
Long-term debt due within one year	1	1	1	1
Long-term debt, less amount due within one year	1,806	1,744	1,726	1,865

Cash and cash equivalents and Restricted cash. The carrying amounts approximate fair value because of the short maturity of the instruments. The fair value amounts for Cash and cash equivalents and Restricted cash were classified in Level 1 of the fair value hierarchy.

Short-term borrowings and Long-term debt, including amounts due within one year. The fair value of Long-term debt, less amount due within one year was based on quoted market prices for public debt and on interest rates that are currently available to Alcoa Corporation for issuance of debt with similar terms and maturities for non-public debt. The fair value amounts for all Short- term borrowings and Long-term debt were classified in Level 2 of the fair value hierarchy.

Q. INCOME TAXES

Provision for income taxes. The components of Income before income taxes were as follows:

	2022	2021	2020
Domestic	$ (652)	$ (663)	$ (328)
Foreign	1,354	1,862	501
Total	$ 702	$ 1,199	$ 173

Provision for income taxes consisted of the following:

	2022	2021	2020
Current:			
Federal	$ –	$ 8	$ 2
Foreign	445	473	211
State and local	–	1	–
	$ 445	$ 482	$ 213
Deferred:			
Federal	(3)	6	–
Foreign	222	141	(26)
State and local	–	–	–
	$ 219	$ 147	$ (26)
Total	$ 664	$ 629	$ 187

Federal includes U.S. income taxes related to foreign income.

A reconciliation of the U.S. federal statutory rate to Alcoa's effective tax rate was as follows:

	2022	2021	2020
U.S. federal statutory rate	21.0%	21.0%	21.0%
Changes in valuation allowances	76.7	23.4	168.3
Taxes on foreign operations – rate differential	9.9	10.8	34.5
Tax on foreign operations – other	1.3	1.7	(0.7)
Non-controlling interest	0.8	0.5	1.6
Uncertain tax positions	0.4	–	(21.5)
Impacts of the TCJA	–	2.0	(88.8)
Adjustment of prior year income taxes	–	–	(2.5)
Equity (loss) income	(2.0)	(2.5)	2.0
Tax holidays	(5.2)	(2.8)	(1.9)
Internal legal entity reorganizations	(9.0)	–	–
Other	0.7	(1.6)	(3.9)
Effective tax rate	94.6%	52.5%	108.1%

In the fourth quarter of 2020, the Supreme Court of Spain ruled in favor of Alcoa regarding the 2006 through 2009 tax year assessment. As a result, the reserve for Uncertain tax positions that was established in 2018 was released in 2020.

On December 22, 2017, U.S. tax legislation known as the U.S. Tax Cuts and Jobs Act of 2017 (the TCJA) was enacted. In 2018, the Company made an accounting policy election to include as a period cost the tax impact generated by including Global Intangible Low-Taxed Income provisions (GILTI) in U.S. taxable income. During 2020, the U.S. Treasury Department finalized regulations implementing the GILTI provisions of the TCJA. Included in these regulations is an exclusion from GILTI for income subject to a high rate of foreign tax, which permits taxpayers to elect to apply the exception to previously filed tax returns. During 2020, an amended tax return was filed for 2018 to make this election. As a result, the Company recorded a tax benefit of ($138) in 2020 to reflect the re-establishment of certain U.S. Federal net operating loss carryforwards and a corresponding tax charge of $138 to record a full valuation allowance against the increased deferred tax asset.

Certain income earned by AWAB is eligible for a tax holiday, which decreases the tax rate on this income from 34% to 15.25%, which will result in future cash tax savings. The holiday related to production at the Alumar refinery will end on December 31, 2027, and the holiday related to the operation of the Juruti (Brazil) bauxite mine will end on December 31, 2026. In 2020, deferred tax assets expected to reverse in the holiday period were revalued at the holiday rate. This resulted in a discrete income tax charge of $15 in 2020. In 2021, it was determined that the deferred taxes associated with the tax holiday would be fully exhausted within the holiday period and the amounts were therefore maintained on the balance sheet at the holiday tax rate. In 2022, the Company's projection of the reversal of deferred tax assets during the holiday tax period was lowered, and as a result, the remainder was revalued at the statutory rate of 34%, resulting in a discrete income tax benefit of $33, which is included in Tax holidays, above.

In October 2022, Alcoa completed the liquidation of Alcoa Saudi Rolling Inversiones S.L. (ASRI), a wholly owned subsidiary that previously held the Company's investment in the Ma'aden Rolling Company. This liquidation resulted in a deductible loss in the Netherlands and a tax benefit of $94 was recognized in 2022, however, this tax benefit was substantially offset by a valuation allowance.

In December 2022, Alcoa commenced an internal reorganization to reduce its number of legal entities in Norway from four to one to simplify accounting and treasury functions and reduce external costs. As a result of the simplification, the Company recorded a deferred tax expense of $30 in 2022.

Deferred income taxes. The components of deferred tax assets and liabilities based on the underlying attributes without regard to jurisdiction were as follows:

	2022		2021	
December 31,	**Deferred tax assets**	**Deferred tax liabilities**	**Deferred tax assets**	**Deferred tax liabilities**
Tax loss carryforwards	$ 1,781	$ –	$ 1,554	$ –
Employee benefits	297	–	409	–
Derivatives and hedging activities	283	24	345	–
Loss provisions	174	–	214	–
Depreciation	128	336	128	425
Interest	127	2	105	1
Investment basis differences	75	–	117	–
Lease assets and liabilities	24	23	26	22
Tax credit carryforwards	23	–	26	–
Deferred income/expense	10	153	2	135
Other	36	–	38	–
	$ 2,958	$ 538	$ 2,964	$ 583
Valuation allowance	(2,333)	–	(2,062)	–
Total	$ 625	$ 538	$ 902	$ 583

The following table details the expiration periods of the deferred tax assets presented above:

December 31, 2022	**Expires within 10 years**	**Expires within 11-20 years**	**No expiration**	**Other**	**Total**
Tax loss carryforwards	$ 298	$ 364	$ 1,119	$ –	$ 1,781
Tax credit carryforwards	23	–	–	–	23
Other	–	–	142	1,012	1,154
Valuation allowance	(321)	(363)	(1,141)	(508)	(2,333)
Total	$ –	$ 1	$ 120	$ 504	$ 625

Deferred tax assets with no expiration may still have annual limitations on utilization. Other represents deferred tax assets whose expiration is dependent upon the reversal of the underlying temporary difference.

The total deferred tax asset (net of valuation allowance) is supported by projections of future taxable income exclusive of reversing temporary differences and taxable temporary differences that reverse within the carryforward period. The composition of Alcoa's net deferred tax asset by jurisdiction as of December 31, 2022 was as follows:

	Domestic	Foreign	Total
Deferred tax assets	$ 964	$ 1,994	$ 2,958
Valuation allowance	(897)	(1,436)	(2,333)
Deferred tax liabilities	(67)	(471)	(538)
Total	$ –	$ 87	$ 87

The Company has several income tax filers in various foreign countries. Of the $87 net deferred tax asset included under the Foreign column in the table above, approximately 85% relates to five of Alcoa's income tax filers (the "Foreign Filers") as follows: a $108 net deferred tax asset for Alcoa Canada Company in Canada; a $96 net deferred tax asset for AWAB in Brazil; a $43 net deferred tax asset for Alcoa Lauralco Management Company in Canada; a $33 net deferred tax asset for Alcoa Wolinbec Company in Canada; and, a $207 net deferred tax liability for AofA in Australia.

The future realization of the net deferred tax asset for each of the Foreign Filers was based on projections of the respective future taxable income (defined as the sum of pretax income, other comprehensive income, and permanent tax differences), exclusive of reversing temporary differences and carryforwards. The realization of the net deferred tax assets of the Foreign Filers is not dependent on any future tax planning strategies.

The Foreign Filers do not have a history of tax loss carryforwards expiring unused. Additionally, tax loss carryforwards have an infinite life under the income tax code in Brazil. However, utilization of an existing tax loss carryforward is limited to 30% of taxable income in a particular year in Brazil.

Accordingly, management concluded that the net deferred tax assets of the Foreign Filers referenced above will more likely than not be realized in future periods, resulting in no need for a partial or full valuation allowance as of December 31, 2022.

In December 2022, Alcoa recorded a valuation allowance of $217 against the net deferred tax assets of Alumínio, of which $150 related to the balance as of December 31, 2021. The 2022 full valuation allowance for Alumínio was a result of Alumínio's three-year cumulative loss position for the period ended December 31, 2022. Although the Company entered into aluminum contracts to manage exposures associated with the restart, these contracts were held by another legal entity, and the associated realized gains are not available to Alumínio to offset the restart losses. While management believes Alumínio will return to profitability in the future with the restart of the Alumar smelter, current volatility in the market does not provide a reliable basis for concluding that it is more likely than not that Alumínio's net deferred tax assets, which consist primarily of tax loss carryforwards with indefinite life, will be realized. Alumar smelter profitability in future periods could prompt the Company to evaluate the realizability of the deferred tax asset and assess the possibility of a reversal of the valuation allowance, which could have a significant impact on net income in the quarter the valuation allowance is reversed.

The Company's subsidiaries in Iceland have a full valuation allowance recorded against deferred tax assets, which was established in 2015 and 2017, as the Company believed it was more likely than not that these tax benefits would not be realized. Strong market conditions in the first half of 2022 prompted management to reevaluate the realizability of the deferred tax asset and assess the possibility of a reversal of the valuation allowance. However, after weighing all available positive and negative evidence as of December 31, 2022, management's position continues to be that it is more likely than not that Alcoa Corporation would not realize the benefit of these deferred tax assets and continues to have a full valuation allowance recorded against Iceland deferred tax assets.

In 2021, Alcoa recorded a valuation allowance of $103 against the net deferred tax assets of Alúmina Española, S.A. (Española). Management concluded that it was more likely than not that Española's net deferred tax assets, which consisted primarily of tax loss carryforwards, would not be realized as the entity's sole operating asset, the San Ciprián refinery, was in a three-year cumulative loss position for the period ended December 31, 2021. This cumulative loss position was the result of recent operating losses due to the high energy costs in Spain and the impact of the refinery workers' strike on the fourth quarter of 2021. After weighing all available positive and negative evidence as of December 31, 2022, management's position continues to be that it is more likely than not that Alcoa Corporation would not realize the benefit of these deferred tax assets and continues to have a full valuation allowance recorded against the deferred tax assets.

The following table details the changes in the valuation allowance:

December 31,	2022	2021	2020
Balance at beginning of year	$ (2,062)	$ (2,127)	$ (1,778)
Establishment of new allowances[(1)]	(150)	(103)	–
Net change to existing allowances[(2)]	(151)	139	(315)
Foreign currency translation	30	29	(34)
Balance at end of year	$ (2,333)	$ (2,062)	$ (2,127)

(1) This line item reflects valuation allowances initially established as a result of a change in management's judgment regarding the realizability of deferred tax assets.

(2) This line item reflects movements in previously established valuation allowances, which increase or decrease as the related deferred tax assets increase or decrease. Such movements occur as a result of remeasurement due to a tax rate change and changes in the underlying attributes of the deferred tax assets, including expiration of the attribute and reversal of the temporary difference that gave rise to the deferred tax asset.

Undistributed net earnings. Certain earnings of Alcoa's foreign subsidiaries are deemed to be permanently reinvested outside the United States. The cumulative amount of Alcoa's foreign undistributed net earnings deemed to be permanently reinvested was approximately $2,794 as of December 31, 2022. Alcoa Corporation has several commitments and obligations related to the Company's operations in various foreign jurisdictions; therefore, management has no plans to distribute such earnings in the foreseeable future. Alcoa Corporation continuously evaluates its local and global cash needs for future business operations and anticipated debt facilities, which may influence future repatriation decisions. If these earnings were distributed in the form of dividends or otherwise, we could be subject to foreign income or withholding taxes and state income taxes. Due to the uncertainty of the manner in which the undistributed earnings would be brought back to the United States and the tax laws in effect at that time, it is not practicable to estimate the tax liability that might be incurred if such earnings were remitted to the U.S.

Unrecognized tax benefits. Alcoa and its subsidiaries file income tax returns in the U.S. federal jurisdiction and various foreign and U.S. state jurisdictions. With few exceptions, the Company is not subject to income tax examinations by tax authorities for years prior to 2014. The U.S. federal income tax filings of the Company's U.S. consolidated tax group have been examined through the 2018 tax year. Foreign jurisdiction tax authorities are in the process of examining income tax returns of several of Alcoa's subsidiaries for various tax years. Excluding the Australia tax matter discussed in Note S, the period under foreign examination includes the income tax years from 2012 through 2021. For U.S. state income tax purposes, the Company and its subsidiaries remain subject to income tax examinations for the 2017 tax year and forward.

In the third quarter of 2020, AofA paid approximately $74 (A$107) to the ATO related to the tax dispute described in Note S. Upon payment, AofA recorded a non-current prepaid tax asset, as the Company continues to believe it is more likely than not that AofA's tax position will be sustained and therefore is not recognizing any tax expense in relation to this matter. In accordance with Australian tax laws, the initial interest assessment and additional interest are deductible against AofA's taxable income resulting in approximately $169 (A$219) in 2020, $14 (A$19) in 2021, and $15 (A$22) in 2022 in lower cash tax payments. Interest compounded in future years is also deductible against AofA's income in the respective periods. If AofA is ultimately successful, the interest deduction would become taxable as income in the year the dispute is resolved. In addition, should the ATO decide in the interim to reduce any interest already assessed, the reduction would be taxable as income at that point in time. During 2022, AofA continued to record its tax provision and tax liability without effect of the ATO assessment, since it expects to prevail. The tax payable will remain on AofA's balance sheet as a non-current liability, increased by the tax effect of subsequent periods' interest deductions, until dispute resolution, which is expected to take several years. The non-current liability resulting from the cumulative interest deductions was approximately $174 (A$260) and $174 (A$238) at December 31, 2022 and 2021, respectively.

The reserve balance for unrecognized tax benefits is included in Non-current income taxes on the Consolidated Balance Sheet. A reconciliation of the beginning and ending amount of unrecognized tax benefits (excluding interest and penalties) was as follows:

December 31,	**2022**	**2021**	**2020**
Balance at beginning of year	$ 4	$ 4	$ 29
Additions for tax positions of prior years	2	–	–
Reductions for tax positions of prior years	–	–	(26)
Expiration of the statute of limitations	(1)	–	–
Foreign currency translation	–	–	1
Balance at end of year	$ 5	$ 4	$ 4

For all periods presented, a portion of the balance at end of year pertains to state tax liabilities, which are presented before any offset for federal tax benefits. The effect of unrecognized tax benefits, if recorded, that would impact the annual effective tax rate for 2022, 2021, and 2020 would be 1%, 0%, and 3%, respectively, of Income before income taxes. In 2018, the Company recorded a charge of $30 (€26), including $10 (€9) for interest, in Provision for income taxes on the accompanying Statement of Consolidated Operations to establish a liability for its 49% share of the estimated loss on a disputed income tax matter (see Spain in the Tax section of Note S). In 2020, the Company received a favorable final ruling in the Supreme Court of Spain on the Spain tax matter and recorded income of $32 (€26) from the reversal of the 2018 entry and the interest expense accrued through 2019. This change is reflected in the above table as Reductions for tax positions of prior years in the amount of $21 (€17), which is exclusive of interest previously charged to expense. The remainder of the change in Reductions for tax positions of prior years is primarily related to changes in Brazil income tax positions. There were no material changes in Reductions for tax positions of prior years in 2021 or 2022. Alcoa does not anticipate that changes in its unrecognized tax benefits will have a material impact on the Statement of Consolidated Operations during 2023.

It is the Company's policy to recognize interest and penalties related to income taxes as a component of the Provision for income taxes on the accompanying Statement of Consolidated Operations. In 2022, 2021, and 2020 Alcoa recognized $1, $0, and $0, in interest and penalties, respectively. Due to the expiration of the statute of limitations, settlements with tax authorities, and refunded overpayments, the Company also recognized interest income of $1, $0, and $13 in 2022, 2021, and 2020, respectively. As of December 31, 2022 and 2021, the amount accrued for the payment of interest and penalties was $3 and $2, respectively.

On August 16, 2022, the U.S. enacted the Inflation Reduction Act of 2022, which includes a 15% minimum tax on book income of certain large corporations, a 1% excise tax on net stock repurchases after December 31, 2022, and several tax incentives to promote clean energy. This legislation did not have a material impact on the Company's Consolidated Financial Statements as of December 31, 2022.

R. ASSET RETIREMENT OBLIGATIONS

Alcoa records AROs related to legal obligations associated with the standard operation of bauxite mines, alumina refineries, and aluminum smelters. These AROs consist primarily of costs associated with mine reclamation, closure of bauxite residue areas, spent pot lining disposal, and landfill closures. The Company also recognizes AROs for the disposal of regulated waste materials related to the demolition of facilities and for any significant lease restoration obligations, if required by a lease agreement.

The following table details the carrying value of recorded AROs by major category, of which $117 and $116 was classified as a current liability as of December 31, 2022 and 2021, respectively:

December 31,		**2022**		**2021**
Closure of bauxite residue areas	$	342	$	274
Mine reclamation		279		255
Spent pot lining disposal		115		107
Demolition		61		72
Landfill closure		31		30
Balance at end of year	$	828	$	738

The following table details the changes in the total carrying value of recorded AROs:

December 31,		**2022**		**2021**
Balance at beginning of year	$	738	$	753
Accretion expense		20		20
Liabilities incurred		224		101
Payments		(114)		(101)
Reversals of previously recorded liabilities		(12)		(6)
Foreign currency translation and other		(28)		(29)
Balance at end of year	$	828	$	738

Liabilities incurred in 2022 include:

- $81 related to improvements required on both operating and non-operating bauxite residue areas at the Poços de Caldas and Alumar (Brazil) refineries for changes in closure estimates and to comply with updated impoundment regulations in the regions;
- $79 for new mining areas opened during the year and higher estimated mine reclamation costs;
- $28 related to spent pot lining treatment and disposal;
- $18 for bauxite residue areas related to water management at non-operating bauxite residue areas and changes in engineering designs for closure of operating bauxite residue areas;
- $15 related to the closure of the previously curtailed magnesium smelter in Addy (Washington). The facility has been fully curtailed since 2001; and,
- $3 related to accruals for demolition projects at closed sites.

The additional accruals were primarily recorded with corresponding capitalized asset retirement costs (see Note B) except for $72 related to non-operating bauxite reside areas which were recorded to Cost of Goods Sold at Poços de Caldas and Alumar and $34 related to the closure of the smelter in Addy (Washington) and adjustments to other previously closed sites which were recorded to Restructuring and other charges, net on the accompanying Statement of Consolidated Operations (see Note D).

Liabilities incurred in 2021 include:

- $30 for new mine areas opened during the year and higher estimated mine reclamation costs, partially driven by increased complexity of reclamation areas due to steeper mine pits and grades;
- $28 for bauxite residue areas, including new bauxite residue areas as well as changes in engineering designs for both operating and non-operating bauxite residue areas;
- $17 related to spent pot lining treatment and disposal;
- $16 related to the closure of the Wenatchee smelter announced in the fourth quarter of 2021;
- $5 related to the closure of the Lake Charles anode facility announced in the third quarter of 2021; and,
- $5 related to changes in scope for landfill closures.

The additional accruals were primarily recorded with corresponding capitalized asset retirement costs (see Note B) except for $23 related to closed sites which were recorded to Restructuring and other charges, net on the accompanying Statement of Consolidated Operations (see Note D).

In 2022, reversals of previously recorded liabilities included a reversal of $12 due to the completion of demolition projects at numerous permanently closed sites. In 2021, reversals of previously recorded liabilities included a reversal of $5 due to the determination that previously estimated demolition costs were not required at the previously closed Tennessee site.

S. CONTINGENCIES AND COMMITMENTS

Contingencies

Environmental Matters

Alcoa Corporation participates in environmental assessments and cleanups at several locations. These include currently or previously owned or operated facilities and adjoining properties, and waste sites, including Superfund (Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)) sites.

Alcoa Corporation's environmental remediation reserve balance reflects the most probable costs to remediate identified environmental conditions for which costs can be reasonably estimated. The following table details the changes in the carrying value of recorded environmental remediation reserves:

Balance at December 31, 2019	$ 335
Liabilities incurred	7
Cash payments	(19)
Reversals of previously recorded liabilities	(1)
Balance at December 31, 2020	322
Liabilities incurred	21
Cash payments	(23)
Reversals of previously recorded liabilities	(17)
Foreign currency translation and other	6
Balance at December 31, 2021	309
Liabilities incurred	32
Cash payments	(26)
Reversals of previously recorded liabilities	(30)
Foreign currency translation and other	(1)
Balance at December 31, 2022	$ 284

At December 31, 2022 and 2021, the current portion of the remediation reserve balance was $58 and $44, respectively.

In 2022, the Company incurred liabilities of $32 primarily related to $14 for the closure of the previously curtailed magnesium smelter in Addy (Washington), $6 for estimates for environmental remediation at the Point Henry site, $4 for a new phase of work at the former East St. Louis site and $9 for environmental activities at various sites. These charges are recorded in Cost of goods sold and Restructuring and other charges, net (see Note D) on the accompanying Statement of Consolidated Operations. Payments related to remediation expenses applied against the reserve were $26 in 2022. These amounts include mandated expenditures as well as those not required by any regulatory authority or third party. Further, the Company recorded a reversals of reserves of $30 during 2022, primarily related to changes in estimates for site remediation at Massena East of $18 and Suralco of $5, and completion of remediation at a previously closed site in Brazil of $6.

In 2021, the Company incurred liabilities of $21 primarily related to remediation design considerations at the Longview site in Washington, closure of the Wenatchee aluminum smelter in Washington, environmental activities at the Point Comfort site in Texas, closure of the anode plant at the Lake Charles site in Louisiana, and wetlands mitigation at the Longview site in Washington, as well as other increases for ongoing monitoring and maintenance at various sites. These charges are primarily recorded in Cost of goods sold and Restructuring and other charges, net on the accompanying Statement of Consolidated Operations. These amounts include mandated expenditures as well as those not required by any regulatory authority or third-party. Further, the Company recorded reversals of reserves of $17 related to:

- $7 due to the determination that previously estimated site remediation is not required at the previously closed Tennessee site;
- $5 due to lower costs for waste treatment at a previously closed Suriname site; and,
- $5 due to lower costs for site remediation related to a previously closed site in Brazil.

In 2020, the Company incurred liabilities of $7 which were primarily related to ongoing remediation work at various sites. The additional accruals were recorded to Cost of goods sold except for $1 which was recorded to Restructuring and other charges, net on the accompanying Statement of Consolidated Operations (see Note D).

The estimated timing of cash outflows from the environmental remediation reserve at December 31, 2022 is as follows:

2023	$	58
2024-2027		169
Thereafter		57
Total	$	284

Reserve balances at December 31, 2022 and 2021, associated with significant sites with active remediation underway or for future remediation were $234 and $247, respectively. In management's judgment, the Company's reserves are sufficient to satisfy the provisions of the respective action plans. Upon changes in facts or circumstances, a change to the reserve may be required. The Company's significant sites include:

Poços de Caldas, Brazil – The reserve associated with the 2015 closure of the Alcoa Alumínio S.A. smelter in Poços de Caldas, Brazil, is for remediation of historic smelting operations, spent potlining storage and disposal areas.

Fusina and Portovesme, Italy – Alcoa Corporation's subsidiary Alcoa Trasformazioni S.r.l. has remediation projects underway for its closed smelter sites at Fusina and Portovesme which have been approved by the Italian Ministry for Ecologic Transition (MET). Soil remediation at the Fusina site was mostly completed in the first half of 2022, however, the scope of the project was changed to include the northwest area of the site; approval of the change is expected in the second half of 2023 with completion by the end of 2024. Soil remediation at the Portovesme site was completed in the first half of 2022.

Suriname – The reserve associated with the 2017 closure of the Suralco refinery and bauxite mine is for treatment and disposal of refinery waste and soil remediation. The work began in 2017 and is expected to be completed at the end of 2025.

Hurricane Creek, Arkansas – The reserve associated with the 1990 closure of two mining areas and refineries near Hurricane Creek, Arkansas is for ongoing monitoring and maintenance for water quality surrounding the mine areas and residue disposal areas.

Massena, New York – The reserve associated with the 2015 closure of the Massena East smelter by the Company's subsidiary, Reynolds Metals Company, is for subsurface soil remediation to be performed after demolition of the structures. Remediation work commenced in 2021 and will take four to eight years to complete.

Point Comfort, Texas – The reserve associated with the 2019 closure of the Point Comfort alumina refinery is for disposal of industrial wastes contained at the site, subsurface remediation, and post-closure monitoring and maintenance. The final remediation plan is currently under review, which may result in a change to the existing reserve.

Sherwin, Texas – In connection with the 2018 settlement of a dispute related to the previously-owned Sherwin alumina refinery, the Company's subsidiary, Copano Enterprises LLC, accepted responsibility for the final closure of four bauxite residue waste disposal areas (known as the Copano facility). Work commenced on the first residue disposal area in 2018 and will take up to three additional years to complete, depending on the nature of its potential re-use. Other than ongoing maintenance and repair activities, work on the next three areas has not commenced but is expected to be completed by 2048, depending on its potential re-use.

Longview, Washington – In connection with a 2018 Consent Decree and Cleanup Action Plan with the State of Washington Department of Ecology, the Company's subsidiary, Northwest Alloys as landowner, accepted certain responsibilities for future remediation of contaminated soil and sediments at the site located near Longview, Washington. In December 2020, the lessee of the land, who was a partner in the remediation of the site, filed for bankruptcy and exited the site in January 2021. Remediation design changes for consolidation and remediation of the onsite industrial waste landfills, groundwater remediation, and post-closure monitoring and maintenance at the site was completed in 2021.

Addy, Washington – The reserve associated with the 2022 closure of the Addy magnesium smelter facility is for site-wide remediation and investigation and post-closure monitoring and maintenance. Remediation work is not expected to begin until 2024 and will take three to five years to complete. The final remediation plan is currently being developed, which may result in a change to the existing reserve.

Other Sites – The Company is in the process of decommissioning various other plants and remediating sites in several countries for potential redevelopment or to return the land to a natural state. In aggregate, there are approximately 30 remediation projects at these other sites that are planned or underway. These activities will be completed at various times in the future with the latest expected to be in 2026, after which ongoing monitoring and other activities may be required. At December 31, 2022 and 2021, the reserve balance associated with these activities was $50 and $62, respectively.

Tax

Brazil (AWAB) – In March 2013, AWAB was notified by the Brazilian Federal Revenue Office (RFB) that approximately $110 (R$220) of value added tax credits previously claimed were being disallowed and a penalty of 50% was assessed. Of this amount, AWAB received $41 (R$82) in cash in May 2012. The value added tax credits were claimed by AWAB for both fixed assets and export sales related to the Juruti bauxite mine and São Luís refinery expansion for tax years 2009 through 2011. The RFB has disallowed credits they allege belong to the consortium in which AWAB owns an interest and should not have been claimed by AWAB. Credits have also been disallowed as a result of challenges to apportionment methods used, questions about the use of the credits, and an alleged lack of documented proof. AWAB presented defense of its claim to the RFB on April 8, 2013. In February 2022, the RFB notified AWAB that it had inspected the value added tax credits claimed for 2012 and disallowed $4 (R$19). In its decision, the RFB allowed credits of $14 (R$65) that were similar to those previously disallowed for 2009 through 2011. In July 2022, the RFB notified AWAB that it had inspected the value added tax credits claimed for 2013 and disallowed $13 (R$70). In its decision, the RFB allowed credits of $16 (R$84) that were similar to those previously disallowed for 2009 through 2011. The decisions on the 2012 and 2013 credits provide positive evidence to support management's opinion that there is no basis for these credits to be disallowed. AWAB received the 2012 allowed credits with interest of $9 (R$44) in March 2022 and the 2013 allowed credits with interest of $6 (R$31) in August 2022. AWAB will continue to dispute the credits that were disallowed for 2012 and 2013. If AWAB is successful in this administrative process, the RFB would have no further recourse. If unsuccessful in this process, AWAB has the option to litigate at a judicial level. Separately from AWAB's administrative appeal, in June 2015, a new tax law was enacted repealing the provisions in the tax code that were the basis for the RFB assessing a 50% penalty in this matter. As such, the estimated range of reasonably possible loss for these matters is $0 to $45 (R$239). It is management's opinion that the allegations have no basis; however, at this time, the Company is unable to reasonably predict an outcome for this matter.

Australia (AofA) – In December 2019, AofA received a statement of audit position (SOAP) from the Australian Taxation Office (ATO) related to the pricing of certain historic third-party alumina sales. The SOAP proposed adjustments that would result in additional income tax payable by AofA. During 2020, the SOAP was the subject of an independent review process within the ATO. At the conclusion of this process, the ATO determined to continue with the proposed adjustments and issued Notices of Assessment (the Notices) that were received by AofA on July 7, 2020. The Notices asserted claims for income tax payable by AofA of approximately $143 (A$214). The Notices also included claims for compounded interest on the tax amount totaling approximately $474 (A$707).

On September 17, 2020, the ATO issued a position paper with its preliminary view on the imposition of administrative penalties related to the tax assessment issued to AofA. This paper proposed penalties of approximately $86 (A$128).

AofA disagreed with the Notices and with the ATO's proposed position on penalties. In September 2020, AofA lodged formal objections to the Notices. In the fourth quarter of 2020, AofA provided a submission on the ATO's imposition of interest and also submitted a response to the ATO's position paper on penalties. After the ATO completes its review of AofA's response to the penalties position paper, the ATO could issue a penalty assessment.

To date, AofA has not received a response to its submission on the ATO's imposition of interest or its response to the ATO's position paper on penalties.

Through February 1, 2022, AofA did not receive a response from the ATO on AofA's formal objections to the Notices and, on that date, AofA submitted statutory notices to the ATO requiring the ATO to make decisions on AofA's objections within a 60-day period. On April 1, 2022, the ATO issued its decision disallowing the Company's objections related to the income tax assessment, while the position on penalties and interest remains outstanding.

On April 29, 2022, AofA filed proceedings in the Australian Administrative Appeals Tribunal (AAT) against the ATO to contest the Notices, a process which could last several years. The AAT held the first directions hearing on July 25, 2022 ordering AofA to file its evidence and related materials by November 4, 2022, ATO to file its materials by April 14, 2023 and AofA to file reply materials by May 26, 2023. AofA filed its evidence and related materials on November 4, 2022. The Company maintains that the sales subject to the ATO's review, which were ultimately sold to Aluminium Bahrain B.S.C., were the result of arm's length transactions by AofA over two decades and were made at arm's length prices consistent with the prices paid by other third-party alumina customers.

In accordance with the ATO's dispute resolution practices, AofA paid 50% of the assessed income tax amount exclusive of interest and any penalties, or approximately $74 (A$107), during the third quarter 2020, and the ATO is not expected to seek further payment prior to final resolution of the matter. If AofA is ultimately successful, any amounts paid to the ATO as part of the 50% payment would be refunded. AofA funded the payment with cash on hand and recorded the payment within Other non-current assets as a non-current prepaid tax asset; the related December 31, 2022 balance is $72 (A$107).

Further interest on the unpaid tax will continue to accrue during the dispute. The initial interest assessment and the additional interest accrued are deductible against taxable income by AofA but would be taxable as income in the year the dispute is resolved if AofA is ultimately successful. AofA applied this deduction beginning in the third quarter of 2020 which reduced cash tax payments by approximately $169 (A$219) in 2020, $14 (A$19) in 2021, and $15 (A$22) in 2022. This amount has been reflected within Other non-current liabilities and deferred credits as a non-current accrued tax liability; the related December 31, 2022 balance is $174 (A$260).

The Company continues to believe it is more likely than not that AofA's tax position will be sustained and therefore is not recognizing any tax expense in relation to this matter. However, because the ultimate resolution of this matter is uncertain at this time, the Company cannot predict the potential loss or range of loss associated with the outcome, which may materially affect its results of operations and financial condition. References to any assessed U.S. dollar amounts presented in connection with this matter have been converted into U.S. dollars from Australian dollars based on the exchange rate in the respective period.

AofA is part of the Company's joint venture with Alumina Limited, an Australian public company listed on the Australian Securities Exchange. The Company and Alumina Limited own 60% and 40%, respectively, of the joint venture entities, including AofA.

Other

Spain – In July 2019, the Company completed the divestiture of the Avilés and La Coruña (Spain) aluminum facilities to PARTER Capital Group AG (PARTER) in a sale process endorsed by the Spanish government and supported by the workers' representatives following a collective dismissal process.

In connection with the divestiture, Alcoa committed to make financial contributions to the divested entities of up to $95; a total of $78 was paid through December 31, 2021.

In early 2020, PARTER sold a majority stake in the facilities to an unrelated party. Alcoa had no knowledge of the subsequent transaction prior to its announcement and on August 28, 2020, Alcoa filed a lawsuit with the Court of First Instance in Madrid, Spain asserting that the sale was in breach of the sale agreement between Alcoa and PARTER.

Related to this subsequent sale transaction, certain proceedings and investigations have been initiated by or at the request of the employees of the facilities against their current employers, the new owners of the current employers, and Alcoa, alleging that certain agreements from the 2019 collective dismissal process remain in force and that, under such agreements, Alcoa remains liable for certain related employment benefits. One such proceeding is a collective case before the Spanish National Court, filed on November 10, 2020, wherein the workers' representatives and employees are seeking to have the terms of a Collective Dismissal Agreement signed between Alcoa and the workers in January 2019 be fulfilled. Other proceedings include: a second collective claim filed in National Court on behalf of employees that were not affected by the 2019 collective dismissal process, numerous individual labor claims filed in the labor courts of Avilés and La Coruña and the initiation of a separate criminal investigation by the National Court.

On June 15, 2021, the Spanish National Court ruled that the collective dismissal agreement for the divested Avilés and La Coruña aluminum facilities should be applied to the situation of the claimant workers, and that Alcoa should be liable for the severance of those employees to the extent they were affected by the 2019 collective dismissal process. Alcoa appealed this ruling to the Supreme Court of Spain.

In July 2021, the Spanish National Court appointed a judicial director to oversee the facilities and later declared the facilities insolvent. In early 2022, the insolvency administrators appointed by the courts (one for each facility) announced their intention to collectively dismiss all employees at the two facilities.

In the first quarter of 2022, the Company recorded a charge of $77 in Restructuring and other charges, net to reflect its estimate for the agreement reached with the workers of the divested Avilés and La Coruña facilities (Spain) to settle various legal disputes related to the 2019 divestiture.

In April 2022, the Company received unanimous acceptance of the offer from all active workers of the divested Avilés and La Coruña facilities and a Global Settlement Agreement (GSA) was fully executed. The Company recorded a charge of $2 in Restructuring and other charges, net in the quarter ended June 30, 2022 to reflect an update to its estimated liability for the GSA. The Company expects to make cash payments in 2023 upon completion of certain administrative and judicial approvals.

General

In addition to the matters discussed above, various other lawsuits, claims, and proceedings have been or may be instituted or asserted against Alcoa Corporation, including those pertaining to environmental, safety and health, commercial, tax, product liability, intellectual property infringement, employment, and employee and retiree benefit matters, and other actions and claims arising out of the normal course of business. While the amounts claimed in these other matters may be substantial, the ultimate liability is not readily determinable because of the considerable uncertainties that exist. Accordingly, it is possible that the Company's liquidity or results of operations in a particular period could be materially affected by one or more of these other matters. However, based on facts currently available, management believes that the disposition of these other matters that are pending or asserted will not have a material adverse effect, individually or in the aggregate, on the financial position of the Company.

Commitments

Purchase Obligations. Alcoa Corporation is party to unconditional purchase obligations for energy that expire between 2040 and 2041. Commitments related to these contracts total $59 in 2023, $62 in 2024, $64 in 2025, $66 in 2026, $68 in 2027, and $716 thereafter. Expenditures under these contracts totaled $58 in 2022, $86 in 2021, and $79 in 2020. Additionally, the Company has entered into other purchase commitments for energy, raw materials, and other goods and services, which total $4,402 in 2023, $2,328 in 2024, $2,004 in 2025, $1,665 in 2026, $1,518 in 2027, and $10,392 thereafter.

AofA has a gas supply agreement to power its three alumina refineries in Western Australia which began in July 2020 for a 12-year period. The terms of this agreement required AofA to make a prepayment of $500 in two installments, the first of which was made in June 2015 for $300. The second installment of $200 was made in April 2016. At December 31, 2022, Alcoa Corporation had a total asset of $348 (A$519), which was included in Prepaid expenses and other current assets ($37) and Other non-current assets ($311) (see Note U) on the accompanying Consolidated Balance Sheet related to these prepayments. At December 31, 2021, Alcoa Corporation had a total asset of $417 (A$571), which was included in Prepaid expenses and other current assets ($40) and Other non-current assets ($377) (see Note U) on the accompanying Consolidated Balance Sheet.

Guarantees of Third Parties. As of December 31, 2022 and 2021, the Company had no outstanding potential future payments for guarantees issued on behalf of a third-party.

Bank Guarantees and Letters of Credit. Alcoa Corporation has outstanding bank guarantees and letters of credit related to, among others, energy contracts, environmental obligations, legal and tax matters, leasing obligations, workers compensation, and customs duties. The total amount committed under these instruments, which automatically renew or expire at various dates between 2023 and 2024, was $293 (includes $131 issued under a standby letter of credit agreement – see below) at December 31, 2022. Additionally, ParentCo has outstanding bank guarantees and letters of credit related to the Company of $14 at December 31, 2022. In the event ParentCo would be required to perform under any of these instruments, ParentCo would be indemnified by Alcoa Corporation in accordance with the Separation and Distribution Agreement. Likewise, the Company has outstanding bank guarantees and letters of credit related to ParentCo of $8 at December 31, 2022. In the event Alcoa Corporation would be required to perform under any of these instruments, the Company would be indemnified by ParentCo in accordance with the Separation and Distribution Agreement.

In August 2017, Alcoa Corporation entered into a standby letter of credit agreement, which expires on June 27, 2024 (extended in August 2018, May 2019, May 2021, and June 2022), with three financial institutions. The agreement provides for a $200 facility used by the Company for matters in the ordinary course of business. Alcoa Corporation's obligations under this facility are secured in the same manner as obligations under the Company's revolving credit facility. Additionally, this facility contains similar representations and warranties and affirmative, negative, and financial covenants as the Company's revolving credit facility (see Note M). As of December 31, 2022, letters of credit aggregating $131 were issued under this facility.

Surety Bonds. Alcoa Corporation has outstanding surety bonds primarily related to tax matters, contract performance, workers compensation, environmental-related matters, and customs duties. The total amount committed under these bonds, which automatically renew or expire at various dates between 2023 and 2027, was $174 at December 31, 2022. Additionally, ParentCo has outstanding surety bonds related to the Company of $11 at December 31, 2022. In the event ParentCo would be required to perform under any of these instruments, ParentCo would be indemnified by Alcoa Corporation in accordance with the Separation and Distribution Agreement. Likewise, the Company has outstanding surety bonds related to ParentCo of $3 at December 31, 2022. In the event Alcoa Corporation would be required to perform under any of these instruments, the Company would be indemnified by ParentCo in accordance with the Separation and Distribution Agreement.

T. LEASING

Management records a right-of-use asset and lease liability for several types of operating leases, including land and buildings, alumina refinery process control technology, plant equipment, vehicles, and computer equipment. These amounts are equivalent to the aggregate future lease payments on a discounted basis. The leases have remaining terms of less than one to 35 years. The discount rate applied to these leases is the Company's incremental borrowing rate based on the information available at the commencement date in determining the present value of lease payments, unless there is a rate implicit in the lease agreement. The Company does not have material financing leases.

Lease expense and operating cash flows include:

		2022		2021
Costs from operating leases	$	54	$	70
Variable lease payments	$	16	$	13
Short-term rental expense	$	2	$	3

The weighted average lease term and weighted average discount rate were as follows:

December 31,	**2022**	**2021**
Weighted average lease term for operating leases (years)	5.1	4.9
Weighted average discount rate for operating leases	5.6%	5.2%

The following represents the aggregate right-of-use assets and related lease obligations recognized in the Consolidated Balance Sheet:

December 31,		**2022**		**2021**
Properties, plants, and equipment, net	$	89	$	97
Other current liabilities		30		35
Other non-current liabilities and deferred credits		59		64
Total operating lease liabilities	$	89	$	99

New leases of $26 and $24 were added during the years ended December 31, 2022 and 2021, respectively.

The future cash flows related to the operating lease obligations as of December 31, 2022 were as follows:

Year Ending December 31,	
2023	$ 37
2024	25
2025	14
2026	11
2027	8
Thereafter	16
Total lease payments (undiscounted)	111
Less: discount to net present value	(22)
Total	$ 89

U. OTHER FINANCIAL INFORMATION

Interest Cost Components

	2022	**2021**	**2020**
Amount charged to expense	$ 106	$ 195	$ 146
Amount capitalized	3	6	9
	$ 109	$ 201	$ 155

Other (Income) Expenses, Net

	2022	2021	2020
Equity loss (gain)	$ 27	$ (105)	$ 46
Foreign currency losses, net	9	3	20
Net loss (gain) from asset sales	10	(354)	(173)
Net (gain) loss on mark-to-market derivative instruments (P)	(174)	(25)	11
Non-service costs – pension and OPEB (O)	60	47	108
Other, net	(50)	(11)	(4)
	$ (118)	$ (445)	$ 8

In 2021, Net loss (gain) from asset sales of $354 was primarily related to the sales of the Rockdale site, the Eastalco site, and the Warrick Rolling Mill (see Note C). In 2020, Net gain from asset sales included a $181 gain related to the sale of EES (see Note C).

In 2022, Other, net of $50 was primarily related to interest income for the Brazil value added tax credits (see Note S).

Other Non-current Assets

December 31,	2022	2021
Gas supply prepayment (S)	$ 311	$ 377
Prepaid gas transmission contract	285	304
Value added tax credits	294	215
Deferred mining costs, net	161	149
Prepaid pension benefit (O)	146	164
Goodwill (L)	145	144
Non-current restricted cash (see below)	56	106
Non-current prepaid tax asset (S)	72	78
Intangibles, net (L)	29	35
Other	94	92
	$ 1,593	$ 1,664

Prepaid gas transmission contract – As part of a previous sale transaction of an equity investment, Alcoa maintained access to approximately 30% of the Dampier to Bunbury Natural Gas Pipeline transmission capacity in Western Australia for gas supply to three alumina refineries. At December 31, 2022 and 2021, AofA had an asset of $285 and $304, respectively, representing prepayments made under the agreement for future gas transmission services.

Value added tax credits – The Value added tax (VAT) credits (federal and state) relate to two of the Company's subsidiaries in Brazil, AWAB and Alumínio, concerning the São Luís smelter and refinery and the Juruti mine. This refinery pays VAT on the purchase of goods and services used in the alumina production process. The credits generally can be utilized to offset the VAT charged on domestic sales of alumina and aluminum.

In March 2021, the Brazil Federal Supreme Court provided clarification on an earlier ruling that found the inclusion of state VAT within the federal VAT tax base to be unconstitutional. After receiving further clarification from the court in August 2021, the Company finalized the amount of its recovery claim and submitted the claim to the tax authorities in the fourth quarter and received acknowledgment of the claim in January 2022. As a result, in the fourth quarter of 2021, the Company recorded $95 of additional VAT credits in Other non-current assets, $47 payable to Arconic Corporation within Other non-current liabilities, $34 in Sales, and $14 of interest income within Other (income) expenses, net. The amount due to Arconic Corporation represents VAT payments related to an Arconic subsidiary previously owned by Alumínio for a portion of the claim years and covered under agreements related to the Separation Transaction (see Note A).

In the fourth quarter of 2018, after an assessment of the future realizability of the state VAT credits, the Company established an allowance on the accumulated state VAT credit balances and recorded a $107 charge in Restructuring and other charges, net, on the accompanying Statement of Consolidated Operations. With the restart of the Alumar smelter in São Luís, Brazil and its first metal sales in June 2022, the Company now has the ability to monetize these credits. In June 2022, the Company reversed the allowance with a credit of $83 to Restructuring and other charges, net and reversed the subsequent additions to the valuation allowance with a credit of $46 to Cost of goods sold (same accounts as when incurred).

Other Non-current Liabilities and Deferred Credits

December 31,	2022	2021
Non-current accrued tax liability (S)	$ 174	$ 174
Accrued compensation and retirement costs	95	120
Operating lease obligations (T)	59	64
Deferred energy credits	37	54
Value added tax credits payable to Arconic Corporation	51	47
Non-current restructuring reserve (D)	3	43
Deferred alumina sales revenue	28	36
Non-current site separation reserve (C)	–	26
Other	39	35
	$ 486	$ 599

Deferred energy credits – Deferred energy credits relate to cash received for 2018 and 2019 carbon dioxide emissions related to the San Ciprián smelter ($40) and refinery ($6), as well as the divested Avilés and La Coruña facilities ($7), from a governmental agency in Spain. During 2022, these credits were repaid and cash was received for 2021 San Ciprián smelter carbon dioxide emission credits ($30). The terms of the credits require the Company to comply with certain conditions for a period of three years. These deferred credits will be recognized as a reduction to Cost of goods sold once it is determined to be probable the Company will satisfy all conditions. Should the Company not meet all conditions during the three-year period, the credits will be repaid to the governmental agency.

During the fourth quarter of 2022, the Norwegian government approved a 2023 budget proposal that sets a floor for the carbon dioxide compensation to be paid in 2023 based on 2022 power purchased. The Company recorded an adjustment of $25 in the fourth quarter of 2022 to Cost of goods sold to reverse amounts accrued for 2022 credits earned through September 30, 2022 under the prior carbon dioxide compensation program.

Value added tax credits payable to Arconic Corporation – See, Other non-current assets – Value added tax credits, above.

Cash and Cash Equivalents and Restricted Cash

December 31,	2022	2021
Cash and cash equivalents	$ 1,363	$ 1,814
Current restricted cash	55	4
Non-current restricted cash	56	106
	$ 1,474	$ 1,924

On December 29, 2021, the Company announced the two-year curtailment of the San Ciprián aluminum smelter in Spain. As a result of the agreement reached between Alcoa and the San Ciprián workers' representatives, the Company has restricted cash of $103 to be made available in the future to cover capital expenditures and future restart costs associated with the planned restart at the end of the curtailment period.

Cash Flow Information

Cash paid for interest and income taxes was as follows:

	2022	2021	2020
Interest, net of amount capitalized	$100	$191	$135
Income taxes, net of amount refunded	504	152	183

V. SUBSEQUENT EVENTS

On February 23, 2023, the Board of Directors declared a quarterly cash dividend of $0.10 per share of the Company's common stock, to be paid on March 23, 2023 to stockholders of record as of the close of business on March 7, 2023.

On February 3, 2023, the Company reached an updated agreement with the workers' representatives to commence the restart process of the San Ciprián (Spain) aluminum smelter in phases beginning in January 2024. Alcoa plans that all pots will be restarted by October 1, 2025, and from October 1, 2025 until the end of 2026, the minimum production will be 75 percent of the annual capacity of 228 kmt. Under the terms of the updated agreement, the Company is responsible for certain employee obligations during the extended curtailment period. As a result, the Company will record charges of approximately $50 (pre- and after-tax) in the first quarter of 2023 in Restructuring and other charges, net on the Statement of Consolidated Operations. Cash outlays related to these obligations are expected in 2024 and 2025. In connection with the updated agreement, the Company made additional commitments of $78 for capital improvements at the site to be spent primarily between 2024 and 2025.

In January 2023, the Company reduced production at the Kwinana (Australia) refinery by approximately 30 percent in response to a domestic natural gas shortage in Western Australia due to production challenges experienced by key gas suppliers.

Beginning in January 2023, the financial information provided to the chief operating decision maker (CODM) for the activities of the bauxite mines and the alumina refineries was combined, and accordingly the Company changed its operating segments. Beginning with the first quarter of 2023, the Company will report its financial results in the following two segments: (i) Alumina, and (ii) Aluminum. Segment information for all prior periods presented will be updated to reflect the new segment structure.

B2. LETTER TO STAKEHOLDERS FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2022

Dear Stockholders,

The year 2022 was defined by volatility, both for Alcoa Corporation and the global commodity industry. The first half of the year saw historically high aluminum prices. But then global instability – partly driven by the war in Ukraine and the resulting European energy crisis – upended markets in the second half of the year.

The year and its study in contrasts gave us another opportunity to demonstrate the strength and resiliency of our business.

Across Alcoa, we have worked diligently to build a stronger foundation, and our work has made us a more agile and resilient business for the various phases of the commodity cycle. We are focused on delivering value today while continuing to focus on tomorrow.

RESPONDING TO SHORT-TERM CHALLENGES

Issues stemming from the widespread global instability in 2022 shocked the aluminum market, but we acted swiftly. We reduced some production capacity – when and where conditions warranted. For example, to mitigate exorbitant energy costs, we curtailed one-third of our production capacity at our smelter in Lista, Norway and worked to sign a more competitive energy agreement for the future.

Similarly, we also reduced the output at our alumina refinery in San Ciprián, Spain, due to high costs of natural gas. We also safely completed the curtailment of the smelter there in January of 2022, per the terms of an agreement signed in December of 2021. Since the curtailment, we have obtained two new wind-based power purchase agreements that can supply up to three-fourths of the electricity at the smelter's full capacity, assuming final permitting needed for construction. A progressive restart of the site is now slated to begin in January of 2024.

We also advanced strategic restarts of aluminum smelting capacity that we expect will bring value to our business, including Alumar in Brazil and Portland Aluminium, two smelter joint ventures we operate as majority owners.

Our decisive actions throughout the year helped our Company effectively mitigate the effect of rapidly changing market conditions, while still delivering against our strategic priorities.

Favorable market dynamics in the first two quarters, including higher aluminum and alumina pricing, yielded $1 billion in net income despite high raw materials, energy, and production costs. In the third and fourth quarters, we saw lower sales prices in alumina and aluminum and incurred restructuring related charges related to non-cash pension settlement charges, contributing to a full year net loss of $123 million.

Despite these challenges, we continue to be well-positioned with a strong balance sheet, ending the year with $1.4 billion in cash and net debt of $444 million and proportional adjusted net debt of $1.1 billion, as a result of our strategic, financial, and operational actions over the past several years that have strengthened the Company.

In 2022, we returned $572 million in capital to our stockholders through share repurchases and our quarterly cash dividend program.

SUPPORTING OUR LONG-TERM VISION

While we addressed short-term challenges, we continued to work on our long-term vision to reinvent the aluminum industry for a sustainable future.

We saw impressive year-over-year growth in sales volume from our Sustana™ line of low- carbon products, further underscoring the demand from customers who seek solutions to lower the carbon footprint in their supply chains. While still a small percentage of our overall volume, our sales of Sustana's low-carbon EcoLum™ metal grew more than four times the previous year, driven mostly by demand from the European market.

Importantly, we also made progress on our roadmap of breakthrough technologies. This includes our Refinery of the Future initiative, which seeks to adapt technologies used in other industries to alumina refining. The R&D work has the potential to further decarbonize the refining process, and the Australian Renewable Energy Agency has provided grants to assist with this work.

Meanwhile, our ELYSIS™ partnership continues to progress toward commercializing a carbon-free smelting process, first developed at Alcoa's Technical Center. The process eliminates direct greenhouse gas emissions from the traditional smelting process. Quantities of the ELYSIS metal, produced at R&D scale, have been used by top-tier brands including Audi and Apple.

ELYSIS and other technologies align with our ambition to reach net zero greenhouse gas emissions by 2050, supported by our mid-range climate goals. Today, 86 percent of our global smelting portfolio is powered by renewable energy.

For environmental, sustainable and governance criteria, Alcoa was again named a top tier aluminum industry producer by the Dow Jones Sustainability Indices, and we certified more of our locations in 2022 to the Aluminium Stewardship Initiative, the industry's most comprehensive, third-party system to verify responsible production.

LOOKING TO THE FUTURE

We remain optimistic about aluminum's long-term fundamentals. Our metal is a key component to modern life, and the structural factors in the aluminum market remain positive.

Aluminum is important to the ongoing transition to build electric vehicles and renewable energy infrastructure, helping society move toward a low-carbon future.

As we look forward to 2023 and beyond, our intent is to stay true to our values, deliver operational and commercial excellence with rigorous cost management and drive forward next- generation technologies via our technology roadmap.

We are honored to be part of a team of more than 13,000 employees working to deliver on our corporate purpose to turn raw potential into real progress.

Sincerely,

Steven W. Williams
Chairman of the Board

Roy C. Harvey
President and Chief Executive Officer

B3. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATION FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2022

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.

(dollars in millions, except per-share amounts, average realized prices, and average cost amounts; dry metric tons in millions (mdmt); metric tons in thousands (kmt))

FORWARD-LOOKING STATEMENTS

This report contains statements that relate to future events and expectations and as such constitute forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements include those containing such words as "aims," "ambition," "anticipates," "believes," "could," "develop," "endeavors," "estimates," "expects," "forecasts," "goal," "intends," "may," "outlook," "potential," "plans," "projects," "reach," "seeks," "sees," "should," "strive," "targets," "will," "working," "would," or other words of similar meaning. All statements by Alcoa Corporation that reflect expectations, assumptions or projections about the future, other than statements of historical fact, are forward-looking statements, including, without limitation, forecasts concerning global demand growth for bauxite, alumina, and aluminum, and supply/demand balances; statements, projections or forecasts of future or targeted financial results, or operating or sustainability performance (including our ability to execute on strategies related to environmental, social and governance matters); statements about strategies, outlook, and business and financial prospects; and statements about capital allocation and return of capital. These statements reflect beliefs and assumptions that are based on Alcoa Corporation's perception of historical trends, current conditions, and expected future developments, as well as other factors that management believes are appropriate in the circumstances.

Forward-looking statements are not guarantees of future performance and are subject to known and unknown risks, uncertainties, and changes in circumstances that are difficult to predict. Although Alcoa Corporation believes that the expectations reflected in any forward-looking statements are based on reasonable assumptions, it can give no assurance that these expectations will be attained and it is possible that actual results may differ materially from those indicated by these forward-looking statements due to a variety of risks and uncertainties. Such risks and uncertainties include, but are not limited to: (a) current and potential future impacts to the global economy and our industry, business and financial condition caused by various worldwide or macroeconomic events, such as the COVID-19 pandemic and the ongoing conflict between Russia and Ukraine, and related regulatory developments; (b) material adverse changes in aluminum industry conditions, including global supply and demand conditions and fluctuations in London Metal Exchange-based prices and premiums, as applicable, for primary aluminum and other products, and fluctuations in indexed-based and spot prices for alumina; (c) changes in global economic and financial market conditions generally, such as inflation, recessionary conditions, and interest rate increases, which may also affect Alcoa Corporation's ability to obtain credit or financing upon acceptable terms or at all; (d) unfavorable changes in the markets served by Alcoa Corporation; (e) the impact of changes in foreign currency exchange and tax rates on costs and results; (f) unfavorable changes in cost, quality, or availability of key inputs, including energy and raw materials, or uncertainty of or disruption to the supply chain including logistics; (g) the inability to execute on strategies related to or achieve improvement in profitability and margins, cost savings, cash generation, revenue growth, fiscal discipline, environmental- and social-related goals and targets (including due to delays in scientific and technological developments), or strengthening of competitiveness and operations anticipated from portfolio actions, operational and productivity improvements, technology advancements, and other initiatives; (h) the inability to realize expected benefits, in each case as planned and by targeted completion dates, from acquisitions, divestitures, restructuring activities, facility closures, curtailments, restarts, expansions, or joint ventures; (i) political, economic, trade, legal, public health and safety, and regulatory risks in the countries in which Alcoa Corporation operates or sells products; (j) labor disputes and/or work stoppages and strikes; (k) the outcome of contingencies, including legal and tax proceedings, government or regulatory investigations, and environmental remediation; (l) the impact of cyberattacks and potential information technology or data security breaches; (m) risks associated with long-term debt obligations; (n) the timing and amount of future cash dividends and share repurchases; (o) declines in the discount rates used to measure pension and other postretirement benefit liabilities or lower-than-expected investment returns on pension assets, or unfavorable changes in laws or regulations that govern pension plan funding; and, (p) the other risk factors discussed in Part 1 Item 1A of this Form 10-K and other reports filed by Alcoa Corporation with the U.S. Securities and Exchange Commission, including those described in this report.

Alcoa Corporation disclaims any obligation to update publicly any forward-looking statements, whether in response to new information, future events or otherwise, except as required by applicable law. Market projections are subject to the risks described above and other risks in the market.

OVERVIEW

Our Business

Alcoa Corporation (Alcoa or the Company) is a vertically integrated aluminum company comprised of bauxite mining, alumina refining, aluminum production (smelting and casting), and energy generation. Aluminum is a commodity that is traded on the London Metal Exchange (LME) and priced daily. Additionally, alumina is subject to market pricing through the Alumina Price Index (API), which is calculated by the Company based on the weighted average of a prior month's daily spot prices published by the following three indices: CRU Metallurgical Grade Alumina Price, Platts Metals Daily Alumina PAX Price, and FastMarkets Metal Bulletin Non-Ferrous Metals Alumina Index. As a result, the price of both aluminum and alumina is subject to significant volatility and, therefore, influences the operating results of Alcoa Corporation.

Through direct and indirect ownership, Alcoa Corporation has 27 operating locations in nine countries around the world, situated primarily in Australia, Brazil, Canada, Iceland, Norway, Spain, and the United States. Governmental policies, laws and regulations, and other economic factors, including inflation and fluctuations in foreign currency exchange rates and interest rates, affect the results of operations in these countries.

Business Update

In 2022, world events, including the on-going conflict between Russia and Ukraine, influenced costs for raw materials and created a global energy crisis, particularly in Europe. The Company saw significant decreases in market pricing for alumina and aluminum between the first and the second half of the year.

Despite the significant change in alumina and aluminum prices during 2022, the alumina and aluminum markets ended 2022 balanced or in a slight volume deficit, respectively, while the cost for raw materials remained high throughout the year. All direct material costs increased since the end of 2021, driven by inflation pressures and multiple supply chain disruptions.

Alcoa worked to offset negative market impacts, including the high costs of energy in Europe. The Company partially curtailed two facilities, adjusting production rates to approximately 50 percent of the 1.6 million metric tons of annual capacity at the San Ciprián alumina refinery in Spain due to high costs of natural gas, and curtailing one of three potlines at the Lista aluminum smelter in Norway due to high electricity costs. Additionally, in July, the Company curtailed one aluminum potline at Warrick Operations in the U.S. due to workforce shortages in the region, and sold the excess power into the market.

The Company also continued its work to support the planned restart of the San Ciprián smelter in Spain. Alcoa signed two power purchase agreements for wind-based electricity for up to approximately 75 percent of the smelter's power needs.

The Company continued to progress the full restart at the Alumar smelter in Brazil and in the fourth quarter 2022 completed the restart of some modest capacity at the Portland Aluminium joint venture in Australia. Those sites have competitive, multi-year energy agreements; with fully renewable power sources (hydropower) for the Alumar smelter.

Lower bauxite quality in areas where the Company is currently mining in Australia impacted production levels in 2022 at certain of the Australia refineries.

During 2022, the Company maintained a strong balance sheet and further reduced pension liabilities by completing a $1,000 transfer of obligations and related assets for certain U.S. retirees and their beneficiaries.

In 2019, the Company announced a five year strategic portfolio review of smelting and refining capacity to improve cost positioning, including curtailment, closure, or divestiture. Through 2021, Alcoa reached approximately 75 and 58 percent of its target to improve, curtail, close, or divest 1.5 and 4 million metric tons of smelting and refining capacity, respectively. While no actions were taken in 2022 related to these targets, the Company took actions in response to market conditions as noted above, and the strategic portfolio review is continuing.

Although 2022 was an unusual year with global events influencing energy and raw material costs, the Company continues to project strong long-term demand for aluminum, as a key material for a global economy with a growing focus on lower carbon dioxide emissions, including renewable energy infrastructure and transmission, electric and electric-intensive vehicles and packaging markets.

Even in a challenging market, the Company saw continued evidence of the growth of aluminum demand. In 2022, Alcoa saw a significant increase in year-over-year demand for its EcoLum aluminum, which is part of our Sustana brand, through both increased margins and deliveries while still a relatively small portion of the Company's overall sales volume. The year-over-year volume increase for EcoLum, which is aluminum produced with no more than 4.0 metric tons of carbon dioxide equivalents per metric ton of aluminum produced, grew more than four times over 2021, driven mostly by the European market.

Due to renewable energy sources and low carbon dioxide intensity in our operations, Alcoa believes that it is well positioned as a supplier of choice, especially in a world that is working to further reduce greenhouse gas emissions. The Company has a global refining system with the industry's lowest carbon dioxide intensity (per CRU Group's 2021 results published in third quarter 2022), and 86 percent of the Company's smelting portfolio was powered by renewable energy sources in 2022.

San Ciprián Smelter

In January 2022, Alcoa completed the curtailment of the San Ciprián aluminum smelter's 228 kmt of annual capacity while the casthouse continues to operate. The curtailment is a result of an agreement that was reached with the workers' representatives in December 2021 to suspend production until January 2024 due to exorbitant energy prices in Spain. In 2022, cash payments of $26 were made to reduce the related reserve for certain employee and contractual obligations that was recorded in December 2021. In connection with the agreement, the Company has restricted cash of $103 to be made available for $68 in capital improvements at the site and $35 in smelter restart costs.

During 2022, Alcoa signed two long-term power purchase agreements for wind-based electricity for up to approximately 75 percent of the San Ciprián smelter's power needs upon restart, although permitting approvals are required by the regional and national Spanish governments before construction can begin.

On February 3, 2023, the Company reached an updated agreement with the workers' representatives to commence the restart process in phases beginning in January 2024. Alcoa plans that all pots will be restarted by October 1, 2025, and from October 1, 2025 until the end of 2026, the minimum production will be 75 percent of the annual capacity of 228 kmt. Under the terms of the updated agreement, the Company is responsible for certain employee obligations during the extended curtailment period. As a result, the Company will record charges of approximately $50 (pre- and after-tax) in the first quarter of 2023 in Restructuring and other charges, net on the Statement of Consolidated Operations. Cash outlays related to these obligations are expected in 2024 and 2025. In connection with the updated agreement, the Company made additional commitments of $78 for capital improvements at the site to be spent primarily between 2024 and 2025.

During the second quarter of 2022, the Company repaid carbon dioxide credits related to the San Ciprián smelter. Spain has a compensatory mechanism for the indirect cost of carbon dioxide and provides associated credits. Upon receipt of the credits in each of the applicable years, the Company recorded the cash received as deferred income (liability) due to a three-year clawback provision based on continued operations and employment. In June 2021, the Spanish Ministry of Industry, Trade and Tourism (the Ministry) initiated the process to request repayment of 2018 and 2019 credits due to Alcoa's decision to implement the collective dismissal process and its potential impact on operations and employment at San Ciprián. Alcoa disagreed with the Ministry's position as the collective dismissal process was not concluded and qualifying operations and employment at San Ciprián were maintained during the relevant three-year period. The Company requested to suspend the payment of the claimed credits (and interest) in exchange for a bank guarantee. On April 26, 2022, the Spanish National Court rejected the Company's request and the Company made a repayment of approximately $41 (€37) for the 2018 and 2019 compensation credits and interest.

Alumar Smelter

On September 20, 2021, the Company announced its plan to restart its 268 kmt per year share of capacity at the Alumar smelter in São Luís, Brazil, which had been fully curtailed since 2015. Alcoa incurred restart expenses of $75 during 2022. The first metal sales occurred in the second quarter of 2022 and the Company continues to progress the restart of the smelter.

The restart leverages the site's integration with an alumina refinery, new long-term contracts for renewable energy and an available skilled workforce, as well as tax efficiencies and a strong U.S. dollar. With the completion of the planned restart, Alcoa will have approximately 76 percent of its 2.97 million metric tons of global aluminum smelting capacity operating.

Other Portfolio Actions

Kwinana – In January 2023, the Company reduced production at the Kwinana (Australia) refinery by approximately 30 percent in response to a domestic natural gas shortage in Western Australia due to production challenges experienced by key gas suppliers.

Portland – In October 2022, the Company completed the restart of 35 kmt (19 kmt Alcoa share) of previously curtailed annual capacity at the Portland aluminum smelter in Australia that was previously announced in November 2021. With the restart complete, the plant is operating at approximately 95 percent of its total capacity and Alcoa has approximately 186 kmt of consolidated annual capacity at Portland.

Lista – On August 30, 2022, the Company announced the curtailment of one third of the production capacity (31 kmt) at the Lista smelter in Norway to mitigate high energy costs for the site. The site was exposed to spot energy pricing, which had increased to above $600 per megawatt hour. In July 2022, the Company entered into a fixed price power agreement effective for the fourth quarter of 2022 through December 31, 2023. In February 2023, the agreement was amended with improved fixed pricing and lower volume commitments.

Warrick – On July 1, 2022, Alcoa curtailed one of the three operating smelting potlines (54 kmt) at its Warrick Operations site due to operational challenges stemming from labor shortages in the region.

Addy, Washington – In July 2022, Alcoa made the decision to permanently close the previously curtailed magnesium smelter in Addy (Washington). The facility has been fully curtailed since 2001. The Company recorded a charge of $29 to establish reserves for environmental and demolition obligations in Restructuring and other charges, net on the Statement of Consolidated Operations in the third quarter of 2022. Associated cash outlays are expected to be paid over the next three to five years.

MRN – On April 30, 2022, Alcoa completed the sale of its investment in MRN for proceeds of $10. An additional $30 in cash could be paid to the Company in the future if certain post-closing conditions related to future MRN mine development are satisfied. Related to this transaction, the Company recorded an asset impairment of $58 in the first quarter of 2022 in Restructuring and other charges, net on the Statement of Consolidated Operations. In addition, the Company entered into several bauxite offtake agreements with South32 to provide bauxite supply for existing long- term supply contracts.

Capital Returns

On July 20, 2022, Alcoa Corporation announced that its Board of Directors approved a new common stock repurchase program under which the Company may purchase shares of its outstanding common stock up to an aggregate transactional value of $500, depending on the Company's continuing analysis of market, financial, and other factors (the New Repurchase Program). The Company had $500 available for share repurchases at the end of 2021 from a prior authorization in October 2021. The share repurchase programs may be suspended or discontinued at any time and do not have predetermined expiration dates.

In 2022, the Company repurchased 8,565,200 shares of its common stock for $500 under the previously authorized program; the shares were immediately retired. As of the date of this report, the Company is currently authorized to repurchase up to a total of $500, in the aggregate, of its outstanding shares of common stock under the New Repurchase Program. Refer to Liquidity and Capital, for more information.

In each quarter of 2022, the Board of Directors declared a quarterly cash dividend of $0.10 per share of the Company's common stock, totaling $72 for the year.

Balance Sheet Actions

In the third quarter of 2022, the Company purchased group annuity contracts to transfer the obligation to pay remaining retirement benefits for approximately 4,400 retirees and beneficiaries from its U.S. defined benefit pension plans. The transfer of approximately $1,000 in both plan obligations and plan assets was completed in August 2022. As a result, Alcoa recognized a non-cash settlement loss of $617 (pre- and after-tax) in Restructuring and other charges, net on the Statement of Consolidated Operations. See Part II Item 2 of this Form 10-K in Note O to the Consolidated Financial Statements for additional information.

On June 27, 2022, the Company successfully amended and restated its Revolving Credit Facility, which includes terms that provide improved flexibility to execute on Alcoa's long-term strategies. Among other improvements, the Revolving Credit Facility released the collateral package that had previously secured the Revolving Credit Facility, which will continue so long as certain credit ratings are maintained, and provides a debt to capitalization ratio not to exceed 0.60 to 1.00 to replace the maximum leverage ratio upon a ratings upgrade to investment grade by Moody's or S&P. On July 26, 2022, Moody's upgraded the rating of ANHBV's senior unsecured notes to Baa3 (investment grade) from Ba1 and set the current outlook to stable. Refer to Liquidity and Capital, for more information.

OTHER MATTERS

During the fourth quarter of 2022, the Norwegian government approved a 2023 budget proposal that sets a floor for the carbon dioxide compensation to be paid in 2023 based on 2022 power purchased. The Company recorded an adjustment of $25 in the fourth quarter of 2022 to Cost of goods sold to reverse amounts accrued for 2022 credits earned through September 30, 2022 under the prior carbon dioxide compensation program.

On August 16, 2022, the U.S. enacted the Inflation Reduction Act of 2022, which includes a 15% minimum tax on book income of certain large corporations, a 1% excise tax on net stock repurchases after December 31, 2022, and several tax incentives to promote clean energy. This legislation did not have a material impact on the Company's Consolidated Financial Statements.

In the first quarter of 2022, the Company recorded a charge of $77 in Restructuring and other charges, net to reflect its estimate for the agreement reached with the workers of the divested Avilés and La Coruña facilities (Spain) to settle various legal disputes related to the 2019 divestiture. In April 2022, the Company received unanimous acceptance of the offer from all active workers of the divested Avilés and La Coruña facilities and a Global Settlement Agreement (GSA) was fully executed. The Company recorded a charge of $2 in Restructuring and other charges, net in second quarter of 2022 to reflect an update to its estimated liability for the GSA. The Company expects to make cash payments in 2023 upon completion of certain administrative and judicial approvals (See Note S).

On March 31, 2022, Ma'aden's put option and the Company's call option, relating to additional interests in the joint venture, expired with neither party exercising their options. In accordance with the joint venture agreement, the call and put options were exercisable for a period of six months after October 1, 2021.

In March 2022, in response to the conflict between Russia and Ukraine, Alcoa announced that it would cease the purchase of raw materials from, or the selling of products to, Russian businesses. The Company identified alternate sources for securing the limited number of materials that would have been purchased from Russian suppliers without any supply interruption or material financial impact on the Company.

See the below sections for additional details on the above-described actions.

BASIS OF PRESENTATION

The Consolidated Financial Statements of Alcoa Corporation are prepared in conformity with accounting principles generally accepted in the United States of America (GAAP). In accordance with GAAP, certain situations require management to make estimates based on judgments and assumptions, which may affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements. They also may affect the reported amounts of revenues and expenses during the reporting periods. Actual results could differ from those estimates upon subsequent resolution of identified matters.

RESULTS OF OPERATIONS

The discussion that follows includes a comparison of our results of operations and liquidity and capital resources for the fiscal years ended December 31, 2022 and 2021. For a comparison of changes for the fiscal years ended December 31, 2021 and 2020, refer to Management's Discussion and Analysis of Financial Condition and Results of Operation in Part II Item 7 of Alcoa Corporation's Annual Report on Form 10-K for the year ended December 31, 2021 (filed February 24, 2022).

	For the year ended December 31,	
Statement of Operations	**2022**	**2021**
Sales	$ 12,451	$ 12,152
Cost of goods sold (exclusive of expenses below)	10,212	9,153
Selling, general administrative, and other expenses	204	227
Research and development expenses	32	31
Provision for depreciation, depletion, and amortization	617	664
Restructuring and other charges, net	696	1,128
Interest expense	106	195
Other income, net	(118)	(445)
Total costs and expenses	11,749	10,953
Income before income taxes	702	1,199
Provision for income taxes	664	629
Net income	38	570
Less: Net income attributable to non-controlling interest	161	141
Net (loss) income attributable to Alcoa Corporation	$ (123)	$ 429

Selected Financial Metrics		2022		2021
Diluted (loss) income per share attributable to Alcoa Corporation common shareholders	$	(0.68)	$	2.26
Third-party shipments of alumina (kmt)		9,169		9,629
Third-party shipments of aluminum products (kmt)		2,570		3,007
Average realized price per metric ton of alumina		$384		$326
Average realized price per metric ton of primary aluminum	$	3,457	$	2,879
Average Alumina Price Index (API)[(1)]		$365		$324
Average London Metal Exchange (LME) 15-day lag[(2)]	$	2,726	$	2,443

(1) API (Alumina Price Index) is a pricing mechanism that is calculated by the Company based on the weighted average of a prior month's daily spot prices published by the following three indices: CRU Metallurgical Grade Alumina Price, Platts Metals Daily Alumina PAX Price, and FastMarkets Metal Bulletin Non-Ferrous Metals Alumina Index.

(2) LME (London Metal Exchange) is a globally recognized exchange for commodity trading, including aluminum. The LME pricing component represents the underlying base metal component, based on quoted prices for aluminum on the exchange.

Earnings Summary

Annual Comparison

Overview

Net (loss) income attributable to Alcoa Corporation decreased $552 primarily as a result of:

- Higher raw material costs due to inflation pressures and multiple supply chain disruptions
- Higher energy costs, primarily in Europe
- Higher costs primarily associated with maintenance, transportation, direct material usage, and labor
- Absence of gains on the sale of non-core assets
- Valuation allowance recorded against the deferred tax assets of Alcoa Alumínio
- Lower shipments across all segments

Partially offset by:

- Higher average realized prices of aluminum and alumina
- Lower restructuring charges
- Favorable mark-to-market results on derivative instruments
- Favorable currency impacts
- Increase in value add product sales

Annual Comparison

Sales

Sales increased $299 primarily as a result of:

- Higher average realized prices of aluminum and alumina
- Increase in value add product sales
- Higher shipments from the Alumar smelter and Portland smelter due to the restarts
- Favorable changes to customer mix in the Alumina segment

Partially offset by:

- Lower trading activities
- Lower shipments across all segments
- Absence of sales from the divested Warrick Rolling Mill
- Decreased sales from the San Ciprián smelter due to the smelter curtailment
- Lower pricing at the Brazil hydro-electric facilities as 2021 drought conditions elevated prices in the prior year period

Cost of goods sold

Cost of goods sold as a percentage of sales increased 7% primarily as a result of:

- Higher raw material costs due to inflation pressures and multiple supply chain disruptions
- Higher energy costs, primarily in Europe
- Higher costs primarily associated with maintenance, transportation, direct material usage, and labor

Partially offset by:

- Higher average realized prices of aluminum and alumina
- Increase in value add product sales

Selling, general administrative, and other expenses

Selling, general administrative, and other expenses decreased $23 primarily as a result of:

- Lower variable compensation

Provision for depreciation, depletion, and amortization

The Provision for depreciation, depletion, and amortization decreased $47 primarily as a result of:

- Currency translation impacts

Annual Comparison

Interest expense

Interest expense decreased $89 primarily as a result of:

- Absence of interest on $750 6.75% Senior Notes redeemed early in April 2021 and early redemption costs
- Absence of interest on $500 7.00% Senior Notes redeemed early in September 2021 and early redemption costs

Partially offset by:

- Interest on $500 4.125% Senior Notes issued in March 2021

Other income, net

Other income, net decreased $327 primarily as a result of:

- Absence of gains on the sale of the former Rockdale site, the former Eastalco site, and the Warrick Rolling Mill
- Decrease in equity earnings from the Ma'aden bauxite and alumina joint venture and aluminum joint venture primarily due to higher raw material and energy costs primarily driven by inflation, partially offset by higher alumina and aluminum prices

Partially offset by:

- Favorable mark-to-market results on derivative instruments primarily due to higher power prices in the current year

Restructuring and other charges, net

In 2022, Restructuring and other charges, net of $696, primarily related to:

- $632 for U.S. pension group annuity contracts and lump sum settlements
- $79 for the agreement reached with the workers of the divested Avilés and La Coruña facilities
- $58 for an asset impairment related to the sale of the Company's interest in the MRN mine
- $29 for the permanent closure of the previously curtailed magnesium smelter in Addy (Washington)

Partially offset by:

- $83 reversal of Brazil state VAT valuation allowance associated with the restart of the Alumar smelter

Annual Comparison

In 2021, Restructuring and other charges, net of $1,128, primarily related to:

- $858 for U.S. pension group annuity contracts and lump sum settlements
- $80 for the permanent closure of the previously curtailed Wenatchee (Washington) smelter
- $63 for Suriname pension group annuity contract
- $62 for the temporary curtailment of the San Ciprián (Spain) smelter
- $47 for the settlement of certain pension benefits
- $27 for the permanent closure of the anode portion of the Lake Charles (Louisiana) facility
- $9 in settlements and curtailments of certain other postretirement benefits related to the sale of the Warrick Rolling Mill

Partially offset by:

- $22 of reversals for environmental and asset retirement obligation reserves at previously closed locations
- $17 for the reversal of a reserve related to the divested Avilés and La Coruña entities

Provision for income taxes

The Provision for income taxes in 2022 was $664 on income before taxes of $702 or 94.6%. In comparison, the 2021 Provision for income taxes was $629 on income before taxes of $1,199 or 52.5%.

The increase in tax expense is primarily attributable to a charge to record a full valuation allowance of $217 against the deferred tax assets of Alcoa Alumínio (Alumínio), and a charge of $30 primarily to write off the deferred tax assets of Alcoa Norway ANS due to a legal entity restructuring in 2022. This increase was partially offset by a tax benefit of $33 recognized due to changes in the utilization of the tax holiday rate in AWAB, lower income in some of the jurisdictions where the Company records taxes, and a valuation allowance of $103 recorded in 2021 against the net deferred tax assets of Alúmina Española, S.A (Española).

The 2022 full valuation allowance for Alumínio was a result of Alumínio's three-year cumulative loss position for the period ended December 31, 2022. Although the Company entered into aluminum contracts to manage exposures associated with the restart, these contracts were held by another legal entity, and the associated realized gains are not available to Alumínio to offset the restart losses. While management believes Alumínio will return to profitability in the future with the restart of the Alumar smelter, current volatility in the market does not provide a reliable basis for concluding that it is more likely than not that Alumínio's net deferred tax assets, which consist primarily of tax loss carryforwards with indefinite life, will be realized. Alumar smelter profitability in future periods could prompt the Company to evaluate the realizability of the deferred tax asset and assess the possibility of a reversal of the valuation allowance, which could have a significant impact on net income in the quarter the valuation allowance is reversed.

In 2021, a valuation allowance of $103 was recorded against the net deferred tax assets of Española. Management concluded that it was more likely than not that Española's net deferred tax assets, which consist primarily of tax loss carryforwards, would not be realized as the entity's sole operating asset, the San Ciprián refinery, was in a three-year cumulative loss position for the period ended December 31, 2021.

Non-controlling interest

Net income attributable to non-controlling interest was $161 in 2022 compared with $141 in 2021. These amounts are entirely related to Alumina Limited's 40% ownership interest in several affiliated operating entities.

The increase is primarily a result of higher average realized prices of alumina, lower elimination of intercompany profit in inventory, higher other income primarily related to favorable mark-to-market results on derivative instruments, lower taxes on lower profits before taxes and the absence of the Española valuation allowance, lower restructuring charges primarily due to lower pension actions, and a decrease in equity earnings from the Ma'aden bauxite and alumina joint venture, partially offset by higher raw material costs, energy prices and production costs.

Segment Information

Alcoa Corporation is a producer of bauxite, alumina, and aluminum products. The Company's operations consist of three worldwide reportable segments: Bauxite, Alumina, and Aluminum. Segment performance under Alcoa Corporation's management reporting system is evaluated based on a number of factors; however, the primary measure of performance is the Adjusted EBITDA (Earnings before interest, taxes, depreciation, and amortization) of each segment. The Company calculates Segment Adjusted EBITDA as Total sales (third-party and intersegment) minus the following items: Cost of goods sold; Selling, general administrative, and other expenses; and Research and development expenses. Alcoa Corporation believes that the presentation of Adjusted EBITDA is useful to investors because such measure provides both additional information about the operating performance of Alcoa Corporation and insight on the ability of Alcoa Corporation to meet its financial obligations. The presentation of Adjusted EBITDA is not intended to be a substitute for, and should not be considered in isolation from, the financial measures reported in accordance with GAAP. Alcoa Corporation's Adjusted EBITDA may not be comparable to similarly titled measures of other companies.

Segment Adjusted EBITDA totaled $2,275 in 2022, $3,053 in 2021, and $1,317 in 2020. The following information provides production, shipments, sales, and Segment Adjusted EBITDA data for each reportable segment, as well as certain realized price and average cost data, for each of the three years in the period ended December 31, 2022. See Part II Item 8 of this Form 10-K in Note E to the Consolidated Financial Statements for additional information.

Bauxite

	2022	2021
Production (mdmt)	42.1	47.6
Third-party shipments (mdmt)	3.5	5.7
Intersegment shipments (mdmt)	39.5	42.4
Total shipments (mdmt)	43.0	48.1
Third-party sales	$ 204	$ 236
Intersegment sales	680	711
Total sales	$ 884	$ 947
Segment Adjusted EBITDA	$ 82	$ 172
Operating costs	$ 919	$ 912
Average cost per dry metric ton of bauxite shipped	$ 21	$ 19

Production in the above table can vary from Total shipments due primarily to differences between the equity allocation of production, offtake agreements with the respective equity investment, and other supply agreements. Additionally, Total shipments include dry metric tons that were not produced by the Bauxite segment. Such bauxite was purchased to satisfy certain customer commitments. The Bauxite segment bears the risk of loss of the purchased bauxite until control of the product has been transferred to this segment's customers. Operating costs in the table above includes all production-related costs: conversion costs, such as labor, materials, and utilities; depreciation, depletion, and amortization; and plant administrative expenses.

Overview. This segment represents the Company's global bauxite mining operations. A portion of this segment's production represents the offtake from equity method investments in Brazil (prior to the MRN sale in April 2022) and Guinea, as well as AWAC's share of production related to the equity investment in Saudi Arabia. The bauxite mined by this segment is sold primarily to internal customers within the Alumina segment; a portion of the bauxite is sold to external customers. Bauxite mined by this segment and used internally is transferred to the Alumina segment at negotiated terms that are intended to approximate market prices; sales to third-parties are conducted on a contract basis. Generally, this segment's sales are transacted in U.S. dollars while costs and expenses are transacted in the local currency of the respective operations, which are the Australian dollar and the Brazilian real. Most of the operations that comprise the Bauxite segment are part of AWAC (see Non-controlling Interest in Earnings Summary above).

Business Update. Total shipments decreased 5.1 million dry metric tons compared to 2021 primarily due to lower demand from certain Alumina segment refineries, the cessation of bauxite sales to Russian aluminum businesses, decreased demand in the Atlantic bauxite market, and the expiration of the Company's license to export bauxite from Australia.

On April 30, 2022, Alcoa completed the sale of its investment in MRN for proceeds of $10. An additional $30 in cash could be paid to the Company in the future if certain post-closing conditions related to future MRN mine development are satisfied. Related to this transaction, the Company recorded an asset impairment of $58 in the first quarter of 2022 in Restructuring and other charges, net on the Statement of Consolidated Operations. In addition, the Company entered into several bauxite offtake agreements with South32 Minerals S.A. to provide bauxite supply for existing long-term supply contracts.

Mining operations are relocated periodically in support of optimizing the value extracted from bauxite reserves. In 2022, the Company continued the process of moving the Juruti mining operations, which is scheduled to be completed in the first quarter of 2023. During 2022, the Company incurred $41 in capital expenditures related to the Juruti mining operation relocation.

Annual Comparison

Production

Production decreased 12% primarily as a result of:

- Lower demand from certain Alumina segment refineries
- Sale of the Company's interest in the MRN mine
- Cessation of bauxite sales to Russian aluminum businesses
- Expiration of the Company's license to export bauxite from Australia

Third-party sales

Third-party sales decreased $32 primarily as a result of:

- Lower shipments primarily due to lower customer demand from Juruti and the cessation of bauxite sales to Russian aluminum businesses, decreased demand in the Atlantic bauxite market, and the expiration of the Company's license to export bauxite from Australia

Partially offset by:

- Higher volumes from offtake and supply agreements caused by the shift to third-party sales due to reduced production at the San Ciprián refinery

Annual Comparison

Intersegment sales

Intersegment sales decreased $31 primarily as a result of:

- Lower intersegment shipments primarily due to lower demand from certain Alumina segment refineries

Partially offset by:

- Higher average internal prices on sales to the Alumina segment

Segment Adjusted EBITDA

Segment Adjusted EBITDA decreased $90 primarily as a result of:

- Lower shipments as discussed above
- Higher production costs primarily due to inefficiencies at lower production rates
- Higher energy costs, primarily diesel costs in Australia
- Lower average margins on sales to the Alumina segment

Partially offset by:

- Favorable currency impacts
- Higher earnings from equity investments

Forward-Look. Beginning in January 2023, financial information for the activities of the bauxite mines and the alumina refineries will be combined and the Company will report its financial results in the following two segments: (i) Alumina, and (ii) Aluminum. Accordingly, segment information for all prior periods presented will be updated to reflect the new segment structure in future Quarterly Report on Form 10-Q and Annual Report on Form 10-K filings.

In Australia, the Company seeks annual approvals from relevant state government agencies for a rolling five-year mine plan and related forest clearing activities that are needed to sustain bauxite mining. The Company's annual mine plan approvals process for the Huntly and Willowdale mines is currently taking longer than it has historically. Alcoa will mine bauxite with a lower bauxite grade from April 2023 through December 2023 at the Huntly mine to extend operations permitted under existing approvals, providing more time to work through the approvals process. See Alumina Forward Look below.

Alumina

	2022	2021
Production (kmt)	12,544	13,259
Third-party shipments (kmt)	9,169	9,629
Intersegment shipments (kmt)	3,958	4,287
Total shipments (kmt)	13,127	13,916
Third-party sales	$ 3,520	$ 3,139
Intersegment sales	1,754	1,586
Total sales	$ 5,274	$ 4,725
Segment Adjusted EBITDA	$ 701	$ 1,002
Average realized third-party price per metric ton of alumina	$ 384	$ 326
Operating costs	$ 4,406	$ 3,678
Average cost per metric ton of alumina shipped	$ 336	$ 264

In the above table, total shipments include metric tons that were not produced by the Alumina segment. Such alumina was purchased to satisfy certain customer commitments. The Alumina segment bears the risk of loss of the purchased alumina until control of the product has been transferred to this segment's customers. Additionally, operating costs in the table above includes all production- related costs: raw materials consumed; conversion costs, such as labor, materials, and utilities; depreciation and amortization; and plant administrative expenses.

Overview. This segment represents the Company's worldwide refining system, which processes bauxite into alumina. The alumina produced by this segment is sold primarily to internal and external aluminum smelter customers; a portion of the alumina is sold to external customers who process it into industrial chemical products. Approximately two-thirds of Alumina's production is sold under supply contracts to third parties worldwide, while the remainder is used internally by the Aluminum segment. Alumina produced by this segment and used internally is transferred to the Aluminum segment at prevailing market prices. A portion of this segment's third-party sales are completed through the use of alumina traders. Generally, this segment's sales are transacted in U.S. dollars while costs and expenses are transacted in the local currency of the respective operations, which are the Australian dollar, the Brazilian real, and the euro. Most of the operations that comprise the Alumina segment are part of AWAC (see Non-controlling Interest in Earnings Summary above). This segment also includes AWAC's 25.1% ownership interest in the mining and refining joint venture company in Saudi Arabia.

Business Update. During 2022, the average API of $365 per metric ton trended favorably compared to 2021 reflecting a 13% sequential increase.

Alumina production decreased 5% in 2022 compared to 2021 primarily due to the reduced production at the Australian refineries, and the reduction in the daily production rate at the San Ciprián refinery, partially offset by increased production at the Alumar refinery due to the non-recurrence of the ship unloader outage in 2021. Australian refinery production in 2022 was less than 2021 due to extended and unplanned maintenance periods and lower bauxite quality impacting production levels.

During 2022, the Alumina segment experienced higher raw material costs, higher energy costs predominantly related to the San Ciprián refinery, and higher caustic usage at certain Australian refineries related to lower bauxite quality, due to the location of mining areas.

In the third quarter of 2022, the Company reduced production at the San Ciprián refinery to 50 percent of the 1.6 million metric tons of annual capacity to lessen the financial impact from rising natural gas prices in Spain.

In December 2022, the Company recorded a charge of $25 to Cost of goods sold to increase the AROs at the Alumar refinery when updated estimates became available for improvements required on closed bauxite residue areas.

During the second quarter of 2022, the Company recorded the reversal of a valuation allowance on Brazil state VAT of $46 in Cost of goods sold. In the fourth quarter of 2018, after an assessment of the future realizability of the state VAT credits, Alcoa established an allowance on the accumulated state VAT credit balances and stopped recording any future credit benefits. With the restart of the Alumar smelter in Brazil and the first metal sales in June 2022, the Company has the ability to monetize these credits and reversed the valuation allowance in the second quarter of 2022.

During 2022, the Company recorded a charge of $48 to Cost of goods sold and an increase to the capitalized asset retirement cost of $9 to increase the AROs at the Poços de Caldas refinery for improvements required on both operating and closed bauxite residue areas to comply with updated impoundment regulations in the region.

Capacity. The Alumina segment had a base annual capacity of 13,843 kmt with 1,014 kmt of curtailed refining capacity. In the third quarter of 2022, curtailed capacity increased 800 kmt, due to the partial curtailment of the San Ciprián refinery (see above).

Annual Comparison

Production

Production decreased 5% primarily as a result of:

- Reduced alumina production at the Australian refineries due to extended and unplanned equipment maintenance and lower bauxite quality impacting production levels
- Decreased production at the San Ciprián refinery due to the partial curtailment in the third quarter of 2022

Partially offset by:

- Increased production at Alumar refinery due to non-recurrence of ship unloader outage in 2021

Third-party sales

Third-party sales increased $381 primarily as a result of:

- Higher average realized price of $58/ton principally driven by a higher average API
- Favorable changes to customer mix

Partially offset by:

- Lower shipments due to decreased production at the Australian refineries

Intersegment sales

Intersegment sales increased $168 primarily as a result of:

- Higher average realized prices on sales to the Aluminum segment

Partially offset by:

- Lower shipments due to the San Ciprián smelter curtailment

Segment Adjusted EBITDA

Segment Adjusted EBITDA decreased $301 primarily as a result of:

- Higher raw material costs primarily due to higher market prices for caustic and lime
- Higher energy costs, primarily in Europe
- Higher costs primarily associated with increased maintenance costs, direct material usage, and higher transportation costs
- Higher costs associated with impoundments
- Lower shipments primarily from Australian refineries due to decreased production

Annual Comparison

Partially offset by:

- Higher average realized price of $58/ton principally driven by a higher average API
- Favorable changes to customer mix
- Favorable currency impact
- Reversal of a valuation allowance on Brazil VAT associated with the restart of the Alumar smelter

Forward-Look. Beginning in January 2023, financial information for the activities of the bauxite mines and the alumina refineries will be combined and the Company will report its financial results in the following two segments: (i) Alumina, and (ii) Aluminum. Accordingly, segment information for all prior periods presented will be updated to reflect the new segment structure in future Quarterly Report on Form 10-Q and Annual Report on Form 10-K filings.

In January 2023, the Company reduced production at the Kwinana (Australia) refinery by approximately 30 percent in response to a domestic natural gas shortage in Western Australia due to production challenges experienced by key gas suppliers.

Alcoa will mine bauxite with a lower bauxite grade from April 2023 through December 2023 to provide additional time for an extended mining approvals process. This change is isolated to the Huntly mine that supplies the Pinjarra and Kwinana refineries. Operating those refineries with lower quality bauxite decreases alumina output and increases caustic usage.

The Company projects total alumina shipments to range between 12.7 and 12.9 million metric tons in 2023, down from 2022 primarily due to the full year impact of the partial curtailment of the San Ciprián refinery and the reduction of bauxite grade at the Huntly mine.

As discussed above, in the third quarter of 2022, the Company reduced production at the San Ciprián refinery to 50 percent of the 1.6 million tons of annual capacity in an effort to reduce the refinery's losses related to natural gas prices. The Company is actively reviewing the refinery's operating levels, commercial options, and other support, given the ongoing volatility in European energy markets. Commercial actions taken in late 2022 to mitigate the impact of energy and raw material costs at the San Ciprián refinery are expected to improve segment profitability in 2023.

Aluminum

Total Aluminum information		2022		2021
Third-party aluminum shipments (kmt)		2,570		3,007
Third-party sales	$	8,735	$	8,766
Intersegment sales		27		18
Total sales	$	8,762	$	8,784
Segment Adjusted EBITDA	$	1,492	$	1,879

Primary aluminum information

		2022		2021
Production (kmt)		2,010		2,193
Third-party shipments (kmt)		2,570		2,924
Third-party sales	$	8,887	$	8,420
Average realized third-party price per metric ton	$	3,457	$	2,879
Total shipments (kmt)		2,570		2,949
Operating costs	$	7,278	$	6,593
Average cost per metric ton of primary aluminum shipped	$	2,831	$	2,235

In the above table, total aluminum third-party shipments and total primary aluminum shipments include metric tons that were not produced by the Aluminum segment. Such aluminum was purchased by this segment to satisfy certain customer commitments. The Aluminum segment bears the risk of loss of the purchased aluminum until control of the product has been transferred to this segment's customer. Until the sale of the Warrick Rolling Mill on March 31, 2021, total aluminum information includes flat-rolled aluminum while primary aluminum information does not. Primary aluminum third-party sales exclude realized gains and losses related to embedded derivative instruments designated as cash flow hedges of forward sales of aluminum. Operating costs includes all production-related costs: raw materials consumed; conversion costs, such as labor, materials, and utilities; depreciation and amortization; and plant administrative expenses.

The average realized third-party price per metric ton of primary aluminum includes three elements: a) the underlying base metal component, based on quoted prices from the LME; b) the regional premium, which represents the incremental price over the base LME component that is associated with the physical delivery of metal to a particular region (e.g., the Midwest premium for metal sold in the United States); and c) the product premium, which represents the incremental price for receiving physical metal in a particular shape (e.g., billet, slab, rod, etc.) or alloy.

Overview. This segment consists of the Company's (i) worldwide smelting and casthouse system, which processes alumina into primary aluminum, and the (ii) portfolio of energy assets in Brazil, Canada, and the United States.

Aluminum's combined smelting and casting operations produce primary aluminum products, virtually all of which are sold to external customers and traders. The smelting operations produce molten primary aluminum, which is then formed by the casting operations into either common alloy ingot (e.g., t-bar, sow, standard ingot) or into value add ingot products (e.g., foundry, billet, rod, and slab). A variety of external customers purchase the primary aluminum products for use in fabrication operations, which produce products primarily for the transportation, building and construction, packaging, wire, and other industrial markets. Results from the sale of aluminum powder and scrap are also included in this segment, as well as the impacts of embedded aluminum derivatives related to energy supply contracts.

The energy assets supply power to external customers in Brazil and, to a lesser extent, in the United States, as well as internal customers in the Aluminum (Canadian smelters and Warrick (Indiana) smelter) and Alumina segments (Brazilian refineries).

Generally, this segment's aluminum sales are transacted in U.S. dollars while costs and expenses of this segment are transacted in the local currency of the respective operations, which are the U.S. dollar, the euro, the Norwegian krone, the Icelandic króna, the Canadian dollar, the Brazilian real, and the Australian dollar.

This segment also includes Alcoa Corporation's 25.1% ownership interest in the smelting joint venture company in Saudi Arabia.

Business Update. During 2022, third-party sales were flat compared to 2021 on higher LME and regional premiums, partially offset by lower trading activities, as well as lower shipments. Metal prices increased with LME prices on a 15-day lag averaging $2,726 per metric ton. The Aluminum segment also experienced higher raw material and energy costs during 2022.

During the fourth quarter of 2022, the Norwegian government approved a 2023 budget proposal that sets a floor for the carbon dioxide compensation to be paid in 2023 based on 2022 power purchased. The Company recorded an adjustment of $25 in the fourth quarter of 2022 to Cost of goods sold to reverse amounts accrued for 2022 credits earned through September 30, 2022 under the prior carbon dioxide compensation program.

On December 29, 2021, the Company and workers' representatives at the San Ciprián, Spain aluminum facility reached an agreement for the two-year curtailment of the smelter's 228 kmt of annual capacity due to exorbitant energy prices in Spain. The curtailment was completed in January 2022 while the casthouse continues to operate. During 2022, $26 of payments were made to reduce the employee leave compensation and take or pay contractual obligations of $62 recorded in the fourth quarter of 2021. The Company incurred $5 of capital investment expenditures against the commitments for capital investments of $68 and restart costs of $35. In October 2022, the Company signed an agreement with a renewable energy provider for approximately 30 percent of the smelter's power needs upon restart and continues to negotiate with other generators to secure the remaining power supply needs for the smelter. When combined with the 45 percent of the smelter's power needs secured in the second quarter of 2022, up to approximately 75 percent of the smelter's power needs have been secured under long-term agreements with renewable energy providers to date. On February 3, 2023, the Company reached an updated agreement with the workers' representatives to commence the restart process in phases beginning in January 2024. Alcoa plans that all pots will be restarted by October 1, 2025, and from October 1, 2025 until the end of 2026, the minimum production will be 75 percent of the annual capacity of 228 kmt. See Part II Item 8 of this Form 10-K in Note V to the Consolidated Financial Statements.

In conjunction with the previously announced restart of the Alumar smelter in São Luís, Brazil, Alcoa incurred restart expenses of $75 during 2022. The first metal sales occurred in the second quarter of 2022 and the Company continues to progress the restart of the Alumar smelter.

In October 2022, the Company completed the previously announced restart of 19 kmt (Alcoa share) of previously curtailed capacity at the Portland (Australia) smelter. Alcoa incurred restart expenses of $12 during 2022.

On August 30, 2022, the Company announced the curtailment of one third of the production capacity (31 kmt) at the Lista (Norway) smelter to mitigate high energy costs for the site. The site was exposed to spot energy pricing, which had increased to above $600 per megawatt hour. In July 2022, the Company entered into a fixed price power agreement effective for the fourth quarter 2022 through December 31, 2023.

On July 1, 2022, Alcoa curtailed one of the three operating smelting potlines (54 kmt) at the Warrick Operations site due to operational challenges stemming from labor shortages in the region.

Capacity. At December 31, 2022, the Aluminum segment had 868 kmt of idle smelting capacity on a base capacity of 2,968 kmt, an increase from 2021 of 183 kmt in idle capacity due to the San Ciprián smelter curtailment and partial curtailment of the Warrick and Lista smelters, partially offset by the Alumar and Portland smelter restarts in 2022.

Annual Comparison

Production

Production decreased 8% primarily as a result of:

- Curtailment of the San Ciprián smelter, completed in January 2022
- Partial curtailment of the Warrick smelter in July 2022
- Partial curtailment of the Lista smelter in August 2022

Partially offset by:

- Alumar smelter restart
- Portland smelter restart

Third-party sales

Third-party sales decreased $31 primarily as a result of:

- Lower trading activities
- Absence of sales from the divested Warrick Rolling Mill
- Decreased sales from the San Ciprián smelter due to the smelter curtailment, partially offset by increased price
- Lower pricing at the Brazil hydro-electric facilities as 2021 drought conditions elevated prices in the prior year period
- Lower shipments mainly due to the partial curtailments of the Warrick smelter and the Lista smelter and maintenance at European smelters, partially offset by higher shipments from the Alumar smelter and Portland smelter due to the restarts

Partially offset by:

- Higher average realized price of $578/ton driven by a higher average LME (on a 15-day lag) and regional premiums
- Increase in value add product sales

Segment Adjusted EBITDA

Segment Adjusted EBITDA decreased $387 primarily as a result of:

- Unfavorable raw material costs, primarily on higher market prices for carbon and average alumina input costs
- Higher costs primarily associated with higher transportation costs, increased maintenance costs, and higher labor expenses
- Lower pricing at the Brazil hydro-electric facilities
- Higher energy costs, primarily in Europe
- Lower shipments mainly related to the partial curtailment of the Warrick smelter

Annual Comparison

Partially offset by:

- Higher average realized price driven by higher average LME (on a 15-day lag) and regional premiums
- Increase in value add product sales
- Favorable currency impacts

Forward-Look. The Company projects total aluminum shipments to range between 2.5 and 2.6 million metric tons in 2023, consistent with 2022 as the restarts at the Alumar and Portland smelters offset the partial curtailments at the Warrick and Lista smelters. Additionally, the Company engages in trading activity when favorable market conditions allow. Availability of trading opportunities in 2023 may impact the Company's shipment projection.

Further, in 2023, the Aluminum segment expects to benefit from lower energy costs in Europe.

Reconciliations of Certain Segment Information

Reconciliation of Total Segment Third-Party Sales to Consolidated Sales

	2022	2021
Bauxite	$ 204	$ 236
Alumina	3,520	3,139
Aluminum:		
Primary aluminum	8,887	8,420
Other[(1)]	(152)	346
Total segment third-party sales	12,459	12,141
Other	(8)	11
Consolidated sales	$ 12,451	$ 12,152

(1) Other includes third-party sales of flat-rolled aluminum (prior to the sale of the Warrick Rolling Mill on March 31, 2021), and energy, as well as realized gains and losses related to embedded derivative instruments designated as cash flow hedges of forward sales of aluminum.

Reconciliation of Total Segment Operating Costs to Consolidated Cost of Goods Sold

	2022	2021
Bauxite	$ 919	$ 912
Alumina	4,406	3,678
Primary aluminum	7,278	6,593
Other[(1)]	533	737
Total segment operating costs	13,136	11,920
Eliminations[(2)]	(2,604)	(2,214)
Provision for depreciation, depletion, and amortization[(3)]	(595)	(639)
Other[(4)]	275	86
Consolidated cost of goods sold	$ 10,212	$ 9,153

(1) Prior to the sale of the Warrick Rolling Mill on March 31, 2021, Other largely relates to the Aluminum segment's flat-rolled aluminum product division.

(2) Represents the elimination of Cost of goods sold related to intersegment sales between Bauxite and Alumina and between Alumina and Aluminum.

(3) Provision for depreciation, depletion, and amortization is included in the operating costs used to calculate average cost for each of the bauxite, alumina, and primary aluminum product divisions (see Bauxite, Alumina, and Aluminum above). However, for financial reporting purposes, Provision for depreciation, depletion, and amortization is presented as a separate line item on Alcoa Corporation's Statement of Consolidated Operations.

(4) Other includes costs related to Transformation, and certain other items that are not included in the operating costs of segments (see footnotes 1 and 3 in the Reconciliation of Total Segment Adjusted EBITDA to Consolidated Net (Loss) Income Attributable to Alcoa Corporation below).

Reconciliation of Total Segment Adjusted EBITDA to Consolidated Net (Loss) Income Attributable to Alcoa Corporation

	2022	2021
Net (loss) income attributable to Alcoa Corporation:		
Total Segment Adjusted EBITDA	$ 2,275	$ 3,053
Unallocated amounts:		
Transformation[(1)]	(66)	(44)
Intersegment eliminations	143	(101)
Corporate expenses[(2)]	(128)	(129)
Provision for depreciation, depletion, and amortization	(617)	(664)
Restructuring and other charges, net	(696)	(1,128)
Interest expense	(106)	(195)
Other income, net	118	445
Other[(3)]	(221)	(38)
Consolidated income before income taxes	702	1,199
Provision for income taxes	(664)	(629)
Net income attributable to non-controlling interest	(161)	(141)
Consolidated net (loss) income attributable to Alcoa Corporation	$ (123)	$ 429

(1) Transformation includes, among other items, the Adjusted EBITDA of previously closed operations.

(2) Corporate expenses are composed of general administrative and other expenses of operating the corporate headquarters and other global administrative facilities, as well as research and development expenses of the corporate technical center.

(3) Other includes certain items that are not included in the Adjusted EBITDA of the reportable segments.

ENVIRONMENTAL MATTERS

See Part II Item 8 of this Form 10-K in Note S to the Consolidated Financial Statements under caption Contingencies – Environmental Matters.

LIQUIDITY AND CAPITAL RESOURCES

Alcoa Corporation's primary future cash flows are centered on operating activities, particularly working capital, as well as capital expenditures and capital returns. Alcoa's ability to fund its cash needs depends on the Company's ongoing ability to generate and raise cash in the future.

In 2022, the Company generated lower profitability due to higher raw material, energy and production costs, partially offset by higher prices for aluminum and alumina and lower restructuring charges. Despite the challenging year, the Company maintained a strong cash position and successfully completed the following actions:

- Returned capital to stockholders of $572, including $500 for the repurchase of common stock and $72 of dividends;
- Funded $480 in capital expenditures to sustain and grow our operations;
- Purchased group annuity contracts to transfer the obligation to pay remaining retirement benefits for approximately 4,400 retirees and beneficiaries from its U.S. defined benefit pension plans. Transferred approximately $1,000 in both plan obligations and plan assets;
- Amended and restated the Company's Revolving Credit Facility to provide additional flexibility to the Company and ANHBV by (i) extending the maturity date of the Revolving Credit Facility from November 2023 to June 2027, (ii) reducing the aggregate commitments under the facility from $1,500 to $1,250, (iii) releasing the collateral package that had previously secured the Revolving Credit Facility, which will continue so long as certain credit ratings are maintained, (iv) increasing the maximum leverage ratio from 2.75 to 1.00 to 3.25 to 1.00, which increases following material acquisitions for four consecutive fiscal quarters following an acquisition, (v) providing a debt to capitalization ratio not to exceed 0.60 to 1.00 to replace the maximum leverage ratio upon a ratings upgrade to investment grade by Moody's or S&P, and (vi) providing flexibility for dividends and other restricted payments, to make investments, and to incur additional indebtedness. The Revolving Credit Facility implements a sustainability adjustment to the applicable margin and commitment fee that may result in a positive or negative adjustment based on two of the Company's existing sustainability metrics;
- Achieved investment grade credit rating. On July 26, 2022, Moody's upgraded the rating of ANHBV's senior unsecured notes to Baa3 (investment grade) from Bal and set the current outlook to stable; and,
- Renewed $79 term loan in Australia with extended maturity date to 2024.

On January 31, 2023, a wholly-owned subsidiary of the Company entered into a one-year Receivables Purchase Agreement to sell up to $150 of certain customer receivables without recourse on a revolving basis. The unsold portion of the specified receivable pool is pledged as collateral to the purchasing bank to secure the sold receivables. Alcoa Corporation will guarantee the performance obligations of the wholly-owned subsidiary under the facility; however no assets (other than the receivables) will be pledged as collateral.

Management believes that the Company's cash on hand, future operating cash flows, and liquidity options, combined with its strategic actions, are adequate to fund its short term and long term operating and investing needs for at least twelve months and the foreseeable future thereafter. Further, the Company has flexibility related to its use of cash; the Company has no significant debt maturities until 2027 and no significant cash contribution requirements related to its U.S. pension plan obligations for the foreseeable future (refer to Material Cash Requirements, below, for more information).

Although management believes that Alcoa's future cash from operations and other liquidity options will provide adequate resources to fund operating and investing needs, the Company's access to, and the availability of, financing on acceptable terms in the future will be affected by many factors, including: (i) Alcoa Corporation's credit rating; (ii) the liquidity of the overall capital markets; (iii) the current state of the economy and commodity markets, and (iv) short- and long-term debt ratings. There can be no assurances that the Company will continue to have access to capital markets on terms acceptable to Alcoa Corporation.

Changes in market conditions caused by global or macroeconomic events, such as the ongoing conflict between Russia and Ukraine, high inflation, and changing global monetary policies could have adverse effects on Alcoa's ability to obtain additional financing and cost of borrowing. Inability to generate sufficient earnings could impact the Company's ability to meet the financial covenants in our outstanding debt and revolving credit facility agreements and limit our ability to access these sources of liquidity or refinance or renegotiate our outstanding debt or credit agreements on terms acceptable to the Company. Additionally, the impact on market conditions from such events could adversely affect the liquidity of Alcoa's customers, suppliers, and joint venture partners and equity method investments, which could negatively impact the collectability of outstanding receivables and our cash flows.

At December 31, 2022, the Company's cash and cash equivalents were $1,363, of which $1,280 was held outside the United States. Alcoa Corporation has a number of commitments and obligations related to the Company's operations in various foreign jurisdictions, resulting in the need for cash outside the United States. Alcoa Corporation continuously evaluates its local and global cash needs for future business operations, which may influence future repatriation decisions. See Part II Item 8 of this Form 10-K in Note Q to the Consolidated Financial Statements for additional information related to undistributed net earnings.

Cash from Operations

Cash provided from operations was $822 in 2022 compared with $920 in 2021. Notable changes to the sources and (uses) of cash include:

- ($964) lower net income generation, excluding the impacts from restructuring charges, primarily due to higher raw materials, energy and production costs, partially offset by higher aluminum and alumina pricing;

- ($372) in income taxes paid on prior year earnings, as well as on higher current year earnings in jurisdictions where the Company pays taxes;

- $282 in certain working capital accounts, primarily a lower increase in receivables relating to higher aluminum and alumina prices than in 2021, a lower increase in inventories on higher raw material volumes in 2021, and a lower increase in accounts payable as raw material and energy costs increased less than in 2021; and,

- $562 in lower pension contributions to the Company's defined benefit pension plans.

In the third quarter of 2020, AofA paid approximately $74 (A$107) to the ATO related to the tax dispute described in Note S to the Consolidated Financial Statements in Part II Item 8 of this Form 10-K. Upon payment, AofA recorded a non-current prepaid tax asset, as the Company continues to believe it is more likely than not that AofA's tax position will be sustained and therefore is not recognizing any tax expense in relation to this matter. In accordance with Australian tax laws, the initial interest assessment and additional interest are deductible against AofA's taxable income resulting in approximately $169 (A$219) in 2020, $14 (A$19) in 2021, and $15 (A$22) in 2022 in lower cash tax payments. If AofA is ultimately successful, the interest deduction would become taxable as income in the year the dispute is resolved. In addition, should the ATO decide in the interim to reduce any interest already assessed, the reduction would be taxable as income at that point in time. During 2022, AofA continued to record its tax provision and tax liability without effect of the ATO assessment, since it expects to prevail. The tax payable will remain on AofA's balance sheet as a non-current liability, increased by the tax effect of subsequent periods' interest deductions, until dispute resolution, which is expected to take several years. At December 31, 2022, the non-current liability resulting from the cumulative interest deductions was approximately $174 (A$260).

Financing Activities

Cash used for financing activities was $768 in 2022 compared with $1,158 in 2021.

The use of cash in 2022 was primarily $165 of net cash paid to Alumina Limited (see Non-controlling interest in Results of Operations above), $500 for the repurchase of common stock, and $72 of dividends paid.

The use of cash in 2021 was primarily $775 for the full, early repayment of $750 aggregate principal amount of 2024 Notes (including $25 redemption premium) in April 2021, $518 for the full, early repayment of $500 aggregate principal amount of 2026 Notes (including $18 redemption premium) in September 2021, $194 in net cash paid to Alumina Limited, $150 for the repurchase of common stock, $19 for dividends paid on common stock, and $17 in financial contributions primarily related to the divested Spanish facilities. The uses of cash were partially offset by the issuance of $500 aggregate principal amount 2029 Notes by ANHBV in March 2021 with net proceeds of approximately $493.

Credit Facilities. On June 27, 2022, Alcoa Corporation and ANHBV, a wholly owned subsidiary of Alcoa Corporation and the borrower, entered into an amendment and restatement agreement (the Third Amendment and Restatement) (as amended and restated, the Revolving Credit Facility) that provides additional flexibility to the Company and ANHBV by (i) extending the maturity date of the Revolving Credit Facility from November 2023 to June 2027, (ii) reducing the aggregate commitments under the facility from $1,500 to $1,250, (iii) releasing the collateral package that had previously secured the Revolving Credit Facility, which will continue so long as certain credit ratings are maintained, (iv) increasing the maximum leverage ratio from 2.75 to 1.00 to 3.25 to 1.00, which increases following material acquisitions for four consecutive fiscal quarters following an acquisition, (v) providing a debt to capitalization ratio not to exceed 0.60 to 1.00 to replace the maximum leverage ratio upon a ratings upgrade to investment grade by Moody's or S&P, and (vi) providing flexibility for dividends and other restricted payments, to make investments, and to incur additional indebtedness. The Revolving Credit Facility implements a sustainability adjustment to the applicable margin and commitment fee that may result in a positive or negative adjustment based on two of the Company's existing sustainability metrics.

If Alcoa Corporation or ANHBV, as applicable, fails to have a rating of at least Ba1 from Moody's and BB+ from S&P, then the Company would be required to execute all security documents to re-secure collateral under the Revolving Credit Facility.

As of December 31, 2022, the Company was in compliance with all covenants. There were no borrowings outstanding at December 31, 2022 and 2021, and no amounts were borrowed during 2022 and 2021 under the Revolving Credit Facility.

The Company may draw on the facility periodically to ensure working capital needs are met. See Part II Item 8 of this Form 10-K in Note M to the Consolidated Financial Statements for additional information related to the Revolving Credit Facility.

Guarantees of Third Parties. As of December 31, 2022 and 2021, the Company had no outstanding potential future payments for guarantees issued on behalf of a third-party.

Bank Guarantees and Letters of Credit. Alcoa Corporation has outstanding bank guarantees and letters of credit related to, among others, energy contracts, environmental obligations, legal and tax matters, leasing obligations, workers compensation, and customs duties. The total amount committed under these instruments, which automatically renew or expire at various dates between 2023 and 2024, was $293 (includes $131 issued under a standby letter of credit agreement – see below) at December 31, 2022. Additionally, ParentCo has outstanding bank guarantees and letters of credit related to the Company of $14 at December 31, 2022. In the event ParentCo would be required to perform under any of these instruments, ParentCo would be indemnified by Alcoa Corporation in accordance with the Separation and Distribution Agreement. Likewise, the Company has outstanding bank guarantees and letters of credit related to ParentCo of $8 at December 31, 2022. In the event Alcoa Corporation would be required to perform under any of these instruments, the Company would be indemnified by ParentCo in accordance with the Separation and Distribution Agreement.

In August 2017, Alcoa Corporation entered into a standby letter of credit agreement, which expires on June 27, 2024 (extended in August 2018, May 2019, May 2021, and June 2022), with three financial institutions. The agreement provides for a $200 facility used by the Company for matters in the ordinary course of business. Alcoa Corporation's obligations under this facility are secured in the same manner as obligations under the Company's revolving credit facility. Additionally, this facility contains similar representations and warranties and affirmative, negative, and financial covenants as the Company's revolving credit facility. See Part II Item 8 of this Form 10-K in Note M to the Consolidated Financial Statements for additional information related to the Company's debt. As of December 31, 2022, letters of credit aggregating $131 were issued under this facility.

Surety Bonds. Alcoa Corporation has outstanding surety bonds primarily related to tax matters, contract performance, workers compensation, environmental-related matters, and customs duties. The total amount committed under these bonds, which automatically renew or expire at various dates between 2023 and 2027, was $174 at December 31, 2022. Additionally, ParentCo has outstanding surety bonds related to the Company of $11 at December 31, 2022. In the event ParentCo would be required to perform under any of these instruments, ParentCo would be indemnified by Alcoa Corporation in accordance with the Separation and Distribution Agreement. Likewise, the Company has outstanding surety bonds related to ParentCo of $3 at December 31, 2022. In the event Alcoa Corporation would be required to perform under any of these instruments, the Company would be indemnified by ParentCo in accordance with the Separation and Distribution Agreement.

Debt. As of December 31, 2022, Alcoa Corporation had three outstanding Notes maturing at varying times. A summary of the Notes and other long-term debt is shown below. See Part II Item 8 of this Form 10-K in Note M to the Consolidated Financial Statements for additional information related to the Company's debt.

December 31,	2022	2021
5.500% Notes, due 2027	750	$ 750
6.125% Notes, due 2028	500	500
4.125% Notes, due 2029	500	500
Other	84	5
Unamortized discounts and deferred financing costs	(27)	(28)
Total	1,807	1,727
Less: amount due within one year	1	1
Long-term debt, less amount due within one year	$ 1,806	$ 1,726

Ratings. Alcoa Corporation's cost of borrowing and ability to access the capital markets are affected not only by market conditions but also by the short- and long-term debt ratings assigned to Alcoa Corporation's debt by the major credit rating agencies.

On July 26, 2022, Moody's upgraded the rating of ANHBV's senior unsecured notes to Baa3 (investment grade) from Ba1 and set the current outlook to stable.

Dividend. In each quarter of 2022, the Board of Directors declared and paid a quarterly cash dividend of $0.10 per share of the Company's common stock, totaling $72 for the year.

The details of any future cash dividend declaration, including the amount of such dividend and the timing and establishment of the record and payment dates, will be determined by the Board of Directors. The decision of whether to pay future cash dividends and the amount of any such dividends will be based on the Company's financial position, results of operations, cash flows, capital requirements, business conditions, the requirements of applicable law, and any other factors the Board of Directors may deem relevant.

Common Stock Repurchase Program

In October 2021, Alcoa Corporation's Board of Directors approved a common stock repurchase program under which the Company may purchase shares of its outstanding common stock up to an aggregate transactional value of $500, depending on cash availability, market conditions, and other factors.

On July 20, 2022, Alcoa Corporation announced that its Board of Directors approved an additional common stock repurchase program under which the Company may purchase shares of its outstanding common stock up to an aggregate transactional value of $500, depending on the Company's continuing analysis of market, financial, and other factors (the New Repurchase Program). Prior to this authorization, $150 remained available for share repurchases at the end of the second quarter of 2022 from a prior authorization in October 2021 of $500 which was fully exhausted in 2022 with the Company's repurchase activity (see below).

In 2022, the Company repurchased 8,565,200 shares of its common stock for $500, under the previously authorized program; the shares were immediately retired. As of the date of this report, the Company is currently authorized to repurchase up to a total of $500, in the aggregate, of its outstanding shares of common stock under the New Repurchase Program. Repurchases under this program may be made using a variety of methods, which may include open market purchases, privately negotiated transactions, or pursuant to a Rule 10b5-1 plan. This program may be suspended or discontinued at any time and does not have a predetermined expiration date. Alcoa Corporation intends to retire repurchased shares of common stock.

In 2021, the Company repurchased 3,184,300 shares of its common stock for $150; the shares were immediately retired.

Investing Activities

Cash used for investing activities was $495 in 2022 compared with cash provided from investing activities of $565 in 2021.

In 2022, the use of cash was primarily attributable to $480 of capital expenditures and $32 of cash contributions to the ELYSIS joint venture, partially offset by the sale of the Company's interest in the MRN mine of $10.

In 2021, the source of cash was primarily attributable to proceeds from the sale of assets of $966, primarily the Warrick Rolling Mill, Rockdale, and Eastalco site sales, partially offset by $390 in capital expenditures.

In 2023, Alcoa expects capital expenditures of approximately $600 related to sustaining capital projects and growth projects. The timing and amount of capital expenditures may fluctuate as a result of the Company's normal operations.

Material Cash Requirements

As discussed above, the Company relies primarily on operating cash flows to fund its cash commitments and management believes its operating cash flows, cash on hand, and liquidity options will be adequate to fund its cash needs for at least 12 months and the foreseeable future thereafter. We have committed cash outflows related to pension and postretirement benefit obligations and operating lease agreements. See Part II Item 8 of this Form 10-K in Notes O and T, respectively, to the Consolidated Financial Statements for additional information. As of December 31, 2022, a summary of Alcoa Corporation's outstanding material cash requirements are as follows:

	Total	2023	2024-2025	2026-2027	Thereafter
Operating activities:					
Energy-related purchase obligations	$ 13,911	$ 1,563	$ 2,400	$ 2,241	$ 7,707
Raw material purchase obligations	8,639	2,516	1,872	943	3,308
Other purchase obligations	794	382	186	133	93
Interest related to debt	513	97	185	185	46
Financing activities:					
Long-term debt	1,834	1	81	751	1,001
Totals	$ 25,691	$ 4,559	$ 4,724	$ 4,253	$ 12,155

Purchase obligations – Energy-related purchase obligations consist primarily of electricity and natural gas contracts with expiration dates ranging from 1 year to 25 years. Raw material obligations consist mostly of bauxite (relates to AWAC's bauxite mine interests in Guinea and Brazil), caustic soda, lime, alumina, aluminum fluoride, calcined petroleum coke, anodes and cathode blocks with expiration dates ranging from less than 1 year to 13 years. Other purchase obligations consist principally of freight for bauxite and alumina with expiration dates ranging from 1 to 10 years. Many of these purchase obligations contain variable pricing components, and, as a result, actual cash payments may differ from the estimates provided in the preceding table. In accordance with the terms of several of these supply contracts, obligations may be reduced as a result of an interruption to operations, such as a plant curtailment or a force majeure event.

Interest related to total debt – Interest is based on interest rates in effect as of December 31, 2022 and is calculated on debt with maturities that extend to 2029.

Long-term debt – Total debt amounts in the preceding table represent the principal amounts of all outstanding long-term debt, which have maturities that extend to 2029.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

The preparation of the Company's Consolidated Financial Statements in accordance with GAAP requires management to make certain estimates based on judgments and assumptions regarding uncertainties that affect the amounts reported in the Consolidated Financial Statements and disclosed in the Notes to the Consolidated Financial Statements. Areas that require such estimates include the review of properties, plants, and equipment and goodwill for impairment, and accounting for each of the following: asset retirement and environmental obligations; litigation matters; pension plans and other postretirement benefits obligations; derivatives and hedging activities; and income taxes.

Management uses historical experience and all available information to make these estimates; actual results may differ from those used to prepare the Company's Consolidated Financial Statements at any given time. Despite these inherent limitations, management believes that the amounts recorded in the financial statements related to these items are based on its best estimates and judgments using all relevant information available at the time.

A summary of the Company's significant accounting policies is included in Part II Item 8 of this Form 10-K in Note B to the Consolidated Financial Statements.

Properties, Plants, and Equipment. Properties, plants, and equipment are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of such assets (asset group) may not be recoverable, including in the period when assets have met the criteria to be classified as held for sale. The model used to determine recoverability of an asset or asset group would leverage the model that management uses for planning and strategic review of the entire business, including related inputs and assumptions. Management's impairment assessment process is described in Part II Item 8 of this Form 10-K in Note B to the Consolidated Financial Statements. Refer to Part II Item 8 of this Form 10-K in Note K to the Consolidated Financial Statements for more information regarding properties, plants, and equipment.

Goodwill. Goodwill is reviewed for impairment annually (in the fourth quarter) or more frequently if indicators of impairment exist or if a decision is made to sell or exit a business. A significant amount of judgment is involved in determining if an indicator of impairment has occurred. Such indicators may include, among others, deterioration in general economic conditions, negative developments in equity and credit markets, adverse changes in the markets in which an entity operates, increases in input costs that have a negative effect on earnings and cash flows, or a trend of negative or declining cash flows over multiple periods. The fair value that could be realized in an actual transaction may differ from that used to evaluate goodwill for impairment.

Under the qualitative impairment test, management considers a number of factors in its assessment, such as: general economic conditions, equity and credit markets, industry and market conditions, and earnings and cash flow trends.

Under the quantitative impairment test, management uses a discounted cash flow (DCF) model to estimate the current fair value of its reporting units. A number of significant assumptions and estimates are involved in the application of the DCF model to forecast operating cash flows, including markets and market share, sales volumes and prices, production costs, production capability, tax rates, capital spending, discount rate, and working capital changes. The model used for the goodwill impairment test leverages the model, including related inputs and assumptions, that management uses for planning and strategic review of the entire business.

Management will test goodwill on a qualitative or quantitative basis. Refer to Part II Item 8 of this Form 10-K in Note B to the Consolidated Financial Statements for more information regarding management's impairment assessment process.

Management performed a quantitative assessment for the Bauxite and Alumina reporting units in 2022. As a result of the assessments, the estimated fair values of the Bauxite and Alumina reporting units were substantially in excess of their carrying values, resulting in no impairment. The impact on the estimated fair values of an increase in the discount rate of 1% would not result in a change in the conclusions reached, the estimated fair values would remain in excess of carrying values.

Further, in all years presented, there have been no triggering events that necessitated an impairment test for either the Bauxite or Alumina reporting units. Refer to Part II Item 8 of this Form 10-K in Note L to the Consolidated Financial Statements for more information regarding goodwill.

Asset Retirement and Environmental Obligations. Estimates are used to record environmental remediation and asset retirement obligation (ARO) reserves based on the best available information at the time of recognition. Several assumptions are used to estimate the costs required to demolish, environmentally remediate, or reclaim the site, including:

- Engineering estimates and benchmarks to other similar projects;
- Mining area to be reclaimed and estimated restoration costs;
- Volume of regulated materials to be removed (asbestos, PCB fluids, spent potlining);
- Disposition of materials;
- Extent of contamination based on available data;
- Scope of remediation to mitigate human health or environmental risks and/or to meet likely regulatory requirements; and,
- Commercial availability and pricing for off-site treatment or disposal applications.

As the site is demolished, remediated, or reclaimed, the assumptions and estimates used to record the reserve may change to account for:

- Actual site conditions that require more or less remediation or reclamation;
- Legislation that becomes more or less stringent;
- Regulative authorities requiring updates to final design prior to completion;
- Alternative disposal methods for waste;
- Technological changes which allow remediation to be more efficient;
- Market factors; and,
- Variances in work that is atypical from prior work experience.

Changes to the estimates may result in material changes to the reserve that may require an increase to or a reversal of a previously recorded reserve. Historically, the Company has not had material changes in established reserves. Refer to Part II Item 8 of this Form 10-K in Note R and Note S to the Consolidated Financial Statements for more information regarding current reserves.

Litigation Matters. For asserted claims and assessments, liabilities are recorded when an unfavorable outcome of a matter is deemed to be probable and the loss is reasonably estimable. Management determines the likelihood of an unfavorable outcome based on many factors such as, among others, the nature of the matter, available defenses and case strategy, progress of the matter, views and opinions of legal counsel and other advisors, applicability and success of appeals processes, and the outcome of similar historical matters. Once an unfavorable outcome is deemed probable, management weighs the probability of estimated losses, and the most reasonable loss estimate is recorded. If an unfavorable outcome of a matter is deemed to be reasonably possible, then the matter is disclosed, and no liability is recorded. With respect to unasserted claims or assessments, management must first determine that the probability that an assertion will be made is likely, then, a determination as to the likelihood of an unfavorable outcome and the ability to reasonably estimate the potential loss is made. Legal matters are reviewed on a continuous basis to determine if there has been a change in management's judgment regarding the likelihood of an unfavorable outcome or the estimate of a potential loss. Refer to Part II Item 8 of this Form 10-K in Note B to the Consolidated Financial Statements for more information regarding management's litigation matters policy.

Pension and Other Postretirement Benefits. Liabilities and expenses for pension and other postretirement benefits are determined using actuarial methodologies and incorporate significant assumptions, including the interest rate used to discount the future estimated liability, the expected long-term rate of return on plan assets, and several assumptions relating to the employee workforce (salary increases, health care cost trend rates, retirement age, and mortality).

The yield curve model used to develop the discount rate parallels the plans' projected cash flows and has a weighted average duration of 11 years. The underlying cash flows of the high-quality corporate bonds included in the model exceed the cash flows needed to satisfy the Company's plan obligations multiple times. If a deep market of high-quality corporate bonds does not exist in a country, then the yield on government bonds plus a corporate bond yield spread is used. The impact on the combined pension and other postretirement liabilities of a change in the weighted average discount rate of ¼ of 1% would be approximately $75 and either a charge or credit of approximately $1 to pretax earnings in the following year.

The expected long-term rate of return on plan assets is generally applied to a five-year market-related value of plan assets (a four-year average or the fair value at the plan measurement date is used for certain non-U.S. plans). The process used by management to develop this assumption is one that relies on forward-looking investment returns by asset class. Management incorporates expected future investment returns on current and planned asset allocations using information from various external investment managers and consultants, as well as management's own judgment. A change in the assumption for the weighted average expected long-term rate of return on plan assets of ¼ of 1% would impact pretax earnings by approximately $7 for 2023.

Mortality rate assumptions are based on mortality tables and future improvement scales published by third parties, such as the Society of Actuaries, and consider other available information including historical data as well as studies and publications from reputable sources.

Refer to Part II Item 8 of this Form 10-K in Note O to the Consolidated Financial Statements for more information regarding pension and other postretirement benefits including accounting impacts of current year actions.

Derivatives and Hedging. To calculate the fair value of certain derivatives, management uses discounted cash flow (DCF) and other simulation models that consider the following inputs and assumptions: quoted market prices (e.g., aluminum prices on the 10-year London Metal Exchange (LME) forward curve and energy prices), information concerning time premiums and volatilities for certain option type embedded derivatives and regional premiums for aluminum contracts, aluminum and energy prices beyond those quoted in the market, and the estimated credit spread between Alcoa and the counterparty. The quoted market prices used in the valuation models are dependent on market fundamentals, the relationship between supply and demand at any point in time, seasonal conditions, inventories, and interest rates. For periods beyond the term of quoted market prices, management estimates the price of aluminum by extrapolating the 10-year LME forward curve and estimates the Midwest premium based on recent transactions.

Changes in estimates can have a material impact on the derivative valuations. Refer to Part II Item 8 of this Form 10-K in Note P to the Consolidated Financial Statements for more information regarding derivatives and hedging and related activity during the period.

Income Taxes. Valuation allowances are recorded to reduce deferred tax assets when it is more likely than not (greater than 50%) that a tax benefit will not be realized. In evaluating the need for a valuation allowance, management applies judgment in assessing all available positive and negative evidence and considers all potential sources of taxable income, including income available in carryback periods, future reversals of taxable temporary differences, projections of taxable income, and income from tax planning strategies. Positive evidence includes factors such as a history of profitable operations, projections of future profitability within the carryforward period, including from tax planning strategies, and Alcoa Corporation's experience with similar operations. Existing favorable contracts and the ability to sell products into established markets are additional positive evidence. Negative evidence includes items such as cumulative losses, projections of future losses, or carryforward periods that are not long enough to allow for the utilization of a deferred tax asset based on existing projections of income. In certain jurisdictions, deferred tax assets related to cumulative losses may exist without a valuation allowance where in management's judgment the weight of the positive evidence more than offsets the negative evidence of the cumulative losses. Upon changes in facts and circumstances, management may conclude that deferred tax assets for which no valuation allowance is currently recorded may not be realized, resulting in a future charge to establish a valuation allowance. Financial information utilized in this analysis leverages the same financial information, including related inputs and assumptions, that management uses for planning and strategic review of the entire business.

Tax benefits related to uncertain tax positions taken or expected to be taken on a tax return are recorded when such benefits meet a more likely than not threshold. Otherwise, these tax benefits are recorded when a tax position has been effectively settled, which means that the statute of limitations has expired, or the appropriate taxing authority has completed their examination even though the statute of limitations remains open.

Changes in estimates can have a material impact on the deferred taxes and uncertain tax positions. Refer to Part II Item 8 of this Form 10-K in Note Q to the Consolidated Financial Statements for more information regarding income taxes and deferred tax assets and related activity during the period.

RELATED PARTY TRANSACTIONS

Alcoa Corporation buys products from and sells products to various related companies, consisting of entities in which Alcoa Corporation retains a 50% or less equity interest, at negotiated prices between the two parties. These transactions were not material to the financial position or results of operations of Alcoa Corporation for all periods presented.

RECENTLY ADOPTED ACCOUNTING GUIDANCE

See Part II Item 8 of this Form 10-K in Note B to the Consolidated Financial Statements under caption Recently Adopted Accounting Guidance.

RECENTLY ISSUED ACCOUNTING GUIDANCE

See Part II Item 8 of this Form 10-K in Note B to the Consolidated Financial Statements under caption Recently Issued Accounting Guidance.

C1. CONSOLIDATED FINANCIAL STATEMENTS OF ALCOA FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2023

ALCOA CORPORATION AND SUBSIDIARIES
STATEMENT OF CONSOLIDATED OPERATIONS
(in millions, except per-share amounts)

For the year ended December 31,	**2023**	**2022**	**2021**
Sales (E)	$ 10,551	$ 12,451	$ 12,152
Cost of goods sold (exclusive of expenses below)	9,813	10,212	9,153
Selling, general administrative, and other expenses	226	204	227
Research and development expenses	39	32	31
Provision for depreciation, depletion, and amortization	632	617	664
Restructuring and other charges, net (D)	184	696	1,128
Interest expense (U)	107	106	195
Other expenses (income), net (U)	134	(118)	(445)
Total costs and expenses	11,135	11,749	10,953
(Loss) income before income taxes	(584)	702	1,199
Provision for income taxes (Q)	189	664	629
Net (loss) income	(773)	38	570
Less: Net (loss) income attributable to non-controlling interest	(122)	161	141
Net (loss) income attributable to Alcoa Corporation	(651)	(123)	429
Earnings per share attributable to Alcoa Corporation common shareholders (F):			
Basic	$ (3.65)	$ (0.68)	$ 2.30
Diluted	$ (3.65)	$ (0.68)	$ 2.26

The accompanying notes are an integral part of the consolidated financial statements.

ALCOA CORPORATION AND SUBSIDIARIES
STATEMENT OF CONSOLIDATED COMPREHENSIVE INCOME
(in millions)

	Alcoa Corporation			Non-controlling interest			Total		
For the year ended December 31,	**2023**	**2022**	**2021**	**2023**	**2022**	**2021**	**2023**	**2022**	**2021**
Net (loss) income	$ (651)	$ (123)	$ 429	$ (122)	$ 161	$ 141	$ (773)	$ 38	$ 570
Other comprehensive (loss) income, net of tax (G):									
Change in unrecognized net actuarial loss and prior service cost/benefit related to pension and other postretirement benefits	(62)	944	1,654	(10)	8	54	(72)	952	1,708
Foreign currency translation adjustments	92	(71)	(229)	57	(103)	(93)	149	(174)	(322)
Net change in unrecognized gains/losses on cash flow hedges	(136)	180	(388)	(1)	2	–	(137)	182	(388)
Total Other comprehensive (loss) income, net of tax	(106)	1,053	1,037	46	(93)	(39)	(60)	960	998
Comprehensive (loss) income	$ (757)	$ 930	$ 1,466	$ (76)	$ 68	$ 102	$ (833)	$ 998	$ 1,568

The accompanying notes are an integral part of the consolidated financial statements.

ALCOA CORPORATION AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEET
(in millions)

December 31,	**2023**	**2022**
Assets		
Current assets:		
Cash and cash equivalents (P)	$ 944	$ 1,363
Receivables from customers (I)	656	778
Other receivables	152	131
Inventories (J)	2,158	2,427
Fair value of derivative instruments (P)	29	134
Prepaid expenses and other current assets	466	417
Total current assets	4,405	5,250
Properties, plants, and equipment, net (K)	6,785	6,493
Investments (H)	979	1,122
Deferred income taxes (Q)	333	296
Fair value of derivative instruments (P)	3	2
Other non-current assets (U)	1,650	1,593
Total Assets	$ 14,155	$ 14,756
Liabilities		
Current liabilities:		
Accounts payable, trade	$ 1,714	$ 1,757
Accrued compensation and retirement costs	357	335
Taxes, including income taxes	88	230
Fair value of derivative instruments (P)	214	200
Other current liabilities	578	481
Long-term debt due within one year (M & P)	79	1

December 31,	2023	2022
Total current liabilities	3,030	3,004
Long-term debt, less amount due within one year (M & P)	1,732	1,806
Accrued pension benefits (O)	278	213
Accrued other postretirement benefits (O)	443	480
Asset retirement obligations (R)	772	711
Environmental remediation (S)	202	226
Fair value of derivative instruments (P)	1,092	1,026
Non-current income taxes (Q)	193	215
Other non-current liabilities and deferred credits (U)	568	486
Total liabilities	8,310	8,167
Contingencies and commitments (S)		
Equity		
Alcoa Corporation shareholders' equity:		
Common stock (N)	2	2
Additional capital	9,187	9,183
Accumulated deficit	(1,293)	(570)
Accumulated other comprehensive loss (G)	(3,645)	(3,539)
Total Alcoa Corporation shareholders' equity	4,251	5,076
Non-controlling interest (A)	1,594	1,513
Total equity	5,845	6,589
Total Liabilities and Equity	$ 14,155	$ 14,756

The accompanying notes are an integral part of the consolidated financial statements.

ALCOA CORPORATION AND SUBSIDIARIES
STATEMENT OF CONSOLIDATED CASH FLOWS
(in millions)

For the year ended December 31,	2023	2022	2021
Cash from Operations			
Net (loss) income	$ (773)	$ 38	$ 570
Adjustments to reconcile net (loss) income to cash from operations:			
Depreciation, depletion, and amortization	632	617	664
Deferred income taxes (Q)	(22)	219	147
Equity loss (income), net of dividends (H)	201	4	(138)
Restructuring and other charges, net (D)	184	696	1,128
Net loss (gain) from investing activities – asset sales (U)	18	10	(354)
Net periodic pension benefit cost (O)	6	54	47
Stock-based compensation (N)	35	40	39
Premium paid on early redemption of debt	–	–	43
Loss (gain) on mark-to-market derivative financial contracts	26	(44)	(24)
Other	78	53	49
Changes in assets and liabilities, excluding effects of divestitures and foreign currency translation adjustments:			
Decrease (increase) in receivables	104	(59)	(414)
Decrease (increase) in inventories (J)	243	(547)	(639)
Decrease (increase) in prepaid expenses and other current assets	39	44	(41)
(Decrease) increase in accounts payable, trade	(74)	189	354
Decrease in accrued expenses	(133)	(173)	(38)
(Decrease) increase in taxes, including income taxes	(146)	(152)	301
Pension contributions (O)	(24)	(17)	(579)
Increase in non-current assets	(210)	(87)	(160)
Decrease in non-current liabilities	(93)	(63)	(35)
Cash provided from operations	91	822	920

For the year ended December 31,	2023	2022	2021
Financing Activities			
Additions to debt (M)	127	4	495
Payments on debt (M)	(72)	(1)	(1,294)
Proceeds from the exercise of employee stock options (N)	1	22	25
Repurchase of common stock (N)	–	(500)	(150)
Dividends paid on Alcoa common stock (N)	(72)	(72)	(19)
Payments related to tax withholding on stock-based compensation awards	(34)	(19)	(1)
Financial contributions for the divestiture of businesses (C)	(52)	(33)	(17)
Contributions from non-controlling interest (A)	188	214	21
Distributions to non-controlling interest	(30)	(379)	(215)
Other	1	(4)	(3)
Cash provided from (used for) financing activities	57	(768)	(1,158)
Investing Activities			
Capital expenditures	(531)	(480)	(390)
Proceeds from the sale of assets and businesses (C)	4	5	966
Additions to investments (H)	(70)	(32)	(11)
Sale of investments (H)	–	10	–
Other	12	2	–
Cash (used for) provided from investing activities	(585)	(495)	565
Effect of exchange rate changes on cash and cash equivalents and restricted cash	10	(9)	(13)
Net change in cash and cash equivalents and restricted cash	(427)	(450)	314
Cash and cash equivalents and restricted cash at beginning of year	1,474	1,924	1,610
Cash and cash equivalents and restricted cash at end of year	$ 1,047	$ 1,474	$ 1,924

The accompanying notes are an integral part of the consolidated financial statements.

ALCOA CORPORATION AND SUBSIDIARIES
STATEMENT OF CHANGES IN CONSOLIDATED EQUITY
(in millions)

	Alcoa Corporation shareholders					
	Common stock	Additional capital	Accumulated deficit	Accumulated other comprehensive (loss) income	Non-controlling interest	Total equity
Balance at December 31, 2020	$ 2	$ 9,663	$ (725)	$ (5,629)	$ 1,705	$ 5,016
Net income	–	–	429	–	141	570
Other comprehensive income (loss) (G)	–	–	–	1,037	(39)	998
Stock-based compensation (N)	–	39	–	–	–	39
Net effect of tax withholding for compensation plans and exercise of stock options (N)	–	25	–	–	–	25
Repurchase of common stock (N)	–	(150)	–	–	–	(150)
Dividends paid on Alcoa common stock ($0.10 per share) (N)	–	–	(19)	–	–	(19)
Contributions	–	–	–	–	21	21
Distributions	–	–	–	–	(215)	(215)
Other	–	–	–	–	(1)	(1)
Balance at December 31, 2021	2	9,577	(315)	(4,592)	1,612	6,284
Net (loss) income	–	–	(123)	–	161	38
Other comprehensive income (loss) (G)	–	–	–	1,053	(93)	960
Stock-based compensation (N)	–	40	–	–	–	40
Net effect of tax withholding for compensation plans and exercise of stock options (N)	–	3	–	–	–	3
Repurchase of common stock (N)	–	(440)	(60)	–	–	(500)
Dividends paid on Alcoa common stock ($0.10 per share) (N)	–	–	(72)	–	–	(72)
Contributions	–	–	–	–	214	214
Distributions	–	–	–	–	(379)	(379)
Other	–	3	–	–	(2)	1
Balance at December 31, 2022	2	9,183	(570)	(3,539)	1,513	6,589
Net loss	–	–	(651)	–	(122)	(773)
Other comprehensive (loss) income (G)	–	–	–	(106)	46	(60)
Stock-based compensation (N)	–	35	–	–	–	35
Net effect of tax withholding for compensation plans and exercise of stock options (N)	–	(33)	–	–	–	(33)
Dividends paid on Alcoa common stock ($0.10 per share) (N)	–	–	(72)	–	–	(72)
Contributions	–	–	–	–	188	188
Distributions	–	–	–	–	(30)	(30)
Other	–	2	–	–	(1)	1
Balance at December 31, 2023	$ 2	$ 9,187	$ (1,293)	$ (3,645)	$ 1,594	$ 5,845

The accompanying notes are an integral part of the consolidated financial statements.

ALCOA CORPORATION AND SUBSIDIARIES
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
(dollars in millions, except per-share amounts; metric tons in thousands (kmt))

A. BASIS OF PRESENTATION

Alcoa Corporation (or the Company) is a vertically integrated aluminum company comprised of bauxite mining, alumina refining, aluminum production (smelting and casting), and energy generation. Through direct and indirect ownership, the Company has 27 operating locations in nine countries around the world, situated primarily in Australia, Brazil, Canada, Iceland, Norway, Spain, and the United States.

Alcoa Corporation became an independent, publicly traded company on November 1, 2016, following its separation (the Separation Transaction) from its former parent company, Alcoa Inc. References herein to "ParentCo" refer to Alcoa Inc. and its consolidated subsidiaries through October 31, 2016, at which time it was renamed Arconic Inc. (Arconic) and since has been subsequently renamed Howmet Aerospace Inc.

Basis of Presentation. The Consolidated Financial Statements of Alcoa Corporation are prepared in conformity with accounting principles generally accepted in the United States of America (GAAP). In accordance with GAAP, certain situations require management to make estimates based on judgments and assumptions, which may affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements. They also may affect the reported amounts of revenues and expenses during the reporting periods. Management uses historical experience and all available information to make these estimates. Management regularly evaluates the judgments and assumptions used in its estimates, and results could differ from those estimates upon future events and their effects or new information.

Principles of Consolidation. The Consolidated Financial Statements of the Company include the accounts of Alcoa Corporation and companies in which Alcoa Corporation has a controlling interest, including those that comprise the Alcoa World Alumina & Chemicals (AWAC) joint venture (see below). Intercompany transactions have been eliminated. The equity method of accounting is used for investments in affiliates and other joint ventures over which the Company has significant influence but does not have effective control. Investments in affiliates in which Alcoa Corporation cannot exercise significant influence are accounted at cost less any impairment, a measurement alternative in accordance with GAAP.

AWAC is an unincorporated global joint venture between Alcoa Corporation and Alumina Limited and consists of several affiliated operating entities, which own, have an interest in, or operate the bauxite mines and alumina refineries within the Company's Alumina segment (except for the Poços de Caldas mine and refinery, portions of the São Luís refinery, and investment in Mineração Rio do Norte S.A. (MRN) until its sale in April 2022, all in Brazil) and a portion (55%) of the Portland smelter (Australia) within the Company's Aluminum segment. Alcoa Corporation owns 60% and Alumina Limited owns 40% of these individual entities, which are consolidated by the Company for financial reporting purposes and include Alcoa of Australia Limited (AofA), Alcoa World Alumina LLC (AWA), Alcoa World Alumina Brasil Ltda. (AWAB), and Alúmina Española, S.A. (Española). Alumina Limited's interest in the equity of such entities is reflected as Non-controlling interest on the accompanying Consolidated Balance Sheet.

Management evaluates whether an Alcoa Corporation entity or interest is a variable interest entity and whether the Company is the primary beneficiary. Consolidation is required if both of these criteria are met. Alcoa Corporation does not have any variable interest entities requiring consolidation.

Related Party Transactions. Alcoa Corporation buys products from and sells products to various related companies, consisting of entities in which the Company retains a 50% or less equity interest, at negotiated prices between the two parties. These transactions were not material to the financial position or results of operations of Alcoa Corporation for all periods presented.

B. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Cash Equivalents. Cash equivalents are highly liquid investments purchased with an original maturity of three months or less.

Restricted Cash. Restricted cash is included with Cash and cash equivalents when reconciling the Cash and cash equivalents and restricted cash at beginning of year and Cash and cash equivalents and restricted cash at end of year on the accompanying Statement of Consolidated Cash Flows. Current restricted cash amounts are reported in Prepaid expenses and other current assets on the accompanying Consolidated Balance Sheet. non-current restricted cash amounts are reported in Other non-current assets on the accompanying Consolidated Balance Sheet (see Note U for a reconciliation of Cash and cash equivalents and restricted cash).

Inventory Valuation. Inventories are carried at the lower of cost or net realizable value, with the cost of inventories principally determined under the average cost method.

Properties, Plants, and Equipment. Properties, plants, and equipment are recorded at cost. Interest related to the construction of qualifying assets is capitalized as part of the construction costs. Depreciation is recorded principally on the straight-line method over the estimated useful lives of the assets. Depreciation is recorded on temporarily idled facilities until such time management approves a permanent closure. The following table details the weighted average useful lives of structures and machinery and equipment by type of operation (numbers in years):

	Structures	Machinery and equipment
Alumina	29	27
Aluminum smelting and casting	37	22
Energy generation	33	25

Repairs and maintenance are charged to expense as incurred while costs for significant improvements that add productive capacity or that extend the useful life are capitalized. Gains or losses from the sale of assets are generally recorded in Other expenses (income), net.

Properties, plants, and equipment are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of such assets (asset group) may not be recoverable. Recoverability of assets is determined by comparing the estimated undiscounted net cash flows of the operations related to the assets (asset group) to their carrying amount. An impairment loss would be recognized when the carrying amount of the assets (asset group) exceeds the fair value. The amount of the impairment loss to be recorded is calculated as the excess of the carrying value of the assets (asset group) over their fair value, with fair value determined using the best information available, which generally is a discounted cash flow (DCF) model. The determination of what constitutes an asset group, the associated estimated undiscounted net cash flows, and the estimated useful lives of assets also require significant judgments.

Leases. The Company determines whether an arrangement is a lease at the inception of the arrangement based on the terms and conditions in the contract. A contract contains a lease if there is an identified asset which the Company has the right to control. Lease right-of-use (ROU) assets are included in Properties, plants, and equipment, net with the corresponding operating lease liabilities included within Other current liabilities and Other non-current liabilities and deferred credits on the accompanying Consolidated Balance Sheet.

Operating lease ROU assets and liabilities are recognized at the lease commencement date based on the present value of lease payments over the lease term. The Company uses its incremental borrowing rate at the commencement date in determining the present value of lease payments unless a rate is implicit in the lease. Lease terms include options to extend the lease when it is reasonably certain that those options will be exercised. Leases with an initial term of 12 months or less, including anticipated renewals, are not recorded on the Consolidated Balance Sheet.

The Company made a policy election not to record any non-lease components of a lease agreement in the lease liability. Variable lease payments are not presented as part of the ROU asset or liability recorded at the inception of a contract. Lease expense for operating lease payments is recognized on a straight-line basis over the lease term.

Equity Investments. Alcoa invests in a number of privately-held companies, primarily through joint ventures and consortia, which are accounted for using the equity method. The equity method is applied in situations where the Company has the ability to exercise significant influence, but not control, over the investee. Management reviews equity investments for impairment whenever certain indicators are present suggesting that the carrying value of an investment is not recoverable.

Deferred Mining Costs. Alcoa incurs deferred mining costs during the development stage of a mine life cycle. Such costs include the construction of access and haul roads, detailed drilling and geological analysis to further define the grade and quality of the known bauxite, and overburden removal costs. These costs relate to sections of the related mines where the Company is currently extracting bauxite or preparing for production in the near term. These sections are outlined and planned incrementally and generally are mined over periods ranging from one to five years, depending on specific mine plans. The amount of geological drilling and testing necessary to determine the economic viability of the bauxite deposit being mined is such that the reserves are considered to be proven. Deferred mining costs are amortized on a units-of-production basis and included in Other non-current assets on the accompanying Consolidated Balance Sheet.

Goodwill and Other Intangible Assets. Goodwill is not amortized but is reviewed for impairment annually (in the fourth quarter) or more frequently if indicators of impairment exist or if a decision is made to sell or exit a business.

Goodwill is allocated among and evaluated for impairment at the reporting unit level, which is defined as an operating segment or one level below an operating segment. Beginning in January 2023, the Company changed its operating segments, by combining the Bauxite and Alumina segments, and reported its financial results in the following two segments: (i) Alumina and (ii) Aluminum (see Note E).

The Company has three reporting units, of which two are included in the Aluminum segment (smelting/casting and energy generation). The remaining reporting unit is the Alumina segment. Of these three reporting units, only Alumina contains goodwill (see Note L).

Goodwill is tested for impairment by assessing qualitative factors to determine whether it is more likely than not (greater than 50%) that the fair value of the reporting unit is less than its carrying amount or performing a quantitative assessment using a discounted cash flow model. If the qualitative assessment indicates a possible impairment, then a quantitative impairment test is performed to determine the fair value of the reporting unit using a discounted cash flow method. Otherwise, no further analysis is required.

Under the quantitative assessment, the evaluation of impairment involves comparing the current fair value of each reporting unit to its carrying value, including goodwill. In the event the estimated fair value of a reporting unit is less than the carrying value, an impairment loss equal to the excess of the reporting unit's carrying value over its fair value not to exceed the total amount of goodwill applicable to that reporting unit would be recognized.

Alcoa's policy for its annual review of goodwill is to perform the quantitative impairment test for its reporting unit containing goodwill at least once during every three-year period.

Intangible assets with finite useful lives are amortized generally on a straight-line basis over the periods benefited. The following table details the weighted average useful lives of software and other intangible assets by type of operation (numbers in years):

	Software	**Other intangible assets**
Alumina	6	25
Aluminum smelting and casting	3	40
Energy generation	3	29

Asset Retirement Obligations. Alcoa recognizes asset retirement obligations (AROs) related to legal obligations associated with the standard operation of bauxite mines, alumina refineries, and aluminum smelters. These AROs consist primarily of costs associated with mine reclamation, closure of bauxite residue areas, spent pot lining and regulated waste materials disposal, and landfill closure. Additionally, costs are recorded as AROs upon management's decision to permanently close and demolish certain structures and for any significant lease restoration obligations. The fair values of these AROs are recorded on a discounted basis at the time the obligation is incurred and accreted over time for the change in present value; related accretion is recorded as a component of Cost of goods sold. Additionally, the Company capitalizes asset retirement costs by increasing the carrying amount of the related long-lived assets and depreciating these assets over their remaining useful life.

The fair values for AROs are determined using significant assumptions, including engineering designs for construction or closure, materials and services costs, regulatory requirements, volume of regulated material to be removed, disposition of demolition materials, and timing to complete construction or closure.

Subsequent adjustments to estimates of previously established AROs for current operations are capitalized by increasing the carrying amount of the related long-lived assets and depreciating these assets over their remaining useful life. Adjustments to estimates of AROs for closed locations are charged to Restructuring and other charges, net on the accompanying Statement of Consolidated Operations (see Note R).

Certain conditional asset retirement obligations related to alumina refineries, aluminum smelters, and energy generation facilities have not been recorded in the Consolidated Financial Statements due to uncertainties surrounding the ultimate settlement date. The fair value of these asset retirement obligations will be recorded when a reasonable estimate of the ultimate settlement date can be made.

Environmental Matters. Environmental related expenditures for current operations are expensed as a component of Cost of goods sold or capitalized, as appropriate. Expenditures relating to existing conditions caused by past operations, generally for closed locations which will not contribute to future revenues, are charged to Restructuring and other charges, net. Liabilities are recorded when remediation costs are probable and can be reasonably estimated. In instances where the Company has ongoing monitoring and maintenance responsibilities, it is Alcoa's policy to maintain a reserve equal to five years of expected costs. The liability is continuously reviewed and adjusted to reflect current remediation progress, rate and pricing changes, actual volumes of material requiring management, changes to the original assumptions regarding how the site was to be remediated, and other factors that may be relevant, including changes in technology or regulations. The estimates may also include costs related to other potentially responsible parties to the extent that Alcoa has reason to believe such parties will not fully pay their proportionate share.

Litigation Matters. For asserted claims and assessments, liabilities are recorded when an unfavorable outcome of a matter is deemed to be probable and the loss is reasonably estimable. With respect to unasserted claims or assessments, liabilities are recorded when the probability that an assertion will be made is likely, an unfavorable outcome of the matter is deemed to be probable, and the loss is reasonably estimable. Legal matters are reviewed on a continuous basis to determine if there has been a change in management's judgment regarding the likelihood of an unfavorable outcome or the estimate of a potential loss. Legal costs, which are primarily for general litigation, environmental compliance, tax disputes, and general corporate matters, are expensed as incurred.

Revenue Recognition. The Company recognizes revenue when it satisfies a performance obligation(s) in accordance with the provisions of a customer order or contract. This is achieved when control of the product has been transferred to the customer, which is generally determined when title, ownership, and risk of loss pass to the customer, all of which occurs upon shipment or delivery of the product. The shipping terms vary across all businesses and depend on the product, the country of origin, and the type of transportation. Accordingly, the sale of Alcoa's products to its customers represent single performance obligations for which revenue is recognized at a point in time, except for the Company's Energy product division in which the customer simultaneously receives and consumes electricity (see Note E). Revenue is based on the consideration the Company expects to receive in exchange for its products. Returns and other adjustments have not been material. Based on the foregoing, no significant judgment is required to determine when control of a product has been transferred to a customer.

The Company considers shipping and handling activities as costs to fulfill the promise to transfer the related products. As a result, customer payments of shipping and handling costs are recorded as a component of revenue. Taxes collected (e.g., sales, use, value added, excise) from its customers related to the sale of its products are remitted to governmental authorities and excluded from Sales.

Cost of goods sold. The Company includes the following in Cost of goods sold: operating costs of our two segments, excluding depreciation, depletion, and amortization, but including all production related costs: raw materials consumed; purchases of metal for consumption; conversion costs, such as labor, materials, and utilities; equity earnings of certain investments integral to the Company's supply chain; and plant administrative expenses. Also included in Cost of goods sold are: costs related to the Transformation function, which focuses on the management of expenses and obligations of previously closed operations; pension and other postretirement benefit service cost for employees maintaining closed locations; purchases of bauxite from offtake or other supply agreements, alumina to satisfy customer commitments, and metal for trade; and other costs not included in the operating costs of the segments.

Selling, general administrative, and other expenses. The Company includes the costs of corporate-wide functional support in Selling, general administrative, and other expenses. Such costs include: executive; sales; marketing; strategy; operations administration; finance; information technology; legal; human resources; and government affairs and communications.

Stock-Based Compensation. Compensation expense for employee equity grants is recognized using the non-substantive vesting period approach, in which the expense is recognized ratably over the requisite service period based on the grant date fair value. Forfeitures are accounted for as they occur. The fair value of performance stock units containing a market condition is valued using a Monte Carlo valuation model. Determining the fair value at the grant date requires judgment, including estimates for the average risk-free interest rate, and volatility. These assumptions may differ significantly between grant dates because of changes in the actual results of these inputs that occur over time. As of January 1, 2021, the Company no longer grants stock options.

Refer to Note N for more information regarding stock-based compensation.

Pension and Other Postretirement Benefits. Alcoa sponsors several defined benefit pension plans and health care postretirement benefit plans. The Company recognizes on a plan-by-plan basis the net funded status of these pension and postretirement benefit plans as either an asset or a liability on its Consolidated Balance Sheet. The net funded status represents the difference between the fair value of each plan's assets and the benefit obligation of the respective plan. The benefit obligation represents the present value of the estimated future benefits the Company currently expects to pay to plan participants based on past service. Unrecognized gains and losses related to the plans are deferred in Accumulated other comprehensive loss on the Consolidated Balance Sheet until amortized into earnings.

The plan assets and benefit obligations are measured at the end of each year or more frequently, upon the occurrence of certain events such as a significant plan amendment, settlement, or curtailment. For interim plan remeasurements, it is the Company's policy to record the related accounting impacts within the same quarter as the triggering event.

Liabilities and expenses for pension and other postretirement benefits are determined using actuarial methodologies and incorporate significant assumptions, including the interest rate used to discount the future estimated liability, the expected long-term rate of return on plan assets, and several assumptions relating to the employee workforce (salary increases, health care cost trend rates, retirement age, and mortality).

The yield curve model used to develop the discount rate parallels the plans' projected cash flows and has a weighted average duration of 10 years. The underlying cash flows of the high-quality corporate bonds included in the model exceed the cash flows needed to satisfy the Company's plan obligations multiple times. If a deep market of high-quality corporate bonds does not exist in a country, then the yield on government bonds plus a corporate bond yield spread is used.

The expected long-term rate of return on plan assets is generally applied to a five-year market-related value of plan assets (a four-year average or the fair value at the plan measurement date is used for certain non-U.S. plans). The process used by management to develop this assumption is one that relies on forward-looking investment returns by asset class. Management incorporates expected future investment returns on current and planned asset allocations using information from various external investment managers and consultants, as well as management's own judgment.

Mortality rate assumptions are based on mortality tables and future improvement scales published by third parties, such as the Society of Actuaries, and consider other available information including historical data as well as studies and publications from reputable sources.

A change in one or a combination of these assumptions, or the effects of actual results differing from assumptions, could have a material impact on Alcoa's projected benefit obligation. These changes or differences are recorded in Accumulated other comprehensive loss and are amortized into earnings as a component of the net periodic benefit cost (income) over the average future working lifetime or average remaining life expectancy, as appropriate, of the plan's participants.

One-time accounting impacts, such as curtailment and settlement losses (gains), are recognized immediately and are reclassified from Accumulated other comprehensive loss to Restructuring and other charges, net on the accompanying Statement of Consolidated Operations.

Refer to Note O for more information regarding pension and other postretirement benefits including accounting impacts of current year actions.

Derivatives and Hedging. Derivatives are held for purposes other than trading and are part of a formally documented risk management program.

Alcoa accounts for hedges of firm customer commitments for aluminum as fair value hedges. The fair values of the derivatives and changes in the fair values of the underlying hedged items are reported as assets and liabilities in the Consolidated Balance Sheet. Changes in the fair values of these derivatives and underlying hedged items generally offset and are recorded each period in Sales, consistent with the underlying hedged item.

The Company accounts for certain hedges of foreign currency exposures and certain forecasted transactions as cash flow hedges. The fair values of the derivatives are recorded as assets and liabilities in the Consolidated Balance Sheet. The changes in the fair values of these derivatives are recorded in Other comprehensive (loss) income and are reclassified to Sales, Cost of goods sold, or Other expenses (income), net in the period in which earnings are impacted by the hedged items or in the period that the transaction no longer qualifies as a cash flow hedge. These contracts cover the same periods as known or expected exposures, generally not exceeding five years.

If no hedging relationship is designated, the derivative is marked to market through Other expenses (income), net.

Cash flows from derivatives are recognized in the Statement of Consolidated Cash Flows in a manner consistent with the underlying transactions.

Income Taxes. The provision for income taxes is determined using the asset and liability approach of accounting for income taxes. Under this approach, the provision for income taxes represents income taxes paid or payable (or received or receivable) for the current year plus the change in deferred taxes during the year. Deferred taxes represent the future tax consequences expected to occur when the reported amounts of assets and liabilities are recovered or paid, resulting from differences between the financial and tax bases of Alcoa's assets and liabilities and are adjusted for changes in tax rates and tax laws when enacted.

Valuation allowances are recorded to reduce deferred tax assets when it is more likely than not (greater than 50%) that a tax benefit will not be realized. In evaluating the need for a valuation allowance, management applies judgment in assessing all available positive and negative evidence and considers all potential sources of taxable income. Deferred tax assets for which no valuation allowance is recorded may not be realized upon changes in facts and circumstances, resulting in a future charge to establish a valuation allowance. Existing valuation allowances are re-examined under the same standards of positive and negative evidence. If it is determined that it is more likely than not that a deferred tax asset will be realized, the appropriate amount of the valuation allowance, if any, is released. Deferred tax assets and liabilities are also re-measured to reflect changes in underlying tax rates due to law changes and the granting and lapse of tax holidays.

Tax benefits related to uncertain tax positions taken or expected to be taken on a tax return are recorded when such benefits meet a more likely than not threshold. Otherwise, these tax benefits are recorded when a tax position has been effectively settled, which means that the statute of limitations has expired or the appropriate taxing authority has completed their examination even though the statute of limitations remains open. Interest and penalties related to uncertain tax positions are recognized as part of the provision for income taxes and are accrued in the period that such interest and penalties would be applicable under relevant tax law until such time that the related tax benefits are recognized.

Foreign Currency. The local currency is the functional currency for Alcoa's significant operations outside the United States, except for certain operations in Canada and Iceland, and a holding and trading company in the Netherlands, where the U.S. dollar is used as the functional currency. The determination of the functional currency for Alcoa's operations is made based on the appropriate economic and management indicators. Where local currency is the functional currency, assets and liabilities are translated into U.S. dollars using period end exchange rates and income and expenses are translated using the average exchange rates for the reporting period. Unrealized foreign currency translation gains and losses are deferred in Accumulated other comprehensive loss on the Consolidated Balance Sheet.

Recently Adopted Accounting Guidance. On January 1, 2023, the Company adopted Accounting Standard Update (ASU) No. 2022-04 which requires a buyer in a supplier finance program to disclose qualitative and quantitative information about its supplier finance programs, including the key terms of the program, the amount of obligations outstanding at the end of the reporting period, a description of where those obligations are presented in the balance sheet, and effective January 1, 2024, a roll-forward of such amounts during the annual period. The adoption of this guidance resulted in enhanced disclosures regarding these programs (see Note V) and did not have a material impact on the Company's Consolidated Financial Statements. Recently Issued Accounting Guidance. In December 2023, the Financial Accounting Standards Board (FASB) issued ASU No. 2023-09 which includes changes to income tax disclosures, including greater disaggregation of information in the rate reconciliation and disclosure of taxes paid by jurisdiction. The guidance is effective for annual periods beginning after December 15, 2024. Early adoption is permitted. The adoption of this guidance will provide enhanced disclosures regarding income taxes and will not have a material impact on the Company's financial statements.

In November 2023, the FASB issued ASU No. 2023-07 which requires disclosure of significant segment expenses regularly provided to the chief operating decision maker (CODM), other segment items (not included in significant segment expenses for each reportable segment), the title and position of the CODM, and an explanation of how the CODM uses the reported measure of segment profit or loss to assess segment performance and allocate resources. The guidance is effective for fiscal years beginning after December 15, 2023 on an annual basis and beginning after December 15, 2024 on an interim basis. Early adoption is permitted. The adoption of this guidance will provide enhanced disclosures regarding reportable segments and will not have a material impact on the Company's financial statements.

C. DIVESTITURES

Rockdale Site

During the fourth quarter of 2021, the Company completed the sale of land and industrial assets at the previously closed Rockdale smelter site in the state of Texas in a transaction valued at $240. Upon closing of the transaction, the Company received $230 in cash and recorded a net gain of $202 in Other expenses (income), net (pre- and after-tax; see Note U) on the Statement of Consolidated Operations.

Eastalco Site

During the second quarter of 2021, the Company completed the sale of land at the previously closed Eastalco smelter site in the state of Maryland in a transaction valued at $100. Upon closing of the transaction, the Company received $94 in cash and recorded a gain of $90 in Other expenses (income), net ($90 pre- and $89 after-tax; see Note U) on the Statement of Consolidated Operations.

Warrick Rolling Mill

In March 2021, Alcoa completed the sale of its rolling mill located at Warrick Operations (Warrick Rolling Mill), an integrated aluminum manufacturing site near Evansville, Indiana (Warrick Operations), to Kaiser Aluminum Corporation (Kaiser) for total consideration of approximately $670, which included the assumption of $69 in other postretirement benefit liabilities. The Company recorded a net gain of $30 in Other expenses (income), net (pre- and after- tax, see Note U) on the Statement of Consolidated Operations. Upon the closing of the transaction, the Company recorded estimated liabilities for future site separation commitments and remaining transaction costs associated with the sales agreement.

The Company recorded a charge of $17 and $8 in 2023 and 2022 in Other expenses (income), net, respectively, related to additional costs of existing site separation commitments. In 2023 and 2022, the Company spent $52 and $37 against the reserve, respectively. The remaining balance of $11 at December 31, 2023 is expected to be spent in 2024. The cash spent against the reserve is included in Cash provided from (used for) financing activities on the Statement of Consolidated Cash Flows.

D. RESTRUCTURING AND OTHER CHARGES, NET

Restructuring and other charges, net were comprised of the following:

	2023	2022	2021
Settlements and/or curtailments related to retirement benefits (O)	$ 21	$ 632	$ 977
Severance and employee termination costs	11	1	1
Loss on divestitures	–	79	–
Asset impairments	50	58	75
Asset retirement obligations (R)	41	34	23
Environmental remediation (S)	27	21	15
Other	36	(7)	82
Reversals of previously recorded charges	(2)	(122)	(45)
Restructuring and other charges, net	$ 184	$ 696	$ 1,128

Severance and employee termination costs were recorded based on approved detailed action plans submitted by the operating locations that specified positions to be eliminated, benefits to be paid under existing severance plans, union contracts or statutory requirements, and the expected timetable for completion of the plans.

2023 Actions. In 2023, Alcoa Corporation recorded Restructuring and other charges, net, of $184 which were primarily comprised of the following components:

- Non-cash settlement charges related to pension benefits (see Note O):
  - $21 related to the purchase of group annuity contracts to transfer approximately $235 of pension obligations and assets associated with defined benefit pension plans for approximately 530 Canadian retirees and beneficiaries;
- Charges related to portfolio actions:
  - $101 for the permanent closure of the previously curtailed Intalco (Washington) smelter (see below);
  - $53 for the updated viability agreement for the San Ciprián (Spain) smelter; and,
  - $11 for employee termination and severance costs, primarily related to the Kwinana refinery productivity program (see below);
- Other net charges:
  - $17 to record additional environmental and asset retirement related reserves at previously closed sites (see Note R and Note S);

  - $19 benefit for the sale of unused carbon credits at a previously closed site;
  - $1 to record additional asset retirement related reserves at Warrick Operations (Indiana) (see Note R); and,
  - $1 for additional take-or-pay contract costs related to the closed Wenatchee (Washington) and Intalco smelters;
- Reversals:
  - $2 due to lower costs for demolition and remediation at previously closed sites (see Note R).

In December 2023, Alcoa began the closure of a line at its Warrick Operations site in Indiana that had not operated since 2016 to allow for future capital investments to improve casting capabilities. The Company recorded a charge of $1 in Restructuring and other charges, net on the Statement of Consolidated Operations to establish reserves related to demolition obligations. Additionally, Alcoa recorded $1 in Cost of goods sold on the Statement of Consolidated Operations to write-off the remaining net book value of related inventory.

In September 2023, the Company initiated productivity programs across its operations in Australia to mitigate the financial impacts of lower grade bauxite and to optimize operating levels. In connection with this program, the Company recorded Restructuring and other charges, net of $6 for employee termination and severance costs for approximately 90 employees at the Kwinana refinery. The restructuring action and associated cash outlays are anticipated to be complete by the end of the second quarter of 2024. In 2023, the Company spent $1 against the reserve.

In March 2023, Alcoa Corporation announced the closure of the Intalco aluminum smelter, which had been fully curtailed since 2020. The Company recorded charges of $117 related to the closure, including a charge of $16 in Cost of goods sold on the Statement of Consolidated Operations to write-down remaining inventories to net realizable value and a charge of $101 in Restructuring and other charges, net on the Statement of Consolidated Operations. The restructuring charges were comprised of asset impairments of $50, environmental and demolition obligation reserves of $50, and severance and employee termination costs of $1 for the separation of approximately 12 employees. Cash outlays related to the permanent closure of the site in 2024 and 2025 are expected to be approximately $54 related to environmental and demolition obligation reserves, $4 of which was reserved for in prior periods, and $31 related to holding costs during the closure. At December 31, 2023, the separation of employees associated with this program was complete with $1 of payments made against the severance and employee termination cost reserve.

In February 2023, the Company reached an updated viability agreement with the workers' representatives of the San Ciprián smelter to commence the restart process in phases beginning in January 2024. The smelter was curtailed in January 2022 as a result of an agreement reached with the workers' representatives in December 2021 (see below). Under the terms of the updated viability agreement, the Company is responsible for certain employee obligations during 2023 through 2025 and made commitments for capital improvements of $78. The Company recorded charges of $53 in Restructuring and other charges, net on the Statement of Consolidated Operations to establish the related reserve for employee obligations in 2023. Cash outlays related to these obligations were $7 in 2023 and the remainder is expected in 2024 and 2025. At December 31 2023, the Company has restricted cash of $91 to be made available for remaining capital improvement commitments at the site of $118 and smelter restart costs of $35 (see below). Restricted cash is included in Prepaid expenses and other current assets and Other non-current assets on the Consolidated Balance Sheet (see Note U).

2022 Actions. In 2022 Alcoa Corporation recorded Restructuring and other charges, net, of $696 which were primarily comprised of the following components:

- Non-cash settlement charges related to pension benefits (see Note O):
  - $635 related to the purchase of group annuity contracts to transfer approximately $1,000 of pension obligations and assets associated with defined benefit pension plans for approximately 4,400 United States retirees and beneficiaries, as well as lump sum settlements;
- Charges related to portfolio actions:
  - $79 for the agreement reached with the workers of the divested Avilés and La Coruña facilities to settle various legal disputes related to the 2019 divestiture (see Note S);
  - $58 for an asset impairment related to the sale of the Company's interest in MRN (see Note H); and,
  - $29 related to the closure of the previously curtailed magnesium smelter facility in Addy (Washington) (see below);
- Other charges and credits:
  - $26 to record additional environmental and asset retirement related reserves at previously closed sites (see Note R and Note S); and,
  - $7 net credit for revaluation of adjustments to take-or-pay contract reserves related to the closed Wenatchee and curtailed Intalco smelters;

- Reversals:
  - $83 for the release of a valuation allowance on Brazil value added taxes (VAT) (see Note Q); and,
  - $34 due to lower costs for demolition and remediation at previously closed sites (see Note S).

In July 2022, Alcoa made the decision to permanently close the previously curtailed magnesium smelter in Addy. The facility has been fully curtailed since 2001. The Company recorded a charge of $29 to establish reserves for environmental and demolition obligations in Restructuring and other charges, net on the Statement of Consolidated Operations in the third quarter of 2022.

2021 Actions. In 2021 Alcoa Corporation recorded Restructuring and other charges, net, of $1,128 which were comprised of the following components:

- Non-cash settlement charges related to pension and certain other postretirement benefits (see Note O):
  - $858 related to the purchase of group annuity contracts to transfer approximately $1,500 of pension obligations and assets associated with defined benefit pension plans for approximately 14,000 United States retirees and beneficiaries, as well as lump sum settlements;
  - $63 related to the purchase of a group annuity contract to transfer approximately $55 of pension obligations and assets associated with a Suriname pension plan for approximately 800 retirees and beneficiaries;
  - $47 related to lump sum settlements; and,
  - Net $9 related to the settlement and curtailment of certain other postretirement benefits resulting from the sale of the Warrick Rolling Mill;
- Charges related to portfolio actions taken as part of the Company's ongoing strategic review (see details below):
  - $80 related to the closure of the previously curtailed aluminum smelter facility in Wenatchee (Washington);
  - $62 related to the agreement reached with the workers at the San Ciprián aluminum smelter to curtail smelting capacity; and,
  - $27 related to the closure of the previously curtailed anode facility in Lake Charles (Louisiana);

- Other charges:
  - $13 for additional take-or-pay contract costs related to the curtailed Wenatchee and Intalco smelters;
  - $11 to record additional environmental and asset retirement related reserves (see Note R and Note S); and,
  - $3 for several other immaterial items;
- Reversals:
  - $6 for a take-or-pay energy-related obligation at the Alumar (Brazil) smelter no longer required due to the restart;
  - $17 related to the divestiture of the Avilés and La Coruña entities (see below); and,
  - $22 due to lower costs for demolition and remediation related to previously established reserves (see Note R and Note S).

In December 2021, the Company announced the two-year curtailment of 228 kmt of smelting capacity at the San Ciprián smelter. The temporary curtailment, which began at the end of January 2022, was the result of an agreement reached with the workers' representatives at the site to suspend production due to exorbitant energy prices in Spain. Under the terms of the agreement, the Company is responsible for certain employee obligations during 2022 and 2023, and committed to restart the smelter beginning in January 2024. The Company recorded charges of $62 in Restructuring and other charges, net on the Statement of Consolidated Operations to establish the related reserve for employee obligations in 2021. Cash payments were $31 and $26 in 2023 and 2022, respectively and this program is complete as of December 31, 2023. Additionally, the Company made restricted cash available for capital improvements at the site of $68 and smelter restart costs of $35 (see above).

During the fourth quarter of 2021, as part of the Company's ongoing strategic portfolio review, the Company announced the permanent closure of the Wenatchee aluminum smelter. The smelter has been fully curtailed since 2015. Charges related to the closure totaled $90 in the fourth quarter of 2021 and included a charge of $10 for the write-down of remaining inventories to net realizable value recorded in Cost of goods sold on the Statement of Consolidated Operations and a charge of $80 recorded in Restructuring and other charges, net on the Statement of Consolidated Operations. The restructuring charges were comprised of: $30 to write-off the remaining net book value of various assets; $23 of asset impairments; $21 to establish reserves related to environmental and demolition obligations; $5 related to take-or-pay contractual obligations; and $1 of severance and employee termination costs from the separation of approximately 10 employees. Cash payments were $3 and $1 in 2023 and 2022, respectively.

During the third quarter of 2021, as part of the Company's ongoing strategic portfolio review, the Company announced the decision to permanently close the previously curtailed anode facility in Lake Charles. The anode facility within the Lake Charles site has been fully curtailed since 2015. The Company recorded charges of $27 in the third quarter of 2021, which were recorded in Restructuring and other charges, net on the Statement of Consolidated Operations, comprised of asset impairments of $22 and cash-based charges for closure and asset retirement obligations of $5. The closure was completed in September 2022. The decision to permanently close the facility was made as part of the Company's ongoing portfolio review. The Company's petroleum coke calciner located at the same site in Lake Charles remains in operation, unaffected by the closure of the anode facility.

Alcoa Corporation does not include Restructuring and other charges, net in the results of its reportable segments. The impact of allocating such charges to segment results would have been as follows:

	2023	2022	2021
Alumina[(1)]	$ 8	$ (27)	$ 1
Aluminum	169	82	184
Segment total	177	55	185
Corporate	7	641	943
Total Restructuring and other charges, net	$ 184	$ 696	$ 1,128

(1) Beginning in January 2023, the Company changed its operating segments, by combining the Bauxite and Alumina segments, and reported its financial results in the following two segments: (i) Alumina and (ii) Aluminum (see Note E).

Activity and reserve balances for restructuring charges were as follows:

	Severance and employee termination costs	Other costs	Total
Balances at December 31, 2020	$ 6	$ 57	$ 63
Restructuring charges, net	1	80	81
Cash payments	(4)	(25)	(29)
Reversals and other	–	(22)	(22)
Balances at December 31, 2021	3	90	93
Restructuring charges, net	1	73	74
Cash payments	(2)	(37)	(39)
Reversals and other	(1)	(10)	(11)
Balances at December 31, 2022	1	116	117
Restructuring charges, net	11	55	66
Cash payments	(6)	(118)	(124)
Reversals and other	–	4	4
Balances at December 31, 2023	$ 6	$ 57	$ 63

The activity and reserve balances include only Restructuring and other charges, net that impact the reserves for Severance and employee termination costs and Other costs. Restructuring and other charges, net that affected other accounts such as Investments (see Note H), Accrued pension benefits and Accrued other postretirement benefits (see Note O), Asset retirement obligations (see Note R), and Environmental remediation (see Note S) are excluded from the above activity and balances. Reversals and other include reversals of previously recorded liabilities and foreign currency translation impacts.

The current portion of the reserve balance is reflected in Other current liabilities on the Consolidated Balance Sheet and the non-current portion of the reserve balance is reflected in Other non-current liabilities and deferred credits on the Consolidated Balance Sheet. The non-current portion of the reserve was $15 and $3 at December 31, 2023 and 2022, respectively.

E. SEGMENT AND RELATED INFORMATION

Segment Information

Alcoa Corporation is a producer of bauxite, alumina, and aluminum products. Beginning in January 2023, the financial information provided to the chief operating decision maker (CODM) for the activities of the bauxite mines and the alumina refineries was combined into the Alumina segment, and accordingly the Company changed its operating segments. Beginning with the first quarter of 2023, the Company reported its financial results in the following two segments: (i) Alumina and (ii) Aluminum. Segment information for all prior periods presented has been updated to reflect the new segment structure. Segment performance under Alcoa Corporation's management reporting system is evaluated based on a number of factors; however, the primary measure of performance is the Adjusted EBITDA (Earnings before interest, taxes, depreciation, and amortization) for each segment. The Company calculates Segment Adjusted EBITDA as Total sales (third-party and intersegment) minus the following items: Cost of goods sold; Selling, general administrative, and other expenses; and Research and development expenses. Alcoa Corporation's Segment Adjusted EBITDA may not be comparable to similarly titled measures of other companies. The CODM function regularly reviews the financial information, including Adjusted EBITDA, of these two operating segments to assess performance and allocate resources.

Segment assets include, among others, customer receivables (third-party and intersegment), inventories, properties, plants, and equipment, and equity investments. The accounting policies of the segments are the same as those described in the Summary of Significant Accounting Policies (see Note B). Transactions between segments are established based on negotiation between the parties. Differences between segment totals and Alcoa Corporation's consolidated totals for line items not reconciled are in Corporate.

The following are detailed descriptions of Alcoa Corporation's reportable segments:

Alumina. This segment represents the Company's worldwide refining system, including the mining of bauxite, which is then refined into alumina.

The alumina produced by this segment is sold primarily to internal and external aluminum smelter customers; a portion of the alumina is sold to external customers who process it into industrial chemical products. Approximately two-thirds of Alumina's production is sold under supply contracts to third parties worldwide, while the remainder is used internally by the Aluminum segment. Alumina produced by this segment and used internally is transferred to the Aluminum segment at prevailing market prices. A portion of this segment's third-party sales are completed through the use of alumina traders.

Generally, this segment's sales are transacted in U.S. dollars while costs and expenses are transacted in the local currency of the respective operations, which are the Australian dollar, the Brazilian real, and the euro. Most of the operations that comprise the Alumina segment are part of AWAC (see Principles of Consolidation in Note A).

A portion of this segment's bauxite production represents the offtake from equity method investments in Brazil (prior to the MRN sale in April 2022) and Guinea, as well as AWAC's share of bauxite production related to an equity investment in Saudi Arabia. Bauxite mined is primarily used internally within the Alumina segment; a portion of the bauxite is sold to external customers. Bauxite sales to third-parties are conducted on a contract basis.

This segment also includes AWAC's 25.1% ownership interest in a mining and refining joint venture company in Saudi Arabia (see Note H).

Aluminum. This segment consists of the Company's (i) worldwide smelting and casthouse system, which processes alumina into primary aluminum, and (ii) portfolio of energy assets in Brazil, Canada, and the United States.

Aluminum's combined smelting and casting operations produce primary aluminum products, nearly all of which are sold to external customers and traders. The smelting operations produce molten primary aluminum, which is then formed by the casting operations into either common alloy ingot (e.g., t-bar, sow, standard ingot) or into value-add ingot products (e.g., foundry, billet, rod, and slab). A variety of external customers purchase the primary aluminum products for use in fabrication operations, which produce products primarily for the transportation, building and construction, packaging, wire, and other industrial markets. Results from the sale of aluminum powder and scrap are also included in this segment, as well as the impacts of embedded aluminum derivatives (see Note P) related to energy supply contracts.

The energy assets supply power to external customers in Brazil and the United States, as well as internal customers in the Aluminum segment (Canadian smelters and Warrick (Indiana) smelter) and, to a lesser extent, the Alumina segment (Brazilian refineries).

Results from the Warrick Rolling Mill are included in this segment through the first quarter of 2021 (see Note C). Alcoa continues to own and operate the Warrick Operations aluminum smelter and the power plant.

Generally, this segment's aluminum sales are transacted in U.S. dollars while costs and expenses of this segment are transacted in the local currency of the respective operations, which are the U.S. dollar, the euro, the Norwegian krone, the Icelandic króna, the Canadian dollar, the Brazilian real, and the Australian dollar.

This segment also includes Alcoa Corporation's 25.1% ownership interest in a smelting joint venture company in Saudi Arabia (see Note H).

The operating results, capital expenditures, and assets of Alcoa Corporation's reportable segments were as follows:

	Alumina	Aluminum	Total
2023			
Sales:			
Third-party sales	$ 3,613	$ 6,925	$ 10,538
Intersegment sales	1,648	15	1,663
Total sales	$ 5,261	$ 6,940	$ 12,201
Segment Adjusted EBITDA	$ 273	$ 461	$ 734
Supplemental information:			
Depreciation, depletion, and amortization	$ 333	$ 277	$ 610
Equity loss	(48)	(106)	(154)
2022			
Sales:			
Third-party sales	$ 3,724	$ 8,735	$ 12,459
Intersegment sales	1,708	27	1,735
Total sales	$ 5,432	$ 8,762	$ 14,194
Segment Adjusted EBITDA	$ 788	$ 1,492	$ 2,280
Supplemental information:			
Depreciation, depletion, and amortization	$ 312	$ 283	$ 595
Equity (loss) income	(39)	48	9

	Alumina	Aluminum	Total
2021			
Sales:			
Third-party sales	$ 3,375	$ 8,766	$ 12,141
Intersegment sales	1,552	18	1,570
Total sales	$ 4,927	$ 8,784	$ 13,711
Segment Adjusted EBITDA	$ 1,192	$ 1,879	$ 3,071
Supplemental information:			
Depreciation, depletion, and amortization	$ 351	$ 289	$ 640
Equity income	4	116	120
2023			
Assets:			
Capital expenditures	$ 323	$ 198	$ 521
Equity investments	395	569	964
Total assets	6,153	5,854	12,007
2022			
Assets:			
Capital expenditures	$ 320	$ 153	$ 473
Equity investments	422	685	1,107
Total assets	5,859	6,358	12,217

The following tables reconcile certain segment information to consolidated totals:

	2023	2022	2021
Sales:			
Total segment sales	$ 12,201	$ 14,194	$ 13,711
Elimination of intersegment sales	(1,663)	(1,735)	(1,570)
Other	13	(8)	11
Consolidated sales	$ 10,551	$ 12,451	$ 12,152
Net (loss) income attributable to Alcoa Corporation:			
Total Segment Adjusted EBITDA	$ 734	$ 2,280	$ 3,071
Unallocated amounts:			
Transformation[(1)]	(80)	(66)	(44)
Intersegment eliminations	7	138	(119)
Corporate expenses[(2)]	(133)	(128)	(129)
Provision for depreciation, depletion, and amortization	(632)	(617)	(664)
Restructuring and other charges, net (D)	(184)	(696)	(1,128)
Interest expense (U)	(107)	(106)	(195)
Other (expenses) income, net (U)	(134)	118	445
Other[(3)]	(55)	(221)	(38)
Consolidated (loss) income before income taxes	(584)	702	1,199
Provision for income taxes (Q)	(189)	(664)	(629)
Net loss (income) attributable to non-controlling interest	122	(161)	(141)
Consolidated net (loss) income attributable to Alcoa Corporation	$ (651)	$ (123)	$ 429

(1) Transformation includes, among other items, the Adjusted EBITDA of previously closed operations.

(2) Corporate expenses are composed of general administrative and other expenses of operating the corporate headquarters and other global administrative facilities, as well as research and development expenses of the corporate technical center.

(3) Other includes certain items that are not included in the Adjusted EBITDA of the reportable segments.

December 31,	2023	2022
Assets:		
Total segment assets	$ 12,007	$ 12,217
Elimination of intersegment receivables	(159)	(126)
Unallocated amounts:		
Cash and cash equivalents	944	1,363
Corporate fixed assets, net	392	364
Corporate goodwill	142	141
Deferred income taxes	333	296
Pension assets	125	146
Other	371	355
Consolidated assets	$ 14,155	$ 14,756

Product Information

Alcoa Corporation has four product divisions and one divested product division as follows:

Bauxite – Bauxite is a reddish clay rock that is mined from the surface of the earth's terrain. This ore is the basic raw material used to produce alumina and is the primary source of aluminum.

Alumina – Alumina is an oxide that is extracted from bauxite and is the basic raw material used to produce primary aluminum. This product can also be consumed for non-metallurgical purposes, such as industrial chemical products.

Primary aluminum – Primary aluminum is metal in the form of a common alloy ingot or a value-add ingot (e.g., foundry, billet, rod, and slab). These products are sold primarily to customers that produce products for the transportation, building and construction, packaging, wire, and other industrial markets, and traders.

Energy – Energy is the generation of electricity, which is sold in the wholesale market to traders, large industrial consumers, distribution companies, and other generation companies.

Flat-rolled aluminum – Flat-rolled aluminum is metal in the form of sheet, which is sold primarily to customers that produce beverage and food cans, including body, tab, and end stock. As noted above, the Company sold the Warrick Rolling Mill in March 2021 which represented the Company's only Flat-rolled aluminum asset. The results of the Warrick Rolling Mill are included in this product division through the first quarter of 2021.

The following table represents the general commercial profile of the Company's Bauxite, Alumina, and Primary aluminum product divisions (see text below table for Energy):

Product division	Pricing components	Shipping terms[3]	Payment terms[4]
Bauxite	Negotiated	FOB/CIF	LC Sight
Alumina:			
Smelter-grade	API[1]/spot/fixed	FOB/CIF	LC Sight/CAD/Net 30 days
Non-metallurgical	Negotiated	FOB/CIF	Net 30 days
Primary aluminum:			
Common alloy ingot	LME + Regional premium[2]	DAP/CIF	Net 30 to 45 days
Value-add ingot	LME + Regional premium + Product premium[2]	DAP/CIF	Net 30 to 45 days

(1) API (Alumina Price Index) is a pricing mechanism that is calculated by the Company based on the weighted average of a prior month's daily spot prices published by the following three indices: CRU Metallurgical Grade Alumina Price, Platts Metals Daily Alumina PAX Price, and FastMarkets Metal Bulletin Non-Ferrous Metals Alumina Index.

(2) LME (London Metal Exchange) is a globally recognized exchange for commodity trading, including aluminum. The LME pricing component represents the underlying base metal component, based on quoted prices for aluminum on the exchange. The regional premium represents the incremental price over the base LME component that is associated with the physical delivery of metal to a particular region (e.g., the Midwest premium for metal sold in the United States). The product premium represents the incremental price for receiving physical metal in a particular shape or alloy.

(3) CIF (cost, insurance, and freight) means that the Company pays for these items until the product reaches the buyer's designated destination point related to transportation by vessel. DAP (delivered at place) means the same as CIF related to all methods of transportation. FOB (free on board) means that the Company pays for costs, insurance, and freight until the product reaches the seller's designated shipping point.

(4) The net number of days means that the customer is required to remit payment to the Company for the invoice amount within the designated number of days. LC Sight is a letter of credit that is payable immediately (usually within five to ten business days) after a seller meets the requirements of the letter of credit (i.e. shipping documents that evidence the seller performed its obligations as agreed to with a buyer). CAD (cash against documents) is a payment arrangement in which a seller instructs a bank to provide shipping and title documents to the buyer at the time the buyer pays in full the accompanying bill of exchange.

For the Company's Energy product division, sales of electricity are based on current market prices. Electricity is provided to customers on demand through a national or regional power grid; the customer simultaneously receives and consumes the electricity. Payment terms are generally within 10 days related to the previous 30 days of electricity consumption.

The following table details Alcoa Corporation's Sales by product division:

	2023	2022	2021
Sales:			
Primary aluminum	$ 7,045	$ 8,887	$ 8,420
Alumina	3,103	3,478	3,125
Bauxite	466	168	207
Energy	118	201	286
Flat-rolled aluminum[(1)]	–	–	320
Other[(2)]	(181)	(283)	(206)
	$ 10,551	$ 12,451	$ 12,152

(1) Flat-rolled aluminum represented sales of the Warrick Rolling Mill through the sale of the facility in March 2021 (see Note C).

(2) Other includes realized gains and losses related to embedded derivative instruments designated as cash flow hedges of forward sales of aluminum (see Note P).

Geographic Area Information

Geographic information for Third-party sales was as follows (based upon the country where the point of sale originated):

	2023	2022	2021
Sales:			
United States[(1)(2)]	$ 4,993	$ 5,462	$ 5,290
Netherlands[(3)]	2,261	3,031	2,644
Australia	2,240	2,742	2,092
Brazil	735	527	610
Spain[(2)(3)]	289	618	1,465
Canada	1	1	11
Other	32	70	40
	$ 10,551	$ 12,451	$ 12,152

(1) Sales of a portion of the alumina from refineries in Australia and Brazil and most of the aluminum from smelters in Canada occurred in the United States.

(2) Sales of aluminum off-take related to an interest in the Saudi Arabia joint venture (see Note H), occurred in Spain through most of the third quarter of 2021, and in the United States thereafter.

(3) Sales of aluminum from smelters in Iceland and Norway occurred in Spain through most of the first quarter of 2021, and in the Netherlands thereafter.

Geographic information for long-lived assets was as follows (based upon the physical location of the assets):

December 31,	**2023**	**2022**
Long-lived assets:		
Australia	$ 2,046	$ 1,944
Brazil	1,550	1,298
Iceland	950	1,002
Canada	896	919
United States	780	830
Norway	310	304
Spain	250	194
Other	3	2
	$ 6,785	$ 6,493

F. EARNINGS PER SHARE

Basic earnings per share (EPS) amounts are computed by dividing Net (loss) income attributable to Alcoa Corporation by the average number of common shares outstanding. Diluted EPS amounts assume the issuance of common stock for all potentially dilutive share equivalents outstanding.

The share information used to compute basic and diluted EPS attributable to Alcoa Corporation common shareholders was as follows (shares in millions):

	2023	2022	2021
Average shares outstanding – basic	178	181	186
Effect of dilutive securities:			
Stock options	–	–	–
Stock units	–	–	4
Average shares outstanding – diluted	178	181	190

In 2023, basic average shares outstanding and diluted average shares outstanding were the same because the effect of potential shares of common stock was anti-dilutive. Had Alcoa generated net income in 2023, three million common share equivalents related to three million outstanding stock units and stock options combined would have been included in diluted average shares outstanding for the period.

In 2022, basic average shares outstanding and diluted average shares outstanding were the same because the effect of potential shares of common stock was anti-dilutive. Had Alcoa generated net income in 2022, three million common share equivalents related to five million outstanding stock units and stock options combined would have been included in diluted average shares outstanding for the period.

In 2021, options to purchase less than two hundred thousand shares of common stock outstanding as of December 31, 2021 at a weighted average exercise price of $38.67 per share were not included in the computation of diluted EPS because the exercise prices of these options were greater than the annual average market price of Alcoa Corporation's common stock.

G. ACCUMULATED OTHER COMPREHENSIVE LOSS

The following table details the activity of the three components that comprise Accumulated other comprehensive loss for both Alcoa Corporation's shareholders and Non-controlling interest:

	Alcoa Corporation			Non-controlling interest		
	2023	2022	2021	2023	2022	2021
Pension and other postretirement benefits (O)						
Balance at beginning of period	$ 62	$ (882)	$ (2,536)	$ (5)	$ (13)	$ (67)
Other comprehensive income (loss):						
Unrecognized net actuarial gain (loss) and prior service cost/benefit	(112)	263	550	(13)	7	30
Tax (expense) benefit[2]	17	(42)	(37)	2	–	(6)
Total Other comprehensive income (loss) before reclassifications, net of tax	(95)	221	513	(11)	7	24
Amortization of net actuarial loss and prior service cost/benefit[1]	39	723	1,144	1	1	30
Tax expense[2]	(6)	–	(3)	–	–	–
Total amount reclassified from Accumulated other comprehensive loss, net of tax[7]	33	723	1,141	1	1	30
Total Other comprehensive income (loss)	(62)	944	1,654	(10)	8	54
Balance at end of period	$ –	$ 62	$ (882)	$ (15)	$ (5)	$ (13)
Foreign currency translation						
Balance at beginning of period	$ (2,685)	$ (2,614)	$ (2,385)	$ (1,040)	$ (937)	$ (844)
Other comprehensive income (loss)	92	(71)	(229)	57	(103)	(93)
Balance at end of period	$ (2,593)	$ (2,685)	$ (2,614)	$ (983)	$ (1,040)	$ (937)
Cash flow hedges (P)						
Balance at beginning of period	$ (916)	$ (1,096)	$ (708)	$ 1	$ (1)	$ (1)
Other comprehensive (loss) income:						
Net change from periodic revaluations	(295)	(119)	(782)	–	2	(2)
Tax benefit[2]	70	43	140	–	–	1
Total Other comprehensive (loss) income before reclassifications, net of tax	(225)	(76)	(642)	–	2	(1)

	Alcoa Corporation			Non-controlling interest		
	2023	2022	2021	2023	2022	2021
Net amount reclassified to earnings:						
Aluminum contracts[3]	181	316	288	–	–	–
Financial contracts[4]	(20)	–	2	–	–	1
Interest rate contracts[5]	(5)	5	8	(1)	–	1
Foreign exchange contracts[6]	(26)	(5)	(3)	–	–	–
Sub-total	130	316	295	(1)	–	2
Tax expense[2]	(41)	(60)	(41)	–	–	(1)
Total amount reclassified from Accumulated other comprehensive loss, net of tax[7]	89	256	254	(1)	–	1
Total Other comprehensive (loss) income	(136)	180	(388)	(1)	2	–
Balance at end of period	$ (1,052)	$ (916)	$ (1,096)	$ –	$ 1	$ (1)
Total Accumulated other comprehensive loss	$ (3,645)	$ (3,539)	$ (4,592)	$ (998)	$ (1,044)	$ (951)

(1) These amounts were included in the computation of net periodic benefit cost for pension and other postretirement benefits. The amounts related to settlements and/or curtailments of certain pension and other postretirement benefits for Alcoa Corporation include $21, $633, and $952 for the years ended December 31, 2023, 2022, and 2021, respectively. The amounts related to settlements and/or curtailments of certain pension and other postretirement benefits for Non-controlling interest include $0, ($1), and $25 for the years ended December 31, 2023, 2022, and 2021, respectively (see Note O).

(2) These amounts were reported in Provision for income taxes on the accompanying Statement of Consolidated Operations.

(3) These amounts were reported in Sales on the accompanying Statement of Consolidated Operations.

(4) These amounts were reported in Cost of goods sold on the accompanying Statement of Consolidated Operations.

(5) These amounts were included in Other (income) expenses, net on the accompanying Statement of Consolidated Operations.

(6) In 2023, $5 was reported in Cost of goods sold and ($31) was reported in Sales on the accompanying Statement of Consolidated Operations. In 2022, $5 was reported in Cost of goods sold and ($10) was reported in Sales on the accompanying Statement of Consolidated Operations.

(7) A positive amount indicates a corresponding charge to earnings and a negative amount indicates a corresponding benefit to earnings.

H. INVESTMENTS

December 31,	2023	2022
Equity investments	$ 969	$ 1,112
Other investments	10	10
	$ 979	$ 1,122

Equity Investments. The following table summarizes information of Alcoa Corporation's equity investments as of December 31, 2023 and 2022. In 2023, 2022, and 2021, Alcoa Corporation received $51, $127, and $50, respectively, in dividends from these equity investments. Each of the investees either owns the facility listed or has an ownership interest in an entity that owns the facility listed:

Investee	Country	Nature of investment	Income Statement Location of Equity Earnings	Ownership interest
Ma'aden Aluminum Company	Saudi Arabia	Aluminum smelter and casthouse	Other expenses (income), net	25.1%
Ma'aden Bauxite and Alumina Company	Saudi Arabia	Bauxite mine and alumina refinery	Other expenses (income), net	25.1%
Halco Mining, Inc.	Guinea	Bauxite mine	Cost of goods sold	45%
Energética Barra Grande S.A.	Brazil	Hydroelectric generation facility	Cost of goods sold	42.18%
Pechiney Reynolds Quebec, Inc.	Canada	Aluminum smelter	Cost of goods sold	50%
Serra do Facão Energia S/A	Brazil	Hydroelectric generation facility	Cost of goods sold	34.97%
Manicouagan Power Limited Partnership	Canada	Hydroelectric generation facility	Cost of goods sold	40%
Elysis™ Limited Partnership	Canada	Aluminum smelting technology	Other expenses (income), net	48.235%

Saudi Arabia Joint Venture – Alcoa Corporation and Ma'aden have a 30-year (from December 2009) joint venture shareholders agreement (automatic extension for an additional 20 years, unless the parties agree otherwise or unless earlier terminated) setting forth the terms for the development, construction, ownership, and operation of an integrated aluminum complex in Saudi Arabia. The project developed by the joint venture consists of a bauxite mine from the Al Ba'itha bauxite deposit in the northern part of Saudi Arabia, an alumina refinery, a primary aluminum smelter, and an aluminum rolling mill.

The joint venture is owned 74.9% by Ma'aden and 25.1% by Alcoa Corporation and originally consisted of three separate companies as follows: the bauxite mine and alumina refinery (Ma'aden Bauxite and Alumina Company; MBAC), the smelter (Ma'aden Aluminum Company; MAC), and the rolling mill (Ma'aden Rolling Company; MRC). In June 2019, Alcoa Corporation and Ma'aden amended the joint venture agreement that governs the operations of each of the three companies that comprise the joint venture. Under the terms of the agreement, Alcoa Corporation transferred its 25.1% interest in MRC to Ma'aden and, as a result, has no further direct or indirect equity interest in MRC. In accordance with the June 2019 amended joint venture agreement, Ma'aden's put option and Alcoa Corporation's call option, relating to additional interests in the joint venture, were exercisable for a period of six months after October 1, 2021. On March 31, 2022, Ma'aden's and Alcoa's put and call options, respectively, expired with neither party exercising their options.

The results for the Saudi Arabia joint venture for the year ended December 31, 2022 include a charge related to a dispute with an industrial utility for periods in 2021 and 2022. Alcoa's share of this charge was $21 which is included in Other expenses (income), net on the Statement of Consolidated Operations for the year ended December 31, 2022. The results for the Saudi Arabia joint venture for the year ended December 31, 2023 include an adjustment to the estimate for the settlement of this dispute. Alcoa's share of this adjustment is $41 which is included in Other expenses (income), net on the Statement of Consolidated Operations for 2023. As of December 31, 2023 and 2022, the carrying value of Alcoa's investment in this joint venture was $533 and $710, respectively.

ELYSIS Limited Partnership – In June 2018, Alcoa Corporation, Rio Tinto Alcan Inc. (Rio Tinto), and Investissement Québec, a company wholly-owned by the Government of Québec, Canada, launched the ELYSIS Limited Partnership (ELYSIS). The purpose of this partnership is to advance larger scale development and commercialization of its patent-protected technology that produces oxygen and eliminates direct greenhouse gas emissions from the traditional aluminum smelting process. Alcoa and Rio Tinto plc, as general partners, each own a 48.235% stake in ELYSIS, and the Québec provincial government, as a limited partner, owns a 3.53% stake. The federal government of Canada and Apple Inc., as well as the Québec provincial government, are providing initial financing to the partnership.

Through December 31, 2023, the Company has contributed $118 (C$155) toward its investment commitment in ELYSIS. The Company's basis in the investment has been reduced to zero for its share of losses incurred to date. In addition to cash contributions, Alcoa is contributing approximately $3 annually to cover overhead expenses incurred by Alcoa and charged to the joint venture. As a result, the Company has $60 in unrecognized losses as of December 31, 2023 that will be recognized upon additional contributions into the partnership.

The following table summarizes the profit and loss data for the respective periods ended December 31, as it relates to Alcoa Corporation's equity investments. Information shown for the Saudi Arabia Joint Venture for all periods presented includes the combined balances for MAC and MBAC. The investments are grouped based on the nature of the investment. The Mining investments are part of the Alumina segment, while the Energy and Other investments are primarily part of the Aluminum segment.

	Saudi Arabia Joint Venture	Mining	Energy	Other
2023				
Sales	$ 2,726	$ 670	$ 236	$ 464
Cost of goods sold	2,550	446	118	425
Net (loss) income	(457)	50	100	(97)
Equity in net (loss) income of affiliated companies, before reconciling adjustments	(115)	23	39	(46)
Other	(43)	–	1	(9)
Alcoa Corporation's equity in net (loss) income of affiliated companies	(158)	23	40	(55)
2022				
Sales	$ 3,317	$ 763	$ 252	$ 488
Cost of goods sold	2,696	488	120	445
Net income (loss)	42	110	109	(75)
Equity in net income (loss) of affiliated companies, before reconciling adjustments	11	39	41	(36)
Other	(7)	(2)	(3)	15
Alcoa Corporation's equity in net income (loss) of affiliated companies	4	37	38	(21)
2021				
Sales	$ 3,127	$ 794	$ 264	$ 404
Cost of goods sold	2,083	571	135	365
Net income (loss)	495	30	114	(42)
Equity in net income (loss) of affiliated companies, before reconciling adjustments	124	18	45	(20)
Other	(8)	5	(1)	25
Alcoa Corporation's equity in net income of affiliated companies	116	23	44	5

The following table summarizes the balance sheet data for the respective periods ended December 31, as it relates to Alcoa Corporation's equity investments.

	Saudi Arabia Joint Venture	Mining	Energy	Other
2023				
Current assets	$ 1,433	$ 8	$ 103	$ 181
Non-current assets	6,958	419	310	764
Current liabilities	1,444	5	16	89
Non-current liabilities	4,272	24	34	117
2022				
Current assets	$ 1,769	$ 5	$ 114	$ 134
Non-current assets	6,993	363	301	757
Current liabilities	1,255	3	13	114
Non-current liabilities	4,314	24	26	84

On February 15, 2022, the Company signed an agreement to sell its share of its investment in MRN in Brazil for $10 to South32 Minerals S.A. Related to this transaction, the Company recorded an asset impairment of $58 in the first quarter of 2022 in Restructuring and other charges, net on the Statement of Consolidated Operations. On April 30, 2022, Alcoa completed the sale of its investment in MRN. An additional $30 in cash could be paid to the Company in the future if certain post-closing conditions related to future MRN mine development are satisfied.

I. RECEIVABLES

On January 31, 2023, a wholly-owned special purpose entity (SPE) of the Company entered into a one-year agreement with a financial institution to sell up to $150 of certain customer receivables without recourse on a revolving basis. On August 27, 2023, the Company amended the agreement to decrease the amount of certain receivables that can be transferred from $150 to $130. On November 15, 2023, the Company amended the agreement to extend the termination date from January 30, 2024 to November 14, 2024. Company subsidiaries sell customer receivables to the SPE, which then transfers the receivables to the financial institution. The Company does not maintain effective control over the transferred receivables, and therefore accounts for the transfers as sales of receivables.

Alcoa Corporation guarantees the performance obligations of the Company subsidiaries and unsold customer receivables are pledged as collateral to the financial institution to secure the sold receivables. At December 31, 2023, the SPE held unsold customer receivables of $104 pledged as collateral against the sold receivables.

The Company continues to service the customer receivables that were transferred to the financial institution. As Alcoa collects customer payments, the SPE transfers additional receivables to the financial institution rather than remitting cash. In 2023, the Company sold gross customer receivables of $591, and reinvested collections of $477 from previously sold receivables, resulting in net cash proceeds from the financial institution of $114. Cash collections from previously sold receivables yet to be reinvested of $99 were included in Accounts payable, trade on the accompanying Consolidated Balance Sheet as of December 31, 2023. Cash received from sold receivables under the agreement are presented within operating activities in the Statement of Consolidated Cash Flows.

J. INVENTORIES

December 31,	2023	2022
Finished goods	$ 355	$ 385
Work-in-process	287	350
Bauxite and alumina	586	584
Purchased raw materials	700	923
Operating supplies	230	185
	$ 2,158	$ 2,427

K. PROPERTIES, PLANTS, AND EQUIPMENT, NET

December 31,	2023	2022
Land and land rights, including mines	$ 257	$ 253
Structures (by type of operation):		
Bauxite mining and alumina refining	4,085	3,515
Aluminum smelting and casting	3,274	3,265
Energy generation	380	354
Other	357	346
	8,096	7,480
Machinery and equipment (by type of operation):		
Bauxite mining and alumina refining	4,352	4,227
Aluminum smelting and casting	5,781	5,813
Energy generation	869	851
Other	457	461
	11,459	11,352
	19,812	19,085
Less: accumulated depreciation, depletion, and amortization	13,596	13,112
	6,216	5,973
Construction work-in-progress	569	520
	$ 6,785	$ 6,493

L. GOODWILL AND OTHER INTANGIBLE ASSETS

Goodwill, which is included in Other non-current assets on the accompanying Consolidated Balance Sheet, was as follows:

December 31,	2023	2022
Alumina	$ 4	$ 4
Aluminum	–	–
Corporate[(1)]	142	141
	$ 146	$ 145

(1) The carrying value of Corporate's goodwill is net of accumulated impairment losses of $742 as of both December 31, 2023 and 2022. As of December 31, 2023, the $142 of goodwill reflected in Corporate is allocated to Alcoa Corporation's Alumina reportable segment for purposes of impairment testing (see Note B). This goodwill is reflected in Corporate for segment reporting purposes because it is not included in management's assessment of performance by the reportable segment. Changes in the carrying amount of goodwill were attributable to foreign currency translation as of December 31, 2023 and 2022.

Management performed a quantitative assessment for the Alumina reporting unit in the fourth quarter 2023. The estimated fair value of the Alumina reporting unit was substantially in excess of its carrying value, resulting in no impairment. As a result of the January 2023 segment change, the Company reviewed the recoverability of the carrying value of goodwill of its Alumina reporting unit in the first quarter of 2023. The estimated fair value of the Alumina reporting unit substantially exceeded the reporting unit's carrying value, resulting in no impairment.

Other intangible assets, which are included in Other non-current assets on the accompanying Consolidated Balance Sheet, were as follows:

	2023			2022		
December 31,	Gross carrying amount	Accumulated amortization	Net carrying amount	Gross carrying amount	Accumulated amortization	Net carrying amount
Computer software	$ 207	$ (194)	$ 13	$ 206	$ (202)	$ 4
Patents and licenses	25	(10)	15	25	(9)	16
Other intangibles	21	(12)	9	20	(11)	9
Total other intangible assets	$ 253	$ (216)	$ 37	$ 251	$ (222)	$ 29

Computer software consists primarily of software costs associated with the enterprise business solution within Alcoa to drive common systems among all businesses.

Amortization expense related to the intangible assets in the table above for the years ended December 31, 2023, 2022, and 2021 was $5, $7, and $11, respectively, and is expected to be approximately $10 annually from 2024 to 2028.

M. DEBT

Short-term Borrowings.

December 31,	2023	2022
Short-term borrowings	$ 56	$ –

Short-term borrowings are reported in Other current liabilities on the accompanying Consolidated Balance Sheet.

Inventory Repurchase Agreements

During 2023, the Company entered into inventory repurchase agreements whereby the Company sold aluminum to a third party and agreed to subsequently repurchase substantially similar inventory. The Company did not record sales upon each shipment of inventory and the net cash received of $56 related to these agreements was recorded in Short-term borrowings as of December 31, 2023.

For the year ended December 31, 2023, the Company recorded borrowings of $117 and repurchased $61 of inventory related to these agreements. As of December 31, 2023, inventory sold of $56 was reflected in Prepaid expenses and other current assets on the Consolidated Balance Sheet.

The cash received and subsequently paid under the inventory repurchase agreements is included in Cash provided from financing activities on the Statement of Consolidated Cash Flows for the year-ended December 31, 2023.

Long-term Debt.

December 31,	2023	2022
5.500% Notes, due 2027	$ 750	$ 750
6.125% Notes, due 2028	500	500
4.125% Notes, due 2029	500	500
Other	82	84
Unamortized discounts and deferred financing costs	(21)	(27)
Total	1,811	1,807
Less: amount due within one year	79	1
Long-term debt, less amount due within one year	$ 1,732	$ 1,806

The principal amount of long-term debt maturing in each of the next five years is: $79 in 2024, $1 in each of 2025 and 2026, $750 in 2027, and $500 in 2028. At December 31, 2023, Other includes $78 related to a term loan that matures in November 2024.

144A Debt.

2029 Notes. In March 2021, Alcoa Nederland Holding B.V. (ANHBV), a wholly-owned subsidiary of Alcoa Corporation, completed a Rule 144A (U.S. Securities Act of 1933, as amended) debt issuance for $500 aggregate principal amount of 4.125% Senior Notes due 2029 (the 2029 Notes) with the following terms:

- Net proceeds were approximately $493, reflecting a discount to the initial purchasers as well as issuance costs. The discount, as well as costs to complete the financing, were deferred and are being amortized to interest expense over the term;

- Interest is paid semi-annually in March and September, which commenced September 30, 2021;

- Indenture contains customary affirmative and negative covenants, see below;

- Option to redeem on at least 10 days, but not more than 60 days, prior notice to the holders under multiple scenarios, including, in whole or in part, at any time, or from time to time after March 31, 2024, at a redemption price up to 102.063% of the principal amount, plus any accrued and unpaid interest; and,

- Subject to repurchase upon the occurrence of a change in control repurchase event (as defined in the indenture) at a repurchase price in cash equal to 101% of the aggregate principal amount of the notes repurchased, plus any accrued and unpaid interest.

The Company used the net proceeds of the 2029 Notes, together with cash on hand, to contribute $500 to its U.S. defined benefit pension plans applicable to salaried and hourly employees on April 1, 2021 (see Note O), to redeem in full $750 aggregate principal amount of the Company's outstanding 6.75% Senior Notes due 2024 on April 7, 2021, and to pay transaction-related fees and expenses.

2027 Notes. In July 2020, ANHBV completed a Rule 144A debt issuance for $750 aggregate principal amount of 5.500% Senior Notes due 2027 (the 2027 Notes) with the following terms:

- Net proceeds were approximately $736, reflecting a discount to the initial purchasers as well as issuance costs. The discount, as well as costs to complete the financing, were deferred and are being amortized to interest expense over the term;

- Interest is paid semi-annually in June and December, which commenced on December 15, 2020;
- Indenture contains customary affirmative and negative covenants, see below;
- Option to redeem on at least 15 days, but not more than 60 days, prior notice to the holders under multiple scenarios, including, in whole or in part, at any time, or from time to time after June 15, 2023, at a redemption price up to 102.750% of the principal amount, plus any accrued and unpaid interest; and,
- Subject to repurchase upon the occurrence of a change in control repurchase event (as defined in the indenture) at a repurchase price in cash equal to 101% of the aggregate principal amount of the notes repurchased, plus any accrued and unpaid interest.

The Company used the net proceeds of the 2027 Notes for general corporate purposes, including adding cash to its balance sheet.

2028 Notes. In May 2018, ANHBV completed a Rule 144A debt issuance for $500 aggregate principal amount of 6.125% Senior Notes due 2028 (the 2028 Notes) with the following terms:

- Net proceeds were approximately $492, reflecting a discount to the initial purchasers as well as issuance costs. The discount, as well as costs to complete the financing, were deferred and are being amortized to interest expense over the term;
- Interest is paid semi-annually in November and May, which commenced November 15, 2018;
- Indenture contains customary affirmative and negative covenants, see below;
- Option to redeem on at least 30 days, but not more than 60 days, prior notice to the holders under multiple scenarios, including, in whole or in part, at any time, or from time to time after May 2023, at a redemption price up to 103.063% of the principal amount, plus any accrued and unpaid interest; and,
- Subject to repurchase upon the occurrence of a change in control repurchase event (as defined in the indenture) at a repurchase price in cash equal to 101% of the aggregate principal amount of the notes repurchased, plus any accrued and unpaid interest.

The Company used the net proceeds of the 2028 Notes, together with cash on hand, to make discretionary contributions to certain U.S. defined benefit pension plans.

The indentures governing the 2027 Notes, 2028 Notes, and 2029 Notes contain customary affirmative and negative covenants, such as limitations on liens, limitations on sale and leaseback transactions, and a prohibition on a reduction in the ownership of AWAC entities below an agreed level. The negative covenants in the indentures are less extensive than those in the Revolving Credit Facility (see below). For example, the indentures do not include a limitation on restricted payments, such as repurchases of common stock and dividends to stockholders.

The 2027 Notes, the 2028 Notes, and the 2029 Notes are senior unsecured obligations of ANHBV and do not entitle the holders to any registration rights pursuant to a registration rights agreement. ANHBV does not intend to file a registration statement with respect to resales of or an exchange offer for the notes. The notes are guaranteed on a senior unsecured basis by Alcoa Corporation and its subsidiaries that are guarantors under the Facility (the ''subsidiary guarantors'' and, together with Alcoa Corporation, the ''guarantors''). Each of the subsidiary guarantors will be released from their guarantees upon the occurrence of certain events, including the release of such guarantor from its obligations as a guarantor under the Facility.

The 2027 Notes, the 2028 Notes, and the 2029 Notes rank equally in right of payment with each other and with all of ANHBV'S existing and future senior unsecured indebtedness; rank senior in right of payment to any future subordinated obligations of ANHBV; and are effectively subordinated to ANHBV's existing and future secured indebtedness, including under the Facility, to the extent of the value of property and assets securing such indebtedness. The guarantees of the notes rank equally in right of payment with each other and with all the guarantors' existing and future senior unsecured indebtedness; rank senior in right of payment to any future subordinated obligations of the guarantors; and are effectively subordinated to the guarantors' existing and future secured indebtedness, including under the Facility, to the extent of the value of property and assets securing such indebtedness.

Redemption events. On April 7, 2021, the Company redeemed in full $750 aggregate principal amount notes due in 2024 at a redemption price equal to 103.375% of the principal amount, plus accrued and unpaid interest. The issuance of the 2029 Notes and this redemption were determined to be an issuance of new debt and an extinguishment of existing debt. As a result, the Company recorded a loss of $32 on the extinguishment of debt in the second quarter of 2021 in Interest expense, which was comprised of the redemption premium and the write-off of deferred financing fees and unamortized debt issuance costs. The cash flows related to the transaction were classified as financing cash flows.

On September 30, 2021, the Company redeemed in full $500 aggregate principal amount notes due in 2026 at a redemption price equal to 103.5% of the principal amount, plus accrued and unpaid interest. As a result, the Company recorded a loss of $22 on the extinguishment of debt in the third quarter of 2021 in Interest expense, which was comprised of the redemption premium and the write-off of deferred financing fees and unamortized debt issuance costs. The cash flows related to the transaction were classified as financing cash flows.

Credit Facilities.

Revolving Credit Facility

On June 27, 2022, Alcoa Corporation and Alcoa Nederland Holding B.V. (ANHBV), a wholly owned subsidiary of Alcoa Corporation and the borrower, entered into an amendment and restatement agreement (the Third Amendment and Restatement) (as amended and restated, the Revolving Credit Facility) that provided additional flexibility to the Company and ANHBV by (i) extending the maturity date of the Revolving Credit Facility from November 2023 to June 2027, (ii) reducing the aggregate commitments under the facility from $1,500 to $1,250, (iii) releasing the collateral package that had previously secured the Revolving Credit Facility, which would have continued so long as certain credit ratings were maintained, (iv) increasing the maximum leverage ratio from 2.75 to 1.00 to 3.25 to 1.00, which increased following material acquisitions for four consecutive fiscal quarters following an acquisition, (v) providing a debt to capitalization ratio not to exceed 0.60 to 1.00 to replace the maximum leverage ratio upon a ratings upgrade to investment grade by Moody's Investor Service (Moody's) or Standard and Poor's Global Ratings (S&P), and (vi) providing flexibility for dividends and other restricted payments, to make investments, and to incur additional indebtedness. The Revolving Credit Facility implemented a sustainability adjustment to the applicable margin and commitment fee that may result in a positive or negative adjustment based on two of the Company's existing sustainability metrics.

On July 26, 2022, Moody's upgraded the rating of ANHBV's senior unsecured notes to Baa3 (investment grade).

In addition to the financial covenants, the Revolving Credit Facility includes several customary affirmative and negative covenants (applicable to Alcoa Corporation and certain subsidiaries described as restricted), that, subject to certain exceptions, include limitations on (among other things): indebtedness, liens, investments, sales of assets, restricted payments, entering into restrictive agreements, a covenant prohibiting reductions in the ownership of AWAC entities, and certain other specified restricted subsidiaries of Alcoa Corporation, below an agreed level. The Revolving Credit Facility also contains customary events of default, including failure to make payments under the Revolving Credit Facility, cross-default and cross-judgment default, and certain bankruptcy and insolvency events.

As of December 31, 2023, the Company was in compliance with all financial covenants. The Company may access the entire amount of commitments under the Revolving Credit Facility. There were no borrowings outstanding at December 31, 2023 and 2022, and no amounts were borrowed during 2023 and 2022 under the Revolving Credit Facility.

On January 17, 2024, Alcoa Corporation, ANHBV, and certain subsidiaries of the Company entered into Amendment No. 1 (Amendment No. 1) to the Revolving Credit Facility (Amended Revolving Credit Facility). The Amended Revolving Credit Facility provides additional flexibility to the Company and the Borrower by temporarily (i) reducing the minimum interest coverage ratio required thereunder from 4.00 to 1.00 to 3.00 to 1.00 and (ii) providing for a maximum addback for cash restructuring charges in Consolidated EBITDA (as defined in the Revolving Credit Facility) of $450, in each case for the 2024 fiscal year. As of January 1, 2025, the minimum interest coverage ratio requirement will revert to 4.00 to 1.00 and the maximum addback for cash restructuring charges in Consolidated EBITDA will revert to 15% of Consolidated EBITDA. The requirement that the Company maintain a debt to capitalization ratio not to exceed 0.60 to 1.00 was not changed by Amendment No. 1. In connection with Amendment No. 1, the Company also agreed to provide collateral for its obligations under the Amended Revolving Credit Facility, which will require it to execute all security documents to re-secure collateral under the Amended Revolving Credit Facility by, subject to certain exceptions, a first priority security interest in substantially all assets of the Company, the Borrower, the material domestic wholly-owned subsidiaries of the Company, and the material foreign wholly-owned subsidiaries of the Company located in Australia, Brazil, Canada, Luxembourg, the Netherlands, Norway, and Switzerland including equity interests of certain subsidiaries that directly hold equity interests in AWAC entities. The collateral would be released if, on or after January 1, 2025, the Company or the Borrower (as applicable) (i) has at least two of the following three designated ratings: (x) Baa3 from Moody's, (y) BBB- from S&P and (z) BBB- from Fitch Ratings and (ii) does not have any designated rating lower than: (x) Ba1 from Moody's, (y) BB+ from S&P and (z) BB+ from Fitch Ratings.

The Amended Revolving Credit Facility contains customary affirmative covenants, negative covenants, and events of default substantially comparable to the Revolving Credit Facility (other than those that are described above and other minor changes). The representations, warranties and covenants contained in the Amended Revolving Credit Facility were made only for purposes of Amendment No. 1 and as of specific dates and were solely for the benefit of the parties to the Amended Revolving Credit Facility.

Japanese Yen Revolving Credit Facility

In April 2023, the Company entered into a one-year unsecured revolving credit facility for $250 (available to be drawn in Japanese yen) (the Japanese Yen Revolving Credit Facility). Subject to the terms and conditions under the facility, the Company or ANHBV may borrow funds. The facility included covenants that are substantially the same as those included in the Revolving Credit Facility.

As of December 31, 2023, the Company was in compliance with all financial covenants. The Company may access the entire amount of commitments under the facility. There were no borrowings outstanding at December 31, 2023 and $10 was borrowed and subsequently repaid in 2023.

On January 17, 2024, Alcoa Corporation and ANHBV, entered into Amendment No. 1 to the Japanese Yen Revolving Credit Facility (Amended Japanese Yen Revolving Credit Facility) which contains changes that are substantially the same as those included in the Amended Revolving Credit Facility (as described above). Also in connection with this amendment, the Company agreed to provide collateral for its obligations with the same conditions as the Amended Revolving Credit Facility. On January 24, 2024, ANHBV drew $201 against this facility.

N. PREFERRED AND COMMON STOCK

Preferred Stock. Alcoa Corporation is authorized to issue 100,000,000 shares of preferred stock at a par value of $0.01 per share. At December 31, 2023 and 2022, the Company had no issued preferred stock.

Common Stock. Alcoa Corporation is authorized to issue 750,000,000 shares of common stock at a par value of $0.01 per share. As of December 31, 2023 and 2022, Alcoa Corporation had 178,472,464 and 176,969,091, respectively, issued and outstanding shares of common stock.

Under its employee stock-based compensation plan, the Company issued shares of 1,503,373 in 2023, 1,434,543 in 2022, and 1,305,979 in 2021. The Company issues new shares to satisfy the exercise of stock options and the conversion of stock units. As of December 31, 2023, 20,525,431 shares of common stock were available for issuance.

Common Stock Repurchase

In October 2021, Alcoa Corporation's Board of Directors approved a common stock repurchase program under which the Company may purchase shares of its outstanding common stock up to an aggregate transactional value of $500, depending on cash availability, market conditions, and other factors.

In July 2022, Alcoa Corporation announced that its Board of Directors approved an additional common stock repurchase program under which the Company may purchase shares of its outstanding common stock up to an aggregate transactional value of $500, depending on the Company's continuing analysis of market, financial, and other factors (the New Repurchase Program).

No shares were repurchased in 2023. As of the date of this report, the Company is currently authorized to repurchase up to a total of $500, in the aggregate, of its outstanding shares of common stock under the New Repurchase Program. Repurchases under this program may be made using a variety of methods, which may include open market purchases, privately negotiated transactions, or pursuant to a Rule 10b5-1 plan. This program may be suspended or discontinued at any time and does not have a predetermined expiration date. Alcoa Corporation intends to retire repurchased shares of common stock.

In 2022, the Company repurchased 8,565,200 shares of its common stock for $500, which fully exhausted the October 2021 authorization; the shares were immediately retired.

In 2021, the Company repurchased 3,184,300 shares of its common stock for $150; the shares were immediately retired.

Dividend

Dividends on common stock are subject to authorization by Alcoa Corporation's Board of Directors.

In October 2021, the Company announced the initiation of a quarterly cash dividend on its common stock and the Board of Directors declared the first quarterly cash dividend of $0.10 per share of the Company's common stock. Dividends paid totaled $19 in 2021.

Quarterly dividends paid were $0.10 per share in 2023 and 2022, totaling $72 in both years.

The details of any future cash dividend declaration, including the amount of such dividend and the timing and establishment of the record and payment dates, will be determined by the Board of Directors. The decision of whether to pay future cash dividends and the amount of any such dividends will be based on the Company's financial position, results of operations, cash flows, capital requirements, business conditions, the requirements of applicable law, and any other factors the Board of Directors may deem relevant.

Stock-based Compensation

Restricted stock units are generally granted in January and/or February of each calendar year to eligible employees (the Company's Board of Directors also receive certain stock units; however, these amounts are not material). Time-based restricted stock units (RSUs) generally cliff vest on the third anniversary of the award grant date. The Company also grants performance restricted stock units (PRSUs), which are subject to performance conditions and earned after the end of the three-year measurement period. As of January 1, 2021, the Company no longer grants stock options.

The final number of PRSUs earned is dependent on Alcoa Corporation's achievement of certain targets over a three-year measurement period for grants. For PRSUs granted in 2021, the award was earned after the end of the measurement period of January 1, 2021 through December 31, 2023 based on performance against four measures: (1) the Company's total shareholder return measured against the ranked total shareholder return of the Standard & Poor's Metals and Mining Select Industry Index components; (2) a preestablished return-on-equity target; (3) an improvement in proportional net debt; and (4) a reduction in carbon intensity in both refining (through reduced carbon dioxide emissions) and smelting (through increased production from renewable energy) operations. For PRSUs granted in 2022, the award will be earned after the end of the measurement period of January 1, 2022 through December 31, 2024 based on performance against three measures: (1) the Company's total shareholder return measured against the ranked total shareholder return of the Standard & Poor's Metals and Mining Select Industry Index components; (2) a pre-established return-one-quity target; and (3) a reduction in carbon intensity in both refining (through reduced carbon dioxide emissions) and smelting (through increased production from renewable energy) operations. For PRSUs granted in 2023, the award will be earned after the end of the measurement period of January 1, 2023 through December 31, 2025 based on performance against three measures: (1) the Company's total shareholder return measured against the ranked total shareholder return of the Standard & Poor's Metals and Mining Select Industry Index components; (2) a pre-established return-on-equity target; and (3) a reduction in carbon intensity in both refining (through reduced carbon dioxide emissions) and smelting (through increased production from renewable energy) operations.

In 2023, 2022, and 2021, Alcoa Corporation recognized stock-based compensation expense of $35, $40, and $39, respectively, of which approximately 95% to 100% was related to stock units in each period. There was no stock-based compensation expense capitalized in 2023, 2022, and 2021.

Stock-based compensation expense is based on the grant date fair value of the applicable equity grant. For both RSUs and PRSUs, the fair value was equivalent to the closing market price per share of Alcoa Corporation's common stock on the date of grant in the respective periods. For stock units with a market condition, the fair value was estimated on the date of grant using a Monte Carlo simulation model, which generated a result of $71.12, $126.86, and $39.88 per unit in 2023, 2022, and 2021, respectively. The Monte Carlo simulation model uses certain assumptions to estimate the fair value of a market-based stock unit, including volatility and a risk-free interest rate, to estimate the probability of satisfying market conditions. Volatility (64.88%, 65.25%, and 60.19% in 2023, 2022, and 2021, respectively) was estimated using the historical volatility of the Company calculated from daily stock price returns. The risk-free interest rate (4.26%, 1.71%, and 0.22% in 2023, 2022, and 2021, respectively) was based on the U.S. Treasury yield curve at the time of the grant based on the remaining performance period.

The activity for stock units and stock options during 2023 was as follows:

	Stock units		Stock options	
	Number of units	Weighted average FMV per unit	Number of options	Weighted average exercise price
Outstanding, January 1, 2023	4,606,215	$ 26.08	220,596	$ 23.88
Granted	835,083	49.95	–	–
Exercised	–	–	(70,060)	17.94
Converted	(2,090,761)	16.98	–	–
Expired or forfeited	(354,230)	55.82	(1,928)	19.89
Performance share adjustment	(862)	127.42	–	–
Outstanding, December 31, 2023	2,995,445	$ 35.54	148,608	$ 26.73

The number of Converted units includes 657,448 shares withheld to meet the Company's statutory tax withholding requirements related to the income earned by the employees as a result of vesting in the units.

As of December 31, 2023, the 148,608 outstanding stock options were fully vested and exercisable, had a weighted average remaining contractual life of 3.99 years, a total intrinsic value of $2 and a weighted average exercise price of $26.73. Cash received from stock option exercises was $1, $22, and $25 in 2023, 2022, and 2021, respectively. The total intrinsic value of stock options exercised during 2023, 2022, and 2021 was $2, $22, and $17, respectively. The total fair value of stock units converted during 2023, 2022, and 2021 was $35, $32 and $19, respectively.

At December 31, 2023, there was $23 of combined unrecognized compensation expense (pretax) related to non-vested grants of stock units. This expense is expected to be recognized over a weighted average period of 1.80 years.

O. PENSION AND OTHER POSTRETIREMENT BENEFITS

Defined Benefit Plans

Alcoa sponsors several defined benefit pension plans covering certain employees in the U.S. and foreign locations. Pension benefits generally depend on length of service, job grade, and remuneration. Substantially all benefits are paid through pension trusts that are sufficiently funded to ensure that all plans can pay benefits to retirees as they become due. Most salaried and non-bargaining hourly U.S. employees hired after March 1, 2006 and most bargaining hourly U.S. employees hired after January 1, 2020 participate in a defined contribution plan instead of a defined benefit plan.

The Company also maintains health care postretirement benefit plans covering certain eligible U.S. retired employees and certain retirees from foreign locations. Generally, the medical plans are unfunded and pay a percentage of medical expenses, reduced by deductibles and other coverage. The Company retains the right, subject to existing agreements, to change or eliminate these benefits. All salaried and certain non-bargaining hourly U.S. employees hired after January 1, 2002 and certain bargaining hourly U.S. employees hired after July 1, 2010 are not eligible for postretirement health care benefits.

As of January 1, 2023, the pension benefit plans and the other postretirement benefit plans covered an aggregate of approximately 17,000 and approximately 21,000 participants, respectively.

2023 Plan Actions. In 2023, management initiated the following actions to certain pension plans:

Action #1 – In the second quarter of 2023, plan amendment accounting and related plan remeasurements were triggered within the Surinamese pension and other postretirement plans as a result of participants electing to prospectively convert their Surinamese dollar pension and Company-provided retiree medical to a United States dollar pension with no Company-provided retiree medical. As a result, Alcoa recorded a $15 increase to Accrued pension benefits and a $9 decrease to Accrued other postretirement benefits.

Action #2 – In the second quarter of 2023, settlement accounting and related plan remeasurements were triggered within certain Canadian pension plans as a result of the Company's purchase of group annuity contracts to transfer the obligation to pay the remaining retirement benefits of approximately 530 retirees and beneficiaries from its Canadian defined benefit pension plans. The transfer of approximately $235 in both plan obligations and plan assets was completed in April 2023. As a result, Alcoa recorded a $22 increase to Accrued pension benefits and a $5 decrease to Other non-current assets and recognized a non-cash settlement loss of $21 ($16 after-tax) in Restructuring and other charges, net on the accompanying Statement of Consolidated Operations.

Action #3 – In the third quarter of 2023, settlement accounting and a related plan remeasurement was triggered within Alcoa's Australian pension plan as a result of participants electing lump sum payments. As a result, Alcoa recorded a $2 decrease to Other non-current assets.

The following table presents certain information and the financial impacts of these actions on the accompanying Consolidated Financial Statements:

Action #	Number of affected plan participants	Weighted average discount rate as of prior plan remeasurement date	Plan remeasurement date	Weighted average discount rate as of plan remeasurement date	Increase to accrued pension benefits liability	Decrease to other non-current assets	Decrease to accrued other postretirement benefits liability	Settlement loss[1]
1	~370	5.58%	March 31, 2023	5.20%	$ 15	$ –	$ (9)	$ –
2	~530	5.20%	April 30, 2023	4.80%	22	(5)	–	21
3	~50	5.08%	September 30, 2023	5.03%	–	(2)	–	–
	~950				$ 37	$ (7)	$ (9)	$ 21

(1) This amount represents the net actuarial loss and was reclassified from Accumulated other comprehensive loss to Restructuring and other charges, net (see Note D) on the accompanying Statement of Consolidated Operations.

2022 Plan Actions. In 2022, management initiated the following actions to certain pension and other postretirement benefit plans:

Action #1 – In the third quarter of 2022, settlement accounting and related plan remeasurements were triggered within Alcoa's U.S. pension plans as a result of the Company's purchase of group annuity contracts to transfer the obligation to pay the remaining retirement benefits of approximately 4,400 retirees and beneficiaries from its U.S. defined benefit pension plans. The transfer of approximately $1,000 in both plan obligations and plan assets was completed in August 2022. As a result, Alcoa recorded a $5 increase to Accrued pension benefits and a $27 increase to Other non-current assets and recognized a non-cash settlement loss of $617 (pre- and after-tax) in Restructuring and other charges, net on the Statement of Consolidated Operations.

Action #2 – In the third quarter of 2022, settlement accounting and related plan remeasurements were triggered within Alcoa's U.S. pension plans as a result of participants electing lump sum payments. Alcoa recognized a non-cash settlement loss of $11 (pre- and after-tax) in Restructuring and other charges, net on the Statement of Consolidated Operations.

Action #3 – In the third quarter of 2022, settlement accounting and a related plan remeasurement was triggered within Alcoa's U.S. salaried pension plan as a result of participants electing lump sum payments. Alcoa recorded a $23 increase to Accrued pension benefits and a $12 decrease to Other non-current assets and recognized a non-cash settlement loss of $1 (pre- and after- tax) in Restructuring and other charges, net on the Statement of Consolidated Operations.

Action #4 – In the third quarter of 2022, settlement accounting and a related plan remeasurement was triggered within Alcoa's Australian pension plan as a result of participants electing lump sum payments. Alcoa recorded a $21 increase to Other non-current assets and recognized a non-cash settlement gain of $3 (pre- and after-tax) in Restructuring and other charges, net on the Statement of Consolidated Operations.

Action #5 – In the fourth quarter of 2022, settlement accounting was triggered within Alcoa's U.S. pension plans as a result of participants electing lump sum payments. Alcoa recorded a $3 increase to Accrued pension benefits and recognized a non-cash settlement loss of $6 (pre- and after-tax) in Restructuring and other charges, net on the Statement of Consolidated Operations.

The following table presents certain information and the financial impacts of these actions on the accompanying Consolidated Financial Statements:

Action #	Number of affected plan participants	Weighted average discount rate as of prior plan remeasurement date	Plan remeasurement date	Weighted average discount rate as of plan remeasurement date	Increase to accrued pension benefits liability[1]	Increase (decrease) to other non-current assets[1]	Settlement loss (gain)[2]
1	~4,400	2.90%	July 31, 2022	4.63%	$ 5	$ 27	$ 617
2	~45	2.90%	July 31, 2022	4.63%	–	–	11
3	~5	4.57%	September 30, 2022	5.71%	23	(12)	1
4	~25	2.46%	September 30, 2022	4.99%	–	21	(3)
5	~20	N/A	December 31, 2022	N/A	3	–	6
	~4,495				$ 31	$ 36	$ 632

(1) Actions 1-4 caused interim plan remeasurements, including an update to the discount rates used to determine the benefit obligations of the affected plans. These amounts include impacts due to interim plan remeasurements.

(2) These amounts represent the net actuarial loss (gain) and were reclassified from Accumulated other comprehensive loss to Restructuring and other charges, net (see Note D) on the accompanying Statement of Consolidated Operations.

2021 Plan Actions. In 2021, management initiated the following actions to certain pension and other postretirement benefit plans:

Action #1 – On March 31, 2021, Alcoa completed the sale of the Warrick Rolling Mill to Kaiser Aluminum Corporation for total consideration of $670, which included the assumption of $69 in other postretirement benefit liabilities. Approximately 1,150 employees at the rolling operations, which includes the casthouse, hot mill, cold mills, and coating and slitting lines, became employees of Kaiser. As a result, the affected plan was remeasured, including an update to the discount rate used to determine the benefit obligation of the plan. Accrued other postretirement benefits reflects a decrease of $40 related to the remeasurement in addition to the $69 assumed by Kaiser. Further, Alcoa recognized a curtailment gain of $17 (pre- and after-tax) and a settlement loss of $26 (pre- and after-tax).

Action #2 – In the second quarter of 2021, settlement accounting and a related plan remeasurement was triggered within Alcoa's U.S. salaried pension plan as a result of a high number of participants electing lump sum payments. This includes former employees of the Warrick Rolling Mill, as well as other Alcoa employees making this election at retirement. Alcoa recorded a $90 decrease to Accrued pension benefits related to this remeasurement and recognized a settlement loss of $39 (pre- and after-tax).

Action #3 – In the third quarter of 2021, settlement accounting and a related plan remeasurement was triggered within Alcoa's U.S. salaried pension plan as a result of participants electing lump sum payments. Alcoa recorded a $7 increase to Accrued pension benefits related to this remeasurement and recognized a settlement loss of $7 (pre- and after-tax).

Action #4 – In the third quarter of 2021, settlement accounting and a related plan remeasurement was triggered within Alcoa's Australian pension plan as a result of participants electing lump sum payments. Alcoa recorded a $38 decrease to Accrued pension benefits related to this remeasurement and recognized a settlement loss of $1 (pre- and after-tax).

Action #5 – In the fourth quarter of 2021, the Company purchased a group annuity contract to transfer the obligation to pay the remaining retirement benefits of approximately 800 retirees and deferred vested participants from one of its Suriname pension plans to an insurance company. The transfer of $55 in both plan obligations and plan assets were completed on October 19, 2021. As a result, the Company recorded a settlement loss of $63 (pre- and after-tax) in Restructuring and other charges, net on the Statement of Consolidated Operations in the fourth quarter of 2021.

Action #6 – In the fourth quarter of 2021, settlement accounting and related plan remeasurements were triggered within Alcoa's U.S. pension plans as a result of the Company purchasing group annuity contracts to transfer the obligation to pay remaining retirement benefits of approximately 14,000 retirees and beneficiaries from its U.S. defined benefit pension plans and transferred approximately $1,540 in both plan obligations and plan assets. The transfers were completed on November 23, 2021 and December 16, 2021. As a result, the Company recorded a $84 decrease to Accrued pension benefits related to this remeasurement and recognized a non-cash settlement loss of $848 (pre- and after-tax) in Restructuring and other charges, net on the Statement of Consolidated Operations in the fourth quarter of 2021.

Action #7 – In the fourth quarter of 2021, settlement accounting and related plan remeasurements were triggered within Alcoa's U.S. pension plans as a result of participants electing lump sum payments (and the group annuity contracts discussed in Action 6 above). Alcoa recorded a $1 decrease to Accrued pension benefits related to this remeasurement and recognized a settlement loss of $10 (pre- and after-tax).

The following table presents certain information and the financial impacts of these actions on the accompanying Consolidated Financial Statements:

Action #	Number of affected plan participants	Weighted average discount rate as of prior plan remeasurement date	Plan remeasurement date	Weighted average discount rate as of plan remeasurement date	Increase (decrease) to accrued pension benefits liability	Decrease to accrued other postretirement benefits liability	Curtailment gain[1]	Settlement loss[1]
1	~840	2.45%	March 31, 2021	3.06%	$ –	$ (106)	$ (17)	$ 26
2	~120	2.38%	June 30, 2021	2.71%	(90)	–	–	39
3	~20	2.71%	September 30, 2021	2.74%	7	–	–	7
4	~20	1.34%	September 30, 2021	1.53%	(38)	–	–	1
5	~800	N/A	N/A	N/A	N/A	–	–	63
6	~14,000	2.59%	November 30, 2021	2.79%	(84)	–	–	848
7	~60	2.59%	November 30, 2021	2.79%	(1)	–	–	10
					$ (206)	$ (106)	$ (17)	$ 994

(1) These amounts primarily represent the accelerated amortization of a portion of the existing prior service benefit for curtailments and net actuarial loss for settlements and were reclassified from Accumulated other comprehensive loss to Restructuring and other charges, net (see Note D) on the accompanying Statement of Consolidated Operations.

Obligations and Funded Status

	Pension benefits		Other postretirement benefits	
December 31,	**2023**	**2022**	**2023**	**2022**
Change in benefit obligation				
Benefit obligation at beginning of year	$ 2,518	$ 4,594	$ 536	$ 710
Service cost	11	13	3	4
Interest cost	119	107	26	15
Amendments	2	–	–	–
Actuarial losses (gains)	117	(803)	(7)	(140)
Settlements	(280)	(1,090)	–	–
Benefits paid, net of participants' contributions	(133)	(211)	(52)	(53)
Suriname resident election transfer	12	–	(12)	–
Foreign currency translation impact	27	(92)	–	–
Benefit obligation at end of year	$ 2,393	$ 2,518	$ 494	$ 536
Change in plan assets				
Fair value of plan assets at beginning of year	$ 2,434	$ 4,306	$ –	$ –
Actual return on plan assets	141	(528)	–	–
Employer contributions	24	18	–	–
Participant contributions	3	4	–	–
Benefits paid	(125)	(204)	–	–
Administrative expenses	(9)	(6)	–	–
Settlements	(280)	(1,090)	–	–
Annuity purchase premium refund	7	22	–	–
Foreign currency translation impact	24	(88)	–	–
Fair value of plan assets at end of year	$ 2,219	$ 2,434	$ –	$ –

December 31,	Pension benefits 2023	Pension benefits 2022	Other postretirement benefits 2023	Other postretirement benefits 2022
Funded status	$ (174)	$ (84)	$ (494)	$ (536)
Less: Amounts attributed to joint venture partners	(11)	(6)	–	–
Net funded status	$ (163)	$ (78)	$ (494)	$ (536)
Amounts recognized in the Consolidated Balance Sheet consist of:				
Non-current assets	$ 125	$ 146	$ –	$ –
Current liabilities	(10)	(11)	(51)	(55)
Non-current liabilities	(278)	(213)	(443)	(481)
Net amount recognized	$ (163)	$ (78)	$ (494)	$ (536)
Amounts recognized in Accumulated Other Comprehensive Loss consist of:				
Net actuarial loss	$ 1,098	$ 1,016	$ 88	$ 95
Prior service cost (benefit)	4	2	(97)	(111)
Total, before tax effect	1,102	1,018	(9)	(16)
Less: Amounts attributed to joint venture partners	33	27	–	–
Net amount recognized, before tax effect	$ 1,069	$ 991	$ (9)	$ (16)

December 31,	Pension benefits 2023	Pension benefits 2022	Other postretirement benefits 2023	Other postretirement benefits 2022
Other Changes in Plan Assets and Benefit Obligations Recognized in Other Comprehensive Income (Loss) consist of:				
Net actuarial loss (benefit)	$ 131	$ (141)	$ (2)	$ (140)
Amortization of accumulated net actuarial loss	(49)	(720)	(5)	(18)
Prior service cost	2	–	–	–
Amortization of prior service benefit	–	–	14	14
Total, before tax effect	84	(861)	7	(144)
Less: Amounts attributed to joint venture partners	6	(11)	–	–
Net amount recognized, before tax effect	$ 78	$ (850)	$ 7	$ (144)

At December 31, 2023, the benefit obligation, fair value of plan assets, and funded status for U.S. pension plans were $1,119, $1,054, and ($65), respectively. At December 31, 2022, the benefit obligation, fair value of plan assets, and funded status for U.S. pension plans were $1,113, $1,064, and ($49), respectively.

Pension Plan Benefit Obligations

	Pension benefits	
	2023	**2022**
The aggregate projected benefit obligation and accumulated benefit obligation for all defined benefit pension plans was as follows:		
Projected benefit obligation	$ 2,393	$ 2,518
Accumulated benefit obligation	2,285	2,453
The aggregate projected benefit obligation and fair value of plan assets for pension plans with projected benefit obligations in excess of plan assets was as follows:		
Projected benefit obligation	1,636	1,465
Fair value of plan assets	1,336	1,232
The aggregate accumulated benefit obligation and fair value of plan assets for pension plans with accumulated benefit obligations in excess of plan assets was as follows:		
Accumulated benefit obligation	1,425	1,458
Fair value of plan assets	1,169	1,232

Components of Net Periodic Benefit Cost

	Pension benefits[1]			Other postretirement benefits		
	2023	2022	2021	2023	2022	2021
Service cost	$ 10	$ 13	$ 22	$ 3	$ 4	$ 4
Interest cost[2]	114	104	116	26	15	15
Expected return on plan assets[2]	(146)	(151)	(281)	–	–	–
Recognized net actuarial loss[2]	28	88	190	5	18	21
Amortization of prior service cost (benefit)[2]	–	–	–	(14)	(14)	(14)
Settlements[3]	21	632	968	–	–	26
Curtailments[4]	–	–	–	–	–	(17)
Net periodic benefit cost[5]	$ 27	$ 686	$ 1,015	$ 20	$ 23	$ 35

(1) In 2023, 2022, and 2021, net periodic benefit cost for U.S pension plans was $6, $698, and $962, respectively.

(2) These amounts were reported in Other expenses (income), net on the accompanying Statement of Consolidated Operations.

(3) These amounts were reported in Restructuring and other charges, net on the accompanying Statement of Consolidated Operations (see Note D). In 2023, 2022 and 2021, settlements were due to management actions (see Plan Actions above).

(4) These amounts were reported in Restructuring and other charges, net on the accompanying Statement of Consolidated Operations (see Note D). In 2021, curtailments were due to management actions (see Plan Actions above).

(5) Amounts attributed to joint venture partners are not included.

Assumptions. Liabilities and expenses for pension and other postretirement benefits are determined using actuarial methodologies and incorporate significant assumptions, including the interest rate used to discount the future estimated liability, the expected long-term rate of return on plan assets, and several assumptions relating to the employee workforce (salary increases, health care cost trend rates, retirement age, and mortality).

Weighted average assumptions used to determine benefit obligations for pension and other postretirement benefit plans were as follows:

December 31,	2023	2022
Discount rate – pension plans	5.03%	5.41%
Discount rate – other postretirement benefit plans	5.19	5.54
Rate of compensation increase – pension plans	3.77	3.21

The yield curve model used to develop the discount rate parallels the plans' projected cash flows and has a weighted average duration of 10 years. The underlying cash flows of the high-quality corporate bonds included in the model exceed the cash flows needed to satisfy the Company's plan obligations multiple times. If a deep market of high-quality corporate bonds does not exist in a country, then the yield on government bonds plus a corporate bond yield spread is used.

Weighted average assumptions used to determine net periodic benefit cost for pension and other postretirement benefit plans were as follows:

	2023	2022	2021
Discount rate – pension plans	5.34%	2.66%	1.91%
Discount rate – other postretirement benefit plans	5.45	2.46	1.99
Expected long-term rate of return on plan assets – pension plans	6.21	4.94	5.66
Rate of compensation increase – pension plans	3.21	3.11	2.58

For 2023, 2022, and 2021, the expected long-term rate of return used by management was based on the prevailing and planned strategic asset allocations, as well as estimates of future returns by asset class. For 2024, management anticipates that 6.13% will be the weighted average expected long-term rate of return.

Assumed health care cost trend rates for U.S. other postretirement benefit plans were as follows (non-U.S. plans are not material):

	2023	2022	2021
Health care cost trend rate assumed for next year	6.5%	7.0%	5.5%
Rate to which the cost trend rate gradually declines	5.0%	5.0%	4.5%
Year that the rate reaches the rate at which it is assumed to remain	2032	2028	2026

The assumed health care cost trend rate is used to measure the expected cost of gross eligible charges covered by the Company's other postretirement benefit plans. For 2024, a 6.5% trend rate will be used, reflecting management's best estimate of the change in future health care costs covered by the plans.

Plan Assets. Alcoa's pension plan weighted average target and actual asset allocations at December 31, 2023 and 2022, by asset class, were as follows:

	Target asset allocation		Plan assets at December 31,	
Asset class	**2023**	**2022**	**2023**	**2022**
Equities	20%	20%	17%	29%
Fixed income	65	65	70	57
Other investments	15	15	13	14
Total	100%	100%	100%	100%

The principal objectives underlying the investment of the pension plan assets are to ensure that the Company can properly fund benefit obligations as they become due under a broad range of potential economic and financial scenarios, maximize the long-term investment return with an acceptable level of risk based on such obligations, and broadly diversify investments across and within various asset classes to protect asset values against adverse movements. Investment risk is controlled by rebalancing to target allocations on a periodic basis and ongoing monitoring of investment manager performance.

The portfolio includes an allocation to investments in long-duration corporate credit and government debt, public and private market equities, intermediate duration corporate credit and government debt, global-listed infrastructure, high-yield bonds and bank loans, real estate, and securitized credit.

In late 2022, management began restructuring the asset portfolios of certain non-U.S. pension plans. The new strategy increased the amount and duration of the fixed income asset portfolios to reduce exposure to interest rates and was substantially implemented at the end of the first quarter in 2023.

Investment practices comply with the requirements of applicable laws and regulations in the respective jurisdictions, including the Employee Retirement Income Security Act of 1974 (ERISA) in the United States.

The following section describes the valuation methodologies used by the trustees to measure the fair value of pension plan assets. For plan assets measured at net asset value, this refers to the net asset value of the investment on a per share basis (or its equivalent) as a practical expedient. Otherwise, an indication of the level in the fair value hierarchy in which each type of asset is generally classified is provided (see Note P for the definition of fair value and a description of the fair value hierarchy).

Equities – These securities consist of: (i) direct investments in the stock of publicly traded U.S. and non-U.S. companies and are valued based on the closing price reported in an active market on which the individual securities are traded (generally classified in Level 1); (ii) the plans' share of commingled funds that are invested in the stock of publicly traded companies and are valued at net asset value; and (iii) direct investments in long/short equity hedge funds and private equity (limited partnerships and venture capital partnerships) and are valued at net asset value.

Fixed income – These securities consist of: (i) U.S. government debt and are generally valued using quoted prices (included in Level 1); (ii) cash and cash equivalents invested in publicly-traded funds and are valued based on the closing price reported in an active market on which the individual securities are traded (generally classified in Level 1); (iii) publicly traded U.S. and non-U.S. fixed interest obligations (principally corporate bonds and debentures) and are valued through consultation and evaluation with brokers in the institutional market using quoted prices and other observable market data (included in Level 2); and (iv) cash and cash equivalents invested in institutional funds and are valued at net asset value.

Other investments – These investments include, among others: (i) real estate investment trusts valued based on the closing price reported in an active market on which the investments are traded (included in Level 1); (ii) the plans' share of commingled funds that are invested in real estate partnerships and are valued at net asset value; (iii) direct investments in private real estate (includes limited partnerships) and are valued at net asset value; and (iv) absolute return strategy funds and are valued at net asset value.

The fair value methods described above may not be indicative of net realizable value or reflective of future fair values. Additionally, while Alcoa believes the valuation methods used by the plans' trustees are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different fair value measurement at the reporting date.

The following table presents the fair value of pension plan assets classified under either the appropriate level of the fair value hierarchy or net asset value:

December 31, 2023	Level 1	Level 2	Level 3	Net Asset Value	Total
Equities:					
Equity securities	$ 108	$ –	$ –	$ 134	$ 242
Private equity	–	–	–	127	127
	$ 108	$ –	$ –	$ 261	$ 369
Fixed income:					
Intermediate and long-duration government/credit	$ 403	$ 517	$ –	$ 496	$ 1,416
Cash and cash equivalent funds	14	–	–	114	128
	$ 417	$ 517	$ –	$ 610	$ 1,544
Other investments:					
Real estate	$ 21	$ –	$ –	$ 253	$ 274
Other	–	–	–	19	19
	$ 21	$ –	$ –	$ 272	$ 293
Total[(1)]	$ 546	$ 517	$ –	$ 1,143	$ 2,206

December 31, 2022	Level 1	Level 2	Level 3	Net Asset Value	Total
Equities:					
Equity securities	$ 71	$ –	$ –	$ 480	$ 551
Long/short equity hedge funds	–	–	–	8	8
Private equity	–	–	–	145	145
	$ 71	$ –	$ –	$ 633	$ 704
Fixed income:					
Intermediate and long-duration government/credit	$ 390	$ 426	$ –	$ 420	$ 1,236
Cash and cash equivalent funds	38	–	–	118	156
	$ 428	$ 426	$ –	$ 538	$ 1,392
Other investments:					
Real estate	$ 20	$ –	$ –	$ 282	$ 302
Other	–	–	–	28	28
	$ 20	$ –	$ –	$ 310	$ 330
Total[2]	$ 519	$ 426	$ –	$ 1,481	$ 2,426

(1) As of December 31, 2023, the total fair value of pension plan assets excludes a net receivable of $13, which primarily represents securities not yet settled plus interest and dividends earned on various investments.

(2) As of December 31, 2022, the total fair value of pension plan assets excludes a net receivable of $8, which primarily represents securities not yet settled plus interest and dividends earned on various investments.

Funding and Cash Flows. It is Alcoa's policy to fund amounts for defined benefit pension plans sufficient to meet the minimum requirements set forth in applicable country benefits laws and tax laws, including ERISA for U.S. plans. From time to time, the Company contributes additional amounts as deemed appropriate.

In 2023, 2022, and 2021, cash contributions to Alcoa's defined benefit pension plans were $24, $17, and $579.

During 2021, Alcoa made $500 in unscheduled contributions to certain U.S. defined benefit pension plans. The additional contributions were discretionary in nature and were funded with net proceeds from a March 2021 debt issuance (see Note M) plus available cash on hand. There were no discretionary contributions made in 2022 or 2023.

Alcoa's minimum required contribution to defined benefit pension plans in 2024 is estimated to be $60, of which approximately $40 is for U.S. plans. Under ERISA regulations, a plan sponsor that establishes a pre-funding balance by making discretionary contributions to a U.S. defined benefit pension plan may elect to apply all or a portion of this balance toward its minimum required contribution obligations to the related plan in future years. In 2024, management intends to make such election related to the Company's U.S. plans.

Benefit payments expected to be paid to pension and other postretirement benefit plan participants are as follows:

Year ending December 31,	Pension benefits	Other postretirement benefits
2024	$ 180	$ 50
2025	175	50
2026	175	45
2027	180	45
2028	175	45
2029 through 2033	855	195
	$ 1,740	$ 430

Defined Contribution Plans

The Company sponsors savings and investment plans in several countries, primarily in Australia and the United States. In the United States, employees may contribute a portion of their compensation to the plans, and Alcoa matches a specified percentage of these contributions in equivalent form of the investments elected by the employee. Also, the Company makes contributions to a retirement savings account based on a percentage of eligible compensation for certain U.S. employees that are not able to participate in Alcoa's defined benefit pension plans. The Company's expenses related to all defined contribution plans were $80 in 2023, $71 in 2022, and $72 in 2021.

Member-funded Pension Plans

The Company contributes to member-funded pension plans for the employees of Aluminerie de Bécancour Inc. and Aluminerie de Deschambault in Canada. Alcoa makes contributions to the plans based on a percentage of the employees' eligible compensation. The Company's expenses related to the member-funded pension plans were $16 in 2023, $17 in 2022, and $17 in 2021.

Target Benefit Plan

The Company contributes to a target benefit plan for the employees of Baie-Comeau in Canada. Alcoa makes contributions to the plan based on a percentage of the employees' eligible compensation. The Company's expenses related to the target benefit plan were $8 in 2023, $9 in 2022, and $9 in 2021.

P. DERIVATIVES AND OTHER FINANCIAL INSTRUMENTS

Fair Value. The Company follows a fair value hierarchy to measure its assets and liabilities. As of December 31, 2023 and 2022, respectively, the assets and liabilities measured at fair value on a recurring basis were primarily derivative instruments. In addition, the Company measures its pension plan assets at fair value (see Note O). Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The fair value hierarchy distinguishes between (i) market participant assumptions developed based on market data obtained from independent sources (observable inputs) and (ii) an entity's own assumptions about market participant assumptions developed based on the best information available in the circumstances (unobservable inputs). The fair value hierarchy consists of three broad levels, which gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3). The three levels of the fair value hierarchy are described below:

- Level 1 – Unadjusted quoted prices in active markets that are accessible at the measurement date for identical, unrestricted assets or liabilities;

- Level 2 – Inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly, including quoted prices for similar assets or liabilities in active markets; quoted prices for identical or similar assets or liabilities in markets that are not active; inputs other than quoted prices that are observable for the asset or liability (e.g., interest rates); and inputs that are derived principally from or corroborated by observable market data by correlation or other means; and,

- Level 3 – Inputs that are both significant to the fair value measurement and unobservable.

Derivatives. Alcoa Corporation is exposed to certain risks relating to its ongoing business operations, including the risks of changing commodity prices, foreign currency exchange rates and interest rates. Alcoa Corporation's commodity and derivative activities include aluminum, energy, foreign exchange, and interest rate contracts, which are held for purposes other than trading. They are used to mitigate uncertainty and volatility, and to cover underlying exposures. While Alcoa does not generally enter into derivative contracts to mitigate the risk associated with changes in aluminum price, the Company may do so in isolated cases to address discrete commercial or operational conditions. Alcoa is not involved in trading activities for energy, weather derivatives, or other non-exchange commodities.

Alcoa Corporation's commodity and derivative activities are subject to the management, direction, and control of the Strategic Risk Management Committee (SRMC), which consists of at least three members, including the chief executive officer, the chief financial officer, and the chief commercial officer. The remaining member(s) are other officers and/or employees of the Company as the chief executive officer may designate from time to time. The SRMC meets on a periodic basis to review derivative positions and strategy and reports to the Audit Committee of Alcoa Corporation's Board of Directors on the scope of its activities.

Alcoa Corporation's aluminum and foreign exchange contracts are predominately classified as Level 1 under the fair value hierarchy. All of the Level 1 contracts are designated as either fair value or cash flow hedging instruments (except as described below). Alcoa Corporation also has several derivative instruments classified as Level 3 under the fair value hierarchy, which are either designated as cash flow hedges or undesignated. Alcoa includes the changes in its equity method investee's Level 2 derivatives in Accumulated other comprehensive loss.

The following tables present the detail for Level 1 and 3 derivatives (see additional Level 3 information in further tables below):

	2023		2022	
Balance at December 31,	**Assets**	**Liabilities**	**Assets**	**Liabilities**
Level 1 derivative instruments	$ 16	$ 9	$ 84	$ 14
Level 3 derivative instruments	16	1,297	52	1,212
Total	$ 32	$ 1,306	$ 136	$ 1,226
Less: Current	29	214	134	200
Non-current	$ 3	$ 1,092	$ 2	$ 1,026

Year ended December 31,	2023 Unrealized gain (loss) recognized in Other comprehensive loss	2023 Realized gain (loss) reclassed from Other comprehensive loss to earnings	2022 Unrealized gain (loss) recognized in Other comprehensive loss	2022 Realized gain (loss) reclassed from Other comprehensive loss to earnings
Level 1 derivative instruments	$ 31	$ 86	$ 116	$ 35
Level 3 derivative instruments	(326)	(221)	(247)	(345)
Non-controlling and equity interest (Level 2)	–	5	12	(6)
Total	$ (295)	$ (130)	$ (119)	$ (316)

The 2023 realized gain of $86 on Level 1 cash flow hedges was comprised of a $91 gain recognized in Sales and a $5 loss recognized in Cost of goods sold. The 2022 realized gain of $35 on Level 1 cash flow hedges was comprised of a $40 gain recognized in Sales and a $5 loss recognized in Cost of goods sold.

The following table presents the outstanding quantities of derivative instruments classified as Level 1:

	Classification	December 31, 2023	December 31, 2022
Aluminum (in kmt)	Commodity buy forwards	78	176
Aluminum (in kmt)	Commodity sell forwards	46	337
Foreign currency (in millions of euro)	Foreign exchange buy forwards	48	60
Foreign currency (in millions of euro)	Foreign exchange sell forwards	9	–
Foreign currency (in millions of Norwegian krone)	Foreign exchange buy forwards	138	302
Foreign currency (in millions of Brazilian real)	Foreign exchange buy forwards	467	1,008
Foreign currency (in millions of Brazilian real)	Foreign exchange sell forwards	–	7
Foreign currency (in millions of Canadian dollar)	Foreign exchange buy forwards	31	–

Alcoa routinely uses Level 1 aluminum derivative instruments to manage exposures to changes in the fair value of firm commitments for the purchases or sales of aluminum. Additionally, Alcoa uses Level 1 aluminum derivative instruments to manage exposures to changes in the LME associated with the Alumar (Brazil) restart (April 2022 through December 2023) and the San Ciprián (Spain) strike (expired October 2022). As a result of delays with the Alumar restart, it became probable that certain of the original forecasted transactions would not occur by the end of the originally specified time period and Alcoa dedesignated certain aluminum sell forwards. The Company reclassified the related unrealized gain of $11 and $20 included in Accumulated other comprehensive loss to Sales during the year ended December 31, 2023 and 2022, respectively. In conjunction with the dedesignations, the Company entered into aluminum buy forwards in 2023 and 2022 for the same volume and periods which were also not designated. The unrealized and realized gains and losses on the aluminum buy and sell forwards that are not designated offset resulting in no impact to Alcoa's earnings.

Alcoa Corporation uses Level 1 foreign exchange forward contracts to mitigate the risk of foreign exchange exposure related to euro power purchases in Norway (expires December 2026), U.S. dollar aluminum sales in Norway (expires June 2025), U.S. dollar alumina and aluminum sales in Brazil (expires August 2025), and U.S. dollar aluminum sales in Canada (expires March 2025).

Derivative instruments classified as Level 3 in the fair value hierarchy represent those in which management has used at least one significant unobservable input in the valuation model. Alcoa Corporation uses a discounted cash flow model to fair value all Level 3 derivative instruments. Inputs in the valuation models for Level 3 derivative instruments are composed of the following: (i) quoted market prices (e.g., aluminum prices on the 10-year LME forward curve and energy prices), (ii) significant other observable inputs (e.g., information concerning time premiums and volatilities for certain option type embedded derivatives and regional premiums for aluminum contracts), and (iii) unobservable inputs (e.g., aluminum and energy prices beyond those quoted in the market, and estimated credit spread between Alcoa and the counterparty). For periods beyond the term of quoted market prices for aluminum, Alcoa Corporation estimates the price of aluminum by extrapolating the 10-year LME forward curve. For periods beyond the term of quoted market prices for the Midwest premium, management estimates the Midwest premium based on recent transactions. Where appropriate, valuations are adjusted for various factors such as liquidity, bid/offer spreads, and credit considerations. Such adjustments are generally based on available market evidence (Level 2). In the absence of such evidence, management's best estimate is used (Level 3). If a significant input that is unobservable in one period becomes observable in a subsequent period, the related asset or liability would be transferred to the appropriate classification (Level 1 or 2) in the period of such change (there were no such transfers in the periods presented). There were no sales or settlements of Level 3 derivative instruments in the periods presented.

Level 3 derivative instruments outstanding as of December 31, 2023 are described in the table below:

Description	Designation	Contract Termination	Unobservable Inputs Impacting Valuation	Sensitivity to Inputs
Power contracts				
Embedded derivative that indexes the price of power to the LME price of aluminum plus the Midwest premium	Cash flow hedge of forward sales of aluminum	March 2026 December 2029 February 2036	LME price,Midwest premium and MWh per year	Increase in LME price and/or the Midwest premium results in a higher cost of power and an increase to the derivative liability
Embedded derivative that indexes the price of power to the LME price of aluminum	Cash flow hedge of forward sales of aluminum	September 2027	LME price and MWh per year	Increase in LME price results in a higher cost of power and an increase to the derivative liability
Embedded derivative that indexes the price of power to the credit spread between the Company and the counterparty	Not designated	October 2028	Estimated credit spread	Wider credit spread results in a higher cost of power and increase in the derivative liability
Financial contracts				
Hedge power prices	Not designated	June 2035	LME price and power price	Lower prices in the power market or higher LME prices result in an increase in the derivative liability

In December 2022, Alcoa entered into a financial contract with a counterparty to hedge power price exposure through March 31, 2023. The Financial contract was designated as a cash flow hedge of future sales of power. Unrealized gains and losses were recognized in Accumulated other comprehensive loss on the accompanying Consolidated Balance Sheet, and realized gains and losses were recognized in Cost of goods sold on the accompanying Statement of Consolidated Operations.

In addition to the instruments presented above, Alcoa had a financial contract that expired in July 2021 that hedged the anticipated power requirements at one of its smelters and was designated as a cash flow hedge of future purchases of electricity. In March 2021, Alcoa entered into four financial contracts (Financial contracts (undesignated), below) with three counterparties to hedge the anticipated power requirements at this smelter for the period from August 1, 2021 through June 30, 2026. A fifth financial contract (undesignated) was entered into in November 2021, with an effective date of September 30, 2022 through June 30, 2026. In August 2023, the Company entered into a nine-year financial contract (undesignated) effective July 1, 2026 when the current contracts end. Three of these financial contracts include LME-linked pricing components and do not qualify for hedge accounting treatment. Management elected not to apply hedge accounting treatment for the other three financial contracts. Unrealized and realized gains and losses on these financial contracts are included in Other expenses (income), net on the accompanying Statement of Consolidated Operations.

At December 31, 2023, the outstanding Level 3 instruments are associated with seven smelters. At December 31, 2023 and 2022, the power contracts with embedded derivatives designated as cash flow hedges hedge forecasted aluminum sales of 1,456 kmt and 1,683 kmt, respectively.

The following table presents quantitative information related to the significant unobservable inputs described above for Level 3 derivative instruments (megawatt hours in MWh):

	December 31, 2023	Unobservable Input	Unobservable Input Range	
Asset Derivatives				
Financial contract (undesignated)	$ 16	Interrelationship of forward energy price, LME forward price and the Consumer Price Index	Electricity (per MWh)	2024: $50.99 2024: $53.55
			LME (per mt)	2024: $2,352 2024: $2,424
Total Asset Derivatives	$ 16			
Liability Derivatives				
Power contract	$ 197	MWh of energy needed to produce the forecasted mt of aluminum	LME (per mt)	2024: $2,352 2027: $2,796
			Electricity	Rate of 4 million MWh per year
Power contracts	1,100	MWh of energy needed to produce the forecasted mt of aluminum	LME (per mt)	2024: $2,352 2029: $2,904 2036: $3,153
			Midwest premium (per pound)	2024: $0.1880 2029: $0.2300 2036: $0.2300
			Electricity	Rate of 18 million MWh per year
Power contract	–	MWh of energy needed to produce the forecasted mt of aluminum	LME (per mt)	2024: $2,352 2024: $2,381
			Midwest premium (per pound)	2024: $0.1880 2024: $0.2140
			Electricity	Rate of 2 million MWh per year
Power contract (undesignated)	–	Estimated spread between the 30-year debt yield of Alcoa and the counterparty	Credit spread	1.15%: 30-year debt yield spread 6.33%: Alcoa (estimated) 5.18%: counterparty
Total Liability Derivatives	$ 1,297			

The fair values of Level 3 derivative instruments recorded in the accompanying Consolidated Balance Sheet were as follows:

Asset Derivatives	**December 31, 2023**	**December 31, 2022**
Derivatives designated as hedging instruments:		
Current – financial contract	$ –	$ 20
Total derivatives designated as hedging instruments	$ –	$ 20
Derivatives not designated as hedging instruments:		
Current – financial contract	$ 16	$ 32
Total derivatives not designated as hedging instruments	$ 16	$ 32
Total Asset Derivatives	$ 16	$ 52
Liability Derivatives		
Derivatives designated as hedging instruments:		
Current – power contracts	$ 210	$ 195
Non-current – power contracts	1,087	1,017
Total derivatives designated as hedging instruments	$ 1,297	$ 1,212
Total Liability Derivatives	$ 1,297	$ 1,212

The following table shows the net fair values of the Level 3 derivative instruments at December 31, 2023 and the effect on these amounts of a hypothetical change (increase or decrease of 10%) in the market prices or rates that existed as of December 31, 2023:

	Fair value asset (liability)	Index change of +/-10%
Power contracts	$ (1,297)	$ 300
Embedded credit derivative	–	–
Financial contracts	16	8

The following tables present a reconciliation of activity for Level 3 derivative instruments:

2023	Assets Power contracts	Financial contracts
January 1, 2023	$ –	$ 52
Total gains or losses included in:		
Sales (realized)	(4)	–
Cost of goods sold (realized)	–	(20)
Other expenses, net (unrealized/realized)	–	(5)
Other comprehensive income (unrealized)	4	–
Settlements and other	–	(11)
December 31, 2023	$ –	$ 16
Change in unrealized gains or losses included in earnings for derivative instruments held at December 31, 2023:		
Other expenses, net	$ –	$ (5)

2023		Liabilities Power contracts
January 1, 2023	$	1,212
Total gains or losses included in:		
Sales (realized)		(245)
Other comprehensive income (unrealized)		330
December 31, 2023	$	1,297

2022		Assets Financial contracts
January 1, 2022	$	2
Total gains or losses included in:		
Sales (realized)		–
Other income, net (unrealized/realized)		171
Other comprehensive income (unrealized)		20
Settlements and other		(141)
December 31, 2022	$	52
Change in unrealized gains or losses included in earnings for derivative instruments held at December 31, 2022:		
Other income, net	$	171

2022	Liabilities	
	Power contracts	Embedded credit derivative
January 1, 2022	$ 1,290	$ 3
Total gains or losses included in:		
Sales (realized)	(345)	–
Other income, net (unrealized/realized)	–	(3)
Other comprehensive (income) loss (unrealized)	267	–
December 31, 2022	$ 1,212	$ –
Change in unrealized gains or losses included in earnings for derivative instruments held at December 31, 2022:		
Other income, net	$ –	$ (3)

Derivatives Designated As Hedging Instruments – Cash Flow Hedges

Assuming market rates remain constant with the rates at December 31, 2023, a realized loss of $210 related to power contracts is expected to be recognized in Sales over the next 12 months.

Material Limitations

The disclosures with respect to commodity prices and foreign currency exchange risk do not consider the underlying commitments or anticipated transactions. If the underlying items were included in the analysis, the gains or losses on the futures contracts may be offset. Actual results will be determined by several factors that are not under Alcoa Corporation's control and could vary significantly from those factors disclosed.

Alcoa Corporation is exposed to credit loss in the event of nonperformance by counterparties on the above instruments, as well as credit or performance risk with respect to its hedged customers' commitments. Alcoa Corporation does not anticipate nonperformance by any of these parties. Contracts are with creditworthy counterparties and are further supported by cash, treasury bills, or irrevocable letters of credit issued by carefully chosen banks. In addition, various master netting arrangements are in place with counterparties to facilitate settlement of gains and losses on these contracts.

Other Financial Instruments. The carrying values and fair values of Alcoa Corporation's other financial instruments were as follows:

	2023		2022	
December 31,	Carrying value	Fair value	Carrying value	Fair value
Cash and cash equivalents	$ 944	$ 944	$ 1,363	$ 1,363
Restricted cash	103	103	111	111
Short-term borrowings	56	56	–	–
Long-term debt due within one year	79	79	1	1
Long-term debt, less amount due within one year	1,732	1,702	1,806	1,744

Cash and cash equivalents and Restricted cash. The carrying amounts approximate fair value because of the short maturity of the instruments. The fair value amounts for Cash and cash equivalents and Restricted cash were classified in Level 1 of the fair value hierarchy.

Short-term borrowings and Long-term debt, including amounts due within one year. The fair value of Long-term debt, less amount due within one year was based on quoted market prices for public debt and on interest rates that are currently available to Alcoa Corporation for issuance of debt with similar terms and maturities for non-public debt. The fair value amounts for all Short-term borrowings and Long-term debt were classified in Level 2 of the fair value hierarchy.

Q. INCOME TAXES

Provision for income taxes. The components of (Loss) income before income taxes were as follows:

	2023	2022	2021
Domestic	$ (277)	$ (652)	$ (663)
Foreign	(307)	1,354	1,862
Total	$ (584)	$ 702	$ 1,199

Provision for income taxes consisted of the following:

	2023	2022	2021
Current:			
Federal	$ –	$ –	$ 8
Foreign	211	445	473
State and local	–	–	1
	$ 211	$ 445	$ 482
Deferred:			
Federal	–	(3)	6
Foreign	(22)	222	141
State and local	–	–	–
	$ (22)	$ 219	$ 147
Total	$ 189	$ 664	$ 629

Federal includes U.S. income taxes related to foreign income.

A reconciliation of the U.S. federal statutory rate to Alcoa's effective tax rate was as follows:

	2023	2022	2021
U.S. federal statutory rate	21.0%	21.0%	21.0%
Taxes on foreign operations – rate differential	7.1	9.9	10.8
Tax credits	1.4	(0.2)	–
Adjustment of prior year income taxes	0.3	–	–
Non-controlling interest	0.2	0.8	0.5
Internal legal entity reorganizations	0.2	(9.0)	–
Tax holidays	0.1	(5.2)	(2.8)
Impacts of the U.S. Tax Cuts and Jobs Act of 2017	–	–	2.0
Uncertain tax positions	(0.1)	0.4	–
Equity loss	(5.3)	(2.0)	(2.5)
Tax on foreign operations – other	(6.1)	1.3	1.7
Changes in valuation allowances	(50.8)	76.7	23.4
Other	(0.4)	0.9	(1.6)
Effective tax rate	(32.4%)	94.6%	52.5%

Certain income earned by AWAB is eligible for a tax holiday, which decreases the tax rate on this income from 34% to 15.25%, which will result in future cash tax savings. The holiday related to production at the Alumar refinery was originally expected to end on December 31, 2027. During 2023, it was extended to December 31, 2032. The holiday related to the operation of the Juruti (Brazil) bauxite mine will end on December 31, 2026.

In 2021, it was determined that the deferred taxes associated with income subject to the tax holiday would be fully exhausted within the holiday period and the amounts were therefore maintained on the balance sheet at the holiday tax rate. In 2022, the Company's projection of the reversal of deferred tax assets during the holiday tax period was lowered, and as a result, the remainder was revalued at the statutory rate of 34%, resulting in a discrete income tax benefit of $33, which is included in Tax holidays, above. In 2023, the Company determined that it was no longer more likely than not that the deferred tax asset at AWAB would be realized and recorded a full valuation allowance against the deferred tax asset (see below). As a result, the amount reflected in Tax holidays, above, is zero with respect to AWAB as of December 31, 2023.

In October 2022, Alcoa completed the liquidation of Alcoa Saudi Rolling Inversiones S.L. (ASRI), a wholly owned subsidiary that previously held the Company's investment in MRC. This liquidation resulted in a deductible loss in the Netherlands and a tax benefit of $94 was recognized in 2022, however, this tax benefit was substantially offset by a valuation allowance.

In December 2022, Alcoa commenced an internal reorganization to reduce its number of legal entities in Norway from four to one to simplify accounting and treasury functions and reduce external costs. As a result of the simplification, the Company recorded a deferred tax expense of $30 in 2022.

Deferred income taxes. The components of deferred tax assets and liabilities based on the underlying attributes without regard to jurisdiction were as follows:

	2023		2022	
December 31,	**Deferred tax assets**	**Deferred tax liabilities**	**Deferred tax assets**	**Deferred tax liabilities**
Tax loss carryforwards	$ 2,042	$ –	$ 1,781	$ –
Employee benefits	312	–	297	–
Derivatives and hedging activities	312	10	283	24
Loss provisions	161	–	174	–
Interest	142	6	127	2
Depreciation	94	318	128	336
Investment basis differences	78	–	75	–
Lease assets and liabilities	34	33	24	23
Tax credit carryforwards	24	–	23	–
Deferred income/expense	16	131	10	153
Other	25	–	36	–
	$ 3,240	$ 498	$ 2,958	$ 538
Valuation allowance	(2,595)	–	(2,333)	–
Total	$ 645	$ 498	$ 625	$ 538

The following table details the expiration periods of the deferred tax assets presented above:

December 31, 2023	**Expires within 10 years**	**Expires within 11-20 years**	**No expiration**	**Other**	**Total**
Tax loss carryforwards	$ 203	$ 333	$ 1,471	$ 35	$ 2,042
Tax credit carryforwards	24	–	–	–	24
Other	(1)	–	154	1,021	1,174
Valuation allowance	(226)	(333)	(1,613)	(423)	(2,595)
Total	$ –	$ –	$ 12	$ 633	$ 645

Deferred tax assets with no expiration may still have annual limitations on utilization. Other represents deferred tax assets whose expiration is dependent upon the reversal of the underlying temporary difference.

The total deferred tax asset (net of valuation allowance) is supported by projections of future taxable income exclusive of reversing temporary differences and taxable temporary differences that reverse within the carryforward period. The composition of Alcoa's net deferred tax asset by jurisdiction as of December 31, 2023 was as follows:

	Domestic	Foreign	Total
Deferred tax assets	$ 1,050	$ 2,190	$ 3,240
Valuation allowance	(988)	(1,607)	(2,595)
Deferred tax liabilities	(62)	(436)	(498)
Total	$ –	$ 147	$ 147

The Company has several income tax filers in various foreign countries. Of the $147 net deferred tax asset included under the Foreign column in the table above, approximately 90% relates to six of Alcoa's income tax filers (the Foreign Filers) as follows: a $135 net deferred tax asset for Alcoa Canada Company in Canada; a $90 net deferred tax asset for Alcoa-Lauralco Management Company in Canada; a $39 net deferred tax asset for Alcoa Wolinbec Company in Canada; a $19 net deferred tax asset for Alcoa Islandi and a $35 net deferred tax asset for Fjarðaál, both in Iceland; and a $185 net deferred tax liability for AofA in Australia.

The future realization of the net deferred tax asset for each of the Foreign Filers was based on projections of the respective future taxable income (defined as the sum of pretax income, other comprehensive income, and permanent tax differences), exclusive of reversing temporary differences and carryforwards. The realization of the net deferred tax assets of the Foreign Filers is not dependent on any future tax planning strategies.

Accordingly, management concluded that the net deferred tax assets of the Foreign Filers referenced above will more likely than not be realized in future periods, resulting in no need for a partial or full valuation allowance as of December 31, 2023.

In December 2023, Alcoa recorded a valuation allowance of $154 against the net deferred tax assets of AWAB, of which $106 related to the balance as of December 31, 2022. The 2023 full valuation allowance for AWAB was a result of AWAB's three-year cumulative loss position for the period ended December 31, 2023. The majority of AWAB's net deferred tax assets relate to prior net operating losses; the loss carryforwards are not subject to an expiration period. AWAB's profitability in future periods could prompt the Company to evaluate the realizability of the deferred tax asset and assess the possibility of a reversal of the valuation allowance, which could have a significant impact on net income in the quarter the valuation allowance is reversed.

The Company's subsidiaries in Iceland had a full valuation allowance recorded against deferred tax assets, which was established in 2015 and 2017, as the Company believed it was more likely than not that these tax benefits would not be realized. During 2023, after considering all positive and negative evidence, including the expectation that the jurisdiction will remain in a three-year cumulative income position, the Company determined that it is more likely than not that the net deferred tax assets will be realized. Based on this conclusion, the Company reversed the valuation allowance totaling $58 during 2023, generating a non-cash benefit from income taxes.

In December 2022, Alcoa recorded a valuation allowance of $217 against the net deferred tax assets of Alcoa Alumínio (Alumínio), of which $150 related to the balance as of December 31, 2021. The 2022 full valuation allowance for Alumínio was a result of Alumínio's three-year cumulative loss position for the period ended December 31, 2022. Although the Company entered into aluminum contracts to manage exposures associated with the restart, these contracts were held by another legal entity, and the associated realized gains are not available to Alumínio to offset the restart losses. While management believes Alumínio will return to profitability in the future with the restart of the Alumar smelter, current volatility in the market does not provide a reliable basis for concluding that it is more likely than not that Alumínio's net deferred tax assets, which consist primarily of tax loss carryforwards with indefinite life, will be realized. Alumar smelter profitability in future periods could prompt the Company to evaluate the realizability of the deferred tax asset and assess the possibility of a reversal of the valuation allowance, which could have a significant impact on net income in the quarter the valuation allowance is reversed.

In 2021, Alcoa recorded a valuation allowance of $103 against the net deferred tax assets of Alúmina Española, S.A. (Española). Management concluded that it was more likely than not that Española's net deferred tax assets, which consisted primarily of tax loss carryforwards, would not be realized as the entity's sole operating asset, the San Ciprián refinery, was in a three-year cumulative loss position for the period ended December 31, 2021. This cumulative loss position was the result of recent operating losses due to the high energy costs in Spain and the impact of the refinery workers' strike on the fourth quarter of 2021. After weighing all available positive and negative evidence as of December 31, 2023, management's position continues to be that it is more likely than not that Alcoa Corporation will not realize the benefit of these deferred tax assets and continues to have a full valuation allowance recorded against the deferred tax assets.

The following table details the changes in the valuation allowance:

December 31,	2023	2022	2021
Balance at beginning of year	$ (2,333)	$ (2,062)	$ (2,127)
Establishment of new allowances[(1)]	(106)	(150)	(103)
Net change to existing allowances[(2)]	(113)	(151)	139
Foreign currency translation	(43)	30	29
Balance at end of year	$ (2,595)	$ (2,333)	$ (2,062)

(1) Reflects valuation allowances initially established as a result of a change in management's judgment regarding the realizability of deferred tax assets.

(2) Reflects movements in previously established valuation allowances, which increase or decrease as the related deferred tax assets increase or decrease. Such movements occur as a result of a change in management's judgment regarding previously established valuation allowances, remeasurement due to a tax rate change and changes in the underlying attributes of the deferred tax assets, including expiration of the attribute and reversal of the temporary difference that gave rise to the deferred tax asset.

Undistributed net earnings. Certain earnings of Alcoa's foreign subsidiaries are deemed to be permanently reinvested outside the United States. The cumulative amount of Alcoa's foreign undistributed net earnings deemed to be permanently reinvested was approximately $2,676 as of December 31, 2023. Alcoa Corporation has several commitments and obligations related to the Company's operations in various foreign jurisdictions; therefore, management has no plans to distribute such earnings in the foreseeable future. Alcoa Corporation continuously evaluates its local and global cash needs for future business operations and anticipated debt facilities, which may influence future repatriation decisions. If these earnings were distributed in the form of dividends or otherwise, Alcoa could be subject to foreign income or withholding taxes and state income taxes. Due to the uncertainty of the manner in which the undistributed earnings would be brought back to the United States and the tax laws in effect at that time, it is not practicable to estimate the tax liability that might be incurred if such earnings were remitted to the U.S.

Unrecognized tax benefits. Alcoa and its subsidiaries file income tax returns in the U.S. federal jurisdiction and various foreign and U.S. state jurisdictions. With few exceptions, the Company is not subject to income tax examinations by tax authorities for years prior to 2014. The U.S. federal income tax filings of the Company's U.S. consolidated tax group have been examined through the 2018 tax year. Foreign jurisdiction tax authorities are in the process of examining income tax returns of several of Alcoa's subsidiaries for various tax years. Excluding the Australia tax matter discussed in Note S, the period under foreign examination includes the income tax years from 2014 through 2022. For U.S. state income tax purposes, the Company and its subsidiaries remain subject to income tax examinations for the 2017 tax year and forward.

In the third quarter of 2020, AofA paid approximately $74 (A$107) to the ATO related to the tax dispute described in Note S. Upon payment, AofA recorded a non-current prepaid tax asset, as the Company continues to believe it is more likely than not that AofA's tax position will be sustained and therefore is not recognizing any tax expense in relation to this matter. In accordance with Australian tax laws, the initial interest assessment and additional interest are deductible against AofA's taxable income. AofA applied this deduction beginning in the third quarter of 2020, reducing cash tax payments. Interest compounded in future years is also deductible against AofA's income in future periods. If AofA is ultimately successful, the interest deduction would become taxable as income in the year the dispute is resolved. In addition, should the ATO decide in the interim to reduce any interest already assessed, the reduction would be taxable as income at that point in time. During 2023, AofA continued to record its tax provision and tax liability without effect of the ATO assessment, since it expects to prevail. The tax payable will remain on AofA's balance sheet as a non-current liability, increased by the tax effect of subsequent periods' interest deductions, until dispute resolution, which is expected to take several years. The non-current liability resulting from the cumulative interest deductions was approximately $199 (A$293) and $174 (A$260) at December 31, 2023 and 2022, respectively.

The reserve balance for unrecognized tax benefits is included in non-current income taxes on the Consolidated Balance Sheet. A reconciliation of the beginning and ending amount of unrecognized tax benefits (excluding interest and penalties) was as follows:

December 31,	**2023**	**2022**	**2021**
Balance at beginning of year	$ 5	$ 4	$ 4
Additions for tax positions of prior years	–	2	–
Reductions for tax positions of prior years	–	–	–
Expiration of the statute of limitations	–	(1)	–
Foreign currency translation	–	–	–
Balance at end of year	$ 5	$ 5	$ 4

For all periods presented, a portion of the balance at end of year pertains to state tax liabilities, which are presented before any offset for federal tax benefits. The effect of unrecognized tax benefits, if recorded, that would impact the annual effective tax rate for 2023, 2022, and 2021 would be 1%, 1%, and 0%, respectively, of (Loss) income before income taxes. Alcoa does not anticipate that changes in its unrecognized tax benefits will have a material impact on the Statement of Consolidated Operations during 2024.

It is the Company's policy to recognize interest and penalties related to income taxes as a component of the Provision for income taxes on the accompanying Statement of Consolidated Operations. In 2023, 2022, and 2021 Alcoa recognized $1, $1, and $0, in interest and penalties, respectively. Due to the expiration of the statute of limitations, settlements with tax authorities, and refunded overpayments, the Company also recognized interest income of $1, $1, and $0 in 2023, 2022, and 2021, respectively. As of December 31, 2023 and 2022, the amount accrued for the payment of interest and penalties was $4 and $3, respectively.

Other Matters. On August 16, 2022, the U.S. enacted the Inflation Reduction Act of 2022 (IRA), which includes a 15% minimum tax on book income of certain large corporations, a 1% excise tax on net stock repurchases after December 31, 2022, and several tax incentives to promote clean energy. As a result of the provisions of the IRA, we will incur an excise tax of 1% for certain common stock repurchases made subsequent to December 31, 2022, which will be reflected in the cost of purchasing the underlying shares. The minimum corporate tax did not have an impact on the Company for 2023 and will not have an impact on the Company for 2024.

The IRA contains a number of tax credits and other incentives for investments in renewable energy production, carbon capture, and other climate-related actions, as well as the production of critical minerals. In December 2023, the U.S. Treasury issued guidance on Section 45X of the Advanced Manufacturing Tax Credit. The Notice of Proposed Rulemaking (the Notice) clarifies that commercial grade aluminum can qualify for the credit, which was designed to incentivize domestic production of critical materials important for the transition to clean energy. In the fourth quarter of 2023, the Company recorded a benefit of $36 in Cost of goods sold and Other receivables related to its Massena West smelter (New York) and its Warrick smelter (Indiana).

R. ASSET RETIREMENT OBLIGATIONS

The following table details the carrying value of recorded AROs by major category, of which $217 and $117 was classified as a current liability as of December 31, 2023 and 2022, respectively:

December 31,	2023	2022
Closure of bauxite residue areas	$ 437	$ 342
Mine reclamation	328	279
Spent pot lining disposal	124	115
Demolition	76	61
Landfill closure	24	31
Balance at end of year	$ 989	$ 828

The following table details the changes in the total carrying value of recorded AROs:

December 31,	2023	2022
Balance at beginning of year	$ 828	$ 738
Accretion expense	33	20
Liabilities incurred	254	224
Payments	(148)	(114)
Reversals of previously recorded liabilities	(8)	(12)
Foreign currency translation and other	30	(28)
Balance at end of year	$ 989	$ 828

Liabilities incurred in 2023 include:

- $97 for changes in closure estimates of operating bauxite residue areas;
- $87 for new mining areas opened during the year and higher estimated mine reclamation costs;
- $36 related to the closure of the previously curtailed Intalco smelter;
- $23 related to spent pot lining treatment and disposal;
- $10 for changes in closure estimates of non-operating bauxite residue areas; and,
- $1 related to an accrual for demolition for the closure of a potline at Warrick Operations.

The additional accruals were primarily recorded with corresponding capitalized asset retirement costs except for $15 related to non-operating bauxite residue areas at the Alumar refinery, spent pot lining and treatment, and mine reclamation which was recorded to Cost of goods sold; and $41 related to the closure of the Intalco smelter, updated estimates for spent pot lining treatment and disposal at a previously closed site, and demolition accruals for the closure of a potline at Warrick Operations, which was recorded to Restructuring and other charges, net on the accompanying Statement of Consolidated Operations (see Note D).

Liabilities incurred in 2022 include:

- $81 related to improvements required on both operating and non-operating bauxite residue areas at the Poços de Caldas and Alumar refineries for changes in closure estimates and to comply with updated impoundment regulations in the regions;

- $79 for new mining areas opened during the year and higher estimated mine reclamation costs;
- $28 related to spent pot lining treatment and disposal;
- $18 for bauxite residue areas related to water management at non-operating bauxite residue areas and changes in engineering designs for closure of operating bauxite residue areas;
- $15 related to the closure of the previously curtailed magnesium smelter in Addy (Washington). The facility has been fully curtailed since 2001; and,
- $3 related to accruals for demolition projects at closed sites.

The additional accruals were primarily recorded with corresponding capitalized asset retirement costs (see Note B) except for $72 related to non-operating bauxite reside areas which was recorded to Cost of goods sold at the Poços de Caldas and Alumar refineries and $34 related to the closure of the magnesium smelter in Addy and adjustments to other previously closed sites which were recorded to Restructuring and other charges, net on the accompanying Statement of Consolidated Operations (see Note D).

In 2023, reversals of previously recorded liabilities included a reversal of $8 due to changes in estimates at various sites and the completion of a site demolition project. In 2022, reversals of previously recorded liabilities included a reversal of $12 due to the completion of demolition projects at numerous permanently closed sites.

The estimated timing of cash outflows for recorded AROs at December 31, 2023 was as follows:

2024	$	217
2025-2028		573
Thereafter		199
Total	$	989

Changes to the estimates may result in material changes to the recorded AROs that may require an increase to or a reversal of previously recorded liabilities, as well as changes in the timing of cash outflows.

S. CONTINGENCIES AND COMMITMENTS

Contingencies

Environmental Matters

Alcoa Corporation participates in environmental assessments and cleanups at several locations. These include currently or previously owned or operated facilities and adjoining properties, and waste sites, including Superfund (Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)) sites.

Alcoa Corporation's environmental remediation reserve balance reflects the most probable costs to remediate identified environmental conditions for which costs can be reasonably estimated. The following table details the changes in the carrying value of recorded environmental remediation reserves:

Balance at December 31, 2020	$ 322
Liabilities incurred	21
Cash payments	(23)
Reversals of previously recorded liabilities	(17)
Foreign currency translation and other	6
Balance at December 31, 2021	309
Liabilities incurred	32
Cash payments	(26)
Reversals of previously recorded liabilities	(30)
Foreign currency translation and other	(1)
Balance at December 31, 2022	284
Liabilities incurred	39
Cash payments	(55)
Reversals of previously recorded liabilities	(1)
Foreign currency translation and other	1
Balance at December 31, 2023	$ 268

At December 31, 2023 and 2022, the current portion of the remediation reserve balance was $66 and $58, respectively.

In 2023, the Company incurred liabilities of $39 primarily related to $14 for the closure of the previously curtailed Intalco smelter and $13 for an increase in estimated costs associated with ongoing remediation work at the previously closed Longview (Washington) site which were recorded in Restructuring and other charges, net on the Statement of Consolidated Operations, and $12 for an increase in estimated costs associated with ongoing remediation work at various other sites which was recorded in Cost of goods sold on the accompanying Statement of Consolidated Operations. Payments related to remediation expenses applied against the reserve were $55 in 2023. These amounts include mandated expenditures as well as those not required by any regulatory authority or third party. Further, the Company reversed reserves of $1 during 2023 due to the determination that certain remaining site remediation is no longer required.

In 2022, the Company incurred liabilities of $32 primarily related to $14 for the closure of the previously curtailed magnesium smelter in Addy (Washington), $6 for estimates for environmental remediation at the Point Henry site, $4 for a new phase of work at the former East St. Louis site and $9 for environmental activities at various sites. These charges are recorded in Cost of goods sold and Restructuring and other charges, net (see Note D) on the accompanying Statement of Consolidated Operations. Payments related to remediation expenses applied against the reserve were $26 in 2022. These amounts include mandated expenditures as well as those not required by any regulatory authority or third party. Further, the Company reversed reserves of $30 during 2022, primarily related to changes in estimates for site remediation at Massena East of $18 and Suralco of $5, and completion of remediation at a previously closed site in Brazil of $6.

In 2021, the Company incurred liabilities of $21 primarily related to remediation design considerations at the Longview site in Washington, closure of the Wenatchee aluminum smelter in Washington, environmental activities at the Point Comfort site in Texas, closure of the anode plant at the Lake Charles site in Louisiana, and wetlands mitigation at the Longview site in Washington, as well as other increases for ongoing monitoring and maintenance at various sites. These charges are primarily recorded in Cost of goods sold and Restructuring and other charges, net on the accompanying Statement of Consolidated Operations. Payments in 2021 include mandated expenditures as well as those not required by any regulatory authority or third-party. Further, the Company reversed reserves of $17 related to:

- $7 due to the determination that previously estimated site remediation is not required at the previously closed Tennessee site;
- $5 due to lower costs for waste treatment at a previously closed Suriname site; and,

- $5 due to lower costs for site remediation related to a previously closed site in Brazil.

The estimated timing of cash outflows from the environmental remediation reserve at December 31, 2023 was as follows:

2024	$	66
2025-2028		112
Thereafter		90
Total	$	268

Reserve balances at December 31, 2023 and 2022, associated with significant sites with active remediation underway or for future remediation were $211 and $234, respectively. In management's judgment, the Company's reserves are sufficient to satisfy the provisions of the respective action plans. Upon changes in facts or circumstances, a change to the reserve may be required. The Company's significant sites include:

Suriname – The reserve associated with the 2017 closure of the Suralco refinery and bauxite mine is for treatment and disposal of refinery waste and soil remediation. The work began in 2017 and is expected to be completed at the end of 2025.

Hurricane Creek, Arkansas – The reserve associated with the 1990 closure of two mining areas and refineries near Hurricane Creek, Arkansas is for ongoing monitoring and maintenance for water quality surrounding the mine areas and residue disposal areas.

Massena, New York – The reserve associated with the 2015 closure of the Massena East smelter by the Company's subsidiary, Reynolds Metals Company, is for subsurface soil remediation to be performed after demolition of the structures. Remediation work commenced in 2021 and will take four to eight years to complete.

Point Comfort, Texas – The reserve associated with the 2019 closure of the Point Comfort alumina refinery is for disposal of industrial wastes contained at the site, subsurface remediation, and post-closure monitoring and maintenance. The final remediation plan is currently being developed, which may result in a change to the existing reserve.

Sherwin, Texas – In connection with the 2018 settlement of a dispute related to the previously-owned Sherwin alumina refinery, the Company's subsidiary, Copano Enterprises LLC, accepted responsibility for the final closure of four bauxite residue waste disposal areas (known as the Copano facility). Work commenced on the first residue disposal area in 2018 and is expected to take up to an additional four years to complete, depending on the nature of its potential re-use. Other than ongoing maintenance and repair activities, work on the next three areas has not commenced but is expected to be completed by 2048, depending on its potential re-use.

Longview, Washington – In connection with a 2018 Consent Decree and Cleanup Action Plan with the State of Washington Department of Ecology, the Company's subsidiary, Northwest Alloys as landowner, accepted certain responsibilities for future remediation of contaminated soil and sediments at the site located near Longview, Washington. In December 2020, the lessee of the land, who was a partner in the remediation of the site, filed for bankruptcy and exited the site in January 2021. The full site remediation project design, long-term and post-closure monitoring and maintenance at the site was approved in March 2023. In the third quarter of 2023, changes in scope and cost increases for remediation resulted in an increase to the reserve. The project is planned to be completed in the next two years.

Addy, Washington – The reserve associated with the 2022 closure of the Addy magnesium smelter facility is for site-wide remediation and investigation and post-closure monitoring and maintenance. Remediation work is not expected to begin until 2026 and will take three to five years to complete. The final remediation plan is currently being developed, which may result in a change to the existing reserve.

Ferndale, Washington – The reserve associated with the 2023 closure of the Intalco aluminum smelter in Ferndale, Washington is for below grade site remediation and five years of post-closure maintenance and monitoring. The final remediation plan is under review.

Other Sites – The Company is in the process of decommissioning various other plants and remediating sites in several countries for potential redevelopment or to return the land to a natural state. In aggregate, there are remediation projects at 32 other sites that are planned or underway. These activities will be completed at various times in the future with the latest expected to be in 2026, after which ongoing monitoring and other activities may be required. At December 31, 2023 and 2022, the reserve balance associated with these activities was $57 and $50, respectively.

Tax

Brazil (AWAB) – In March 2013, AWAB was notified by the Brazilian Federal Revenue Office (RFB) that approximately $110 (R$220) of value added tax credits previously claimed were being disallowed and a penalty of 50% was assessed. Of this amount, AWAB received $41 (R$82) in cash in May 2012. The value added tax credits were claimed by AWAB for both fixed assets and export sales related to the Juruti bauxite mine and Alumar refinery expansion for tax years 2009 through 2011. The RFB has disallowed credits they allege belong to the consortium in which AWAB owns an interest and should not have been claimed by AWAB. Credits have also been disallowed as a result of challenges to apportionment methods used, questions about the use of the credits, and an alleged lack of documented proof. AWAB presented defense of its claim to the RFB on April 8, 2013. In February 2022, the RFB notified AWAB that it had inspected the value added tax credits claimed for 2012 and disallowed $4 (R$19). In its decision, the RFB allowed credits of $14 (R$65) that were similar to those previously disallowed for 2009 through 2011. In July 2022, the RFB notified AWAB that it had inspected the value added tax credits claimed for 2013 and disallowed $13 (R$70). In its decision, the RFB allowed credits of $16 (R$84) that were similar to those previously disallowed for 2009 through 2011. The decisions on the 2012 and 2013 credits provide positive evidence to support management's opinion that there is no basis for these credits to be disallowed. AWAB received the 2012 allowed credits with interest of $9 (R$44) in March 2022 and the 2013 allowed credits with interest of $6 (R$31) in August 2022. AWAB will continue to dispute the credits that were disallowed for 2012 and 2013. If AWAB is successful in this administrative process, the RFB would have no further recourse. If unsuccessful in this process, AWAB has the option to litigate at a judicial level. Separately from AWAB's administrative appeal, in June 2015, a new tax law was enacted repealing the provisions in the tax code that were the basis for the RFB assessing a 50% penalty in this matter. As such, the estimated range of reasonably possible loss for these matters is $0 to $49 (R$239). It is management's opinion that the allegations have no basis; however, at this time, the Company is unable to reasonably predict an outcome for this matter.

Australia (AofA) – In December 2019, AofA received a statement of audit position (SOAP) from the Australian Taxation Office (ATO) related to the pricing of certain historic third-party alumina sales. The SOAP proposed adjustments that would result in additional income tax payable by AofA. During 2020, the SOAP was the subject of an independent review process within the ATO. At the conclusion of this process, the ATO determined to continue with the proposed adjustments and issued Notices of Assessment (the Notices) that were received by AofA on July 7, 2020. The Notices asserted claims for income tax payable by AofA of approximately $145 (A$214). The Notices also included claims for compounded interest on the tax amount totaling approximately $481 (A$707).

On September 17, 2020, the ATO issued a position paper with its preliminary view on the imposition of administrative penalties related to the tax assessment issued to AofA. This paper proposed penalties of approximately $87 (A$128).

AofA disagreed with the Notices and with the ATO's proposed position on penalties. During 2020, AofA lodged formal objections to the Notices, provided a submission on the ATO's imposition of interest and submitted a response to the ATO's position paper on penalties. After the ATO completes its review of AofA's response to the penalties position paper, the ATO could issue a penalty assessment.

To date, AofA has not received a response to its submission on the ATO's imposition of interest or its response to the ATO's position paper on penalties.

Through February 1, 2022, AofA did not receive a response from the ATO on AofA's formal objections to the Notices and, on that date, AofA submitted statutory notices to the ATO requiring the ATO to make decisions on AofA's objections within a 60-day period. On April 1, 2022, the ATO issued its decision disallowing the Company's objections related to the income tax assessment, while the position on penalties and interest remains outstanding.

On April 29, 2022, AofA filed proceedings in the Australian Administrative Appeals Tribunal (AAT) against the ATO to contest the Notices, a process which could last several years. The AAT held the first directions hearing on July 25, 2022 ordering AofA to file its evidence and related materials by November 4, 2022, ATO to file its materials by April 14, 2023 and AofA to file reply materials by May 26, 2023. AofA filed its evidence and related materials on November 4, 2022. The ATO did not file its materials by April 14, 2023. At a directions hearing on May 17, 2023, the ATO was granted an extension to file its materials by August 18, 2023. At a directions hearing on September 26, 2023, the ATO was granted an additional extension to file its materials by November 3, 2023. The ATO filed its materials on November 13, 2023. At a directions hearing on November 22, 2023, AofA was ordered to file any reply materials by March 15, 2024. The substantive hearing is scheduled for June 2024.

The Company maintains that the sales subject to the ATO's review, which were ultimately sold to Aluminium Bahrain B.S.C., were the result of arm's length transactions by AofA over two decades and were made at arm's length prices consistent with the prices paid by other third-party alumina customers.

In accordance with the ATO's dispute resolution practices, AofA paid 50% of the assessed income tax amount exclusive of interest and any penalties, or approximately $74 (A$107), during the third quarter 2020, and the ATO is not expected to seek further payment prior to final resolution of the matter. If AofA is ultimately successful, any amounts paid to the ATO as part of the 50% payment would be refunded. AofA funded the payment with cash on hand and recorded the payment within Other non-current assets as a non-current prepaid tax asset; the related December 31, 2023 balance is $73 (A$107).

Further interest on the unpaid tax will continue to accrue during the dispute. The initial interest assessment and the additional interest accrued are deductible against taxable income by AofA but would be taxable as income in the year the dispute is resolved if AofA is ultimately successful. AofA applied this deduction beginning in the third quarter of 2020, reducing cash tax payments. At December 31, 2023 and December 31, 2022, total reductions in cash tax payments were $199 (A$293) and $174 (A$260), respectively, and are reflected within Other non-current liabilities and deferred credits as a non-current accrued tax liability.

The Company continues to believe it is more likely than not that AofA's tax position will be sustained and therefore is not recognizing any tax expense in relation to this matter. However, because the ultimate resolution of this matter is uncertain at this time, the Company cannot predict the potential loss or range of loss associated with the outcome, which may materially affect its results of operations and financial condition. References to any assessed U.S. dollar amounts presented in connection with this matter have been converted into U.S. dollars from Australian dollars based on the exchange rate in the respective period.

AofA is part of the Company's joint venture with Alumina Limited, an Australian public company listed on the Australian Securities Exchange. The Company and Alumina Limited own 60% and 40%, respectively, of the joint venture entities, including AofA.

Other

Spain – In July 2019, the Company completed the divestiture of the Avilés and La Coruña (Spain) aluminum facilities to PARTER Capital Group AG (PARTER) in a sale process endorsed by the Spanish government and supported by the workers' representatives following a collective dismissal process. In connection with the divestiture, Alcoa committed to make financial contributions to the divested entities of up to $95; a total of $78 was paid through December 31, 2021.

In early 2020, PARTER sold a majority stake in the facilities to an unrelated party. Alcoa had no knowledge of the subsequent transaction prior to its announcement and on August 28, 2020, Alcoa filed a lawsuit with the Court of First Instance in Madrid, Spain asserting that the sale was in breach of the sale agreement between Alcoa and PARTER. In June 2023, the Court of First Instance in Madrid issued a declaratory judgment in Alcoa's favor ruling that the transaction between PARTER and the unrelated party was a breach of the sale agreement. There was no financial compensation to the Company as a result of this ruling.

Related to this subsequent sale transaction, certain proceedings and investigations were initiated by or at the request of the employees of the facilities against their current employers, the new owners of the current employers, and Alcoa, alleging that certain agreements from the 2019 collective dismissal process remain in force and that, under such agreements, Alcoa remains liable for certain related employment benefits.

During 2022, Alcoa reached a Global Settlement Agreement (GSA) with the workers of the divested Avilés and La Coruña facilities to settle various legal disputes related to the 2019 divestiture, and Alcoa recorded a charge of $79 in Restructuring and other charges, net to reflect its estimated liability for the GSA. In July 2023, the Supreme Court of Spain ratified the GSA. Upon completion of the remaining administrative and judicial approvals, the Company made cash payments of $76 to the former employees of the facilities in 2023 in accordance with the GSA. The remaining payments will be made in the early 2024.

General

In addition to the matters discussed above, various other lawsuits, claims, and proceedings have been or may be instituted or asserted against Alcoa Corporation, including those pertaining to environmental, safety and health, commercial, tax, product liability, intellectual property infringement, employment, and employee and retiree benefit matters, and other actions and claims arising out of the normal course of business. While the amounts claimed in these other matters may be substantial, the ultimate liability is not readily determinable because of the considerable uncertainties that exist. Accordingly, it is possible that the Company's liquidity or results of operations in a particular period could be materially affected by one or more of these other matters. However, based on facts currently available, management believes that the disposition of these other matters that are pending or asserted will not have a material adverse effect, individually or in the aggregate, on the financial position of the Company.

Commitments

Purchase Obligations. Alcoa Corporation is party to unconditional purchase obligations for energy that expire between 2040 and 2041. Commitments related to these contracts total $56 in 2024, $59 in 2025, $61 in 2026, $63 in 2027, $65 in 2028, and $770 thereafter. Expenditures under these contracts totaled $53 in 2023, $58 in 2022, and $86 in 2021. Additionally, the Company has entered into other purchase commitments for energy, raw materials, and other goods and services, which total $3,896 in 2024, $1,998 in 2025, $1,566 in 2026, $1,448 in 2027, $1,407 in 2028, and $8,757 thereafter.

AofA has a gas supply agreement to power its three alumina refineries in Western Australia which began in July 2020 for a 12-year period. The terms of this agreement required AofA to make a prepayment of $500 prior to 2017. At December 31, 2023, prepayments of $37 and $283 were included in Prepaid expenses and other current assets and Other non-current assets (see Note U), respectively, on the accompanying Consolidated Balance Sheet. At December 31, 2022, prepayments of $37 and $311 were included in Prepaid expenses and other current assets and Other non-current assets (see Note U), respectively, on the accompanying Consolidated Balance Sheet.

Guarantees of Third Parties. As of December 31, 2023 and 2022, the Company had no outstanding potential future payments for guarantees issued on behalf of a third party.

Bank Guarantees and Letters of Credit. Alcoa Corporation and its subsidiaries have outstanding bank guarantees and letters of credit related to, among others, energy contracts, environmental obligations, legal and tax matters, leasing obligations, workers compensation, and customs duties. The total amount committed under these instruments, which automatically renew or expire at various dates between 2024 and 2025, was $294 (includes $86 issued under a standby letter of credit agreement – see below) at December 31, 2023. Additionally, ParentCo has outstanding bank guarantees and letters of credit related to the Company of $13 at December 31, 2023. In the event ParentCo would be required to perform under any of these instruments, ParentCo would be indemnified by Alcoa Corporation in accordance with the Separation and Distribution Agreement. Likewise, the Company has outstanding bank guarantees and letters of credit related to ParentCo of $8 at December 31, 2023. In the event Alcoa Corporation would be required to perform under any of these instruments, the Company would be indemnified by ParentCo in accordance with the Separation and Distribution Agreement.

In December 2023, AofA committed to provide a bank guarantee for approximately $68 (A$100) which demonstrates Alcoa's confidence that its operations will not impair drinking water supplies.

In August 2017, Alcoa Corporation entered into a standby letter of credit agreement, which expires on June 27, 2024 (amended in August 2018, May 2019, May 2021, June 2022, and January 2024), with three financial institutions. The agreement provides for a $200 facility used by the Company for matters in the ordinary course of business. Alcoa Corporation's obligations under this facility are secured in the same manner as obligations under the Company's revolving credit facility. Additionally, this facility contains similar representations and warranties and affirmative, negative, and financial covenants as the Company's Revolving Credit Facility (see Note M). As of December 31, 2023, letters of credit aggregating $86 were issued under this facility.

Surety Bonds. Alcoa Corporation has outstanding surety bonds primarily related to tax matters, contract performance, workers compensation, environmental-related matters, and customs duties. The total amount committed under these bonds, which automatically renew or expire at various dates between 2024 and 2028, was $190 at December 31, 2023. Additionally, ParentCo has outstanding surety bonds related to the Company of $8 at December 31, 2023. In the event ParentCo would be required to perform under any of these instruments, ParentCo would be indemnified by Alcoa Corporation in accordance with the Separation and Distribution Agreement. Likewise, the Company has outstanding surety bonds related to ParentCo of $5 at December 31, 2023. In the event Alcoa Corporation would be required to perform under any of these instruments, the Company would be indemnified by ParentCo in accordance with the Separation and Distribution Agreement.

T. LEASING

The Company records a right-of-use asset and lease liability for several types of operating leases, including land and buildings, alumina refinery process control technology, plant equipment, vehicles, and computer equipment. These amounts are equivalent to the aggregate future lease payments on a discounted basis. The leases have remaining terms of less than one to 59 years. The discount rate applied in determining the present value of lease payments is the Company's incremental borrowing rate at the lease commencement date, unless there is a rate implicit in the lease agreement. The Company does not have material financing leases.

Lease expense and operating cash flows include:

	2023	2022
Costs from operating leases	$ 53	$ 54
Variable lease payments	$ 25	$ 16
Short-term rental expense	$ 11	$ 2

The weighted average lease term and weighted average discount rate were as follows:

December 31,	**2023**	**2022**
Weighted average lease term for operating leases (years)	12.9	5.1
Weighted average discount rate for operating leases	6.7%	5.6%

The following represents the aggregate right-of-use assets and related lease obligations recognized in the Consolidated Balance Sheet:

December 31,	**2023**	**2022**
Properties, plants, and equipment, net	$ 135	$ 89
Other current liabilities	31	30
Other non-current liabilities and deferred credits	104	59
Total operating lease liabilities	$ 135	$ 89

New leases of $76 and $26 were added during the years ended December 31, 2023 and 2022, respectively.

The future cash flows related to the operating lease obligations as of December 31, 2023 were as follows:

Year Ending December 31,	
2024	$ 40
2025	26
2026	20
2027	16
2028	11
Thereafter	112
Total lease payments (undiscounted)	225
Less: discount to net present value	(90)
Total	$ 135

U. OTHER FINANCIAL INFORMATION

Interest Cost Components

	2023	**2022**	**2021**
Amount charged to expense	$ 107	$ 106	$ 195
Amount capitalized	4	3	6
	$ 111	$ 109	$ 201

Other Expenses (Income), Net

	2023	**2022**	**2021**
Equity loss (income)	$ 228	$ 27	$ (105)
Foreign currency (gains) losses, net	(64)	9	3
Net loss (gain) from asset sales	14	10	(354)
Net loss (gain) on mark-to-market derivative instruments (P)	5	(174)	(25)
Non-service costs – pension and other postretirement benefits (O)	13	60	47
Other, net	(62)	(50)	(11)
	$ 134	$ (118)	$ (445)

In 2023, Other, net of $62 was primarily related to interest income on interest bearing accounts.

In 2022, Other, net of $50 was primarily related to interest income for the Brazil value added tax credits (see Note S).

In 2021, Net loss (gain) from asset sales of $354 was primarily related to the sales of the Rockdale site, the Eastalco site, and the Warrick Rolling Mill (see Note C).

Other non-current Assets

December 31,	**2023**	**2022**
Value added tax credits	$ 336	$ 294
Prepaid gas transmission contract	297	285
Gas supply prepayment (S)	283	311
Deferred mining costs, net	187	161
Goodwill (L)	146	145
Prepaid pension benefit (O)	125	146
non-current prepaid tax asset (S)	73	72
non-current restricted cash (see below)	71	56
Intangibles, net (L)	37	29
Other	95	94
	$ 1,650	$ 1,593

Prepaid gas transmission contract – As part of a previous sale transaction of an equity investment, Alcoa maintained access to approximately 30% of the Dampier to Bunbury Natural Gas Pipeline transmission capacity in Western Australia for gas supply to three alumina refineries. At December 31, 2023 and 2022, AofA had an asset of $297 and $285, respectively, representing prepayments made under the agreement for future gas transmission services.

Value added tax credits – The Value added tax (VAT) credits (federal and state) relate to two of the Company's subsidiaries in Brazil, AWAB and Alumínio, concerning the Alumar smelter and refinery and the Juruti mine. The mine, refinery and smelter pay VAT on the purchase of goods and services used in the mining, alumina, and production process. The credits generally can be utilized to offset the VAT charged on domestic sales of bauxite, alumina, and aluminum.

In March 2021, the Brazil Federal Supreme Court provided clarification on an earlier ruling that found the inclusion of state VAT within the federal VAT tax base to be unconstitutional. After receiving further clarification from the court in August 2021, the Company finalized the amount of its recovery claim and submitted the claim to the tax authorities in the fourth quarter and received acknowledgment of the claim in January 2022. As a result, in the fourth quarter of 2021, the Company recorded $95 of additional VAT credits in Other non-current assets, $47 payable to Arconic Corporation within Other non-current liabilities, $34 in Sales, and $14 of interest income within Other (income) expenses, net. The amount due to Arconic Corporation represents VAT payments related to an Arconic subsidiary previously owned by Alumínio for a portion of the claim years and covered under agreements related to the Separation Transaction (see Note A).

In the fourth quarter of 2018, after an assessment of the future realizability of Brazil state VAT credits recorded, the Company established an allowance on the accumulated state VAT credit balances and stopped recording any future credit benefits. With the restart of the Alumar smelter and its first metal sales in June 2022, the Company had the ability to monetize these credits. In June 2022, the Company reversed the allowance with a credit of $83 to Restructuring and other charges, net and reversed the subsequent additions to the valuation allowance with a credit to Cost of goods sold of $46 (same accounts as when incurred).

Other non-current Liabilities and Deferred Credits

December 31,	**2023**	**2022**
non-current accrued tax liability (S)	$ 199	$ 174
Operating lease obligations (T)	104	59
Accrued compensation and retirement costs	94	95
Value added tax credits payable to Arconic Corporation	58	51
Deferred energy credits	42	37
non-current restructuring reserve (D)	15	3
Deferred alumina sales revenue	20	28
Other	36	39
	$ 568	$ 486

Deferred energy credits – Deferred energy credits relate to cash received for 2022 and 2021 carbon dioxide emissions related to the San Ciprián smelter and refinery during the years ended December 31, 2023 and 2022, respectively, from a governmental agency in Spain. The terms of the credits require the Company to comply with certain conditions for a period of three years. These deferred credits will be recognized as a reduction to Cost of goods sold once it is determined to be probable the Company will satisfy all conditions. Should the Company not meet all conditions during the three-year period, the credits will be repaid to the governmental agency.

Value added tax credits payable to Arconic Corporation – See, Other non-current assets – Value added tax credits, above.

Cash and Cash Equivalents and Restricted Cash

December 31,	**2023**	**2022**
Cash and cash equivalents	$ 944	$ 1,363
Current restricted cash	32	55
non-current restricted cash	71	56
	$ 1,047	$ 1,474

Restricted cash primarily relates to commitments made for the December 2021 and February 2023 viability agreements for the San Ciprián restart (see Note D).

At December 31, 2023, the Company had restricted cash of $91 remaining to be made available for $118 in capital improvements at the site and $35 in smelter restart costs. The Company incurred $28 of capital investment expenditures against the commitments during 2023.

Cash Flow Information

Cash paid for interest and income taxes was as follows:

	2023	**2022**	**2021**
Interest, net of amount capitalized	$ 100	$ 100	$ 191
Income taxes, net of amount refunded	319	504	152

V. SUPPLIER FINANCE PROGRAMS

The Company has various supplier finance programs with third-party financial institutions that are made available to suppliers to facilitate payment term negotiations. Under the terms of these agreements, participating suppliers receive payment in advance of the payment date from third-party financial institutions for qualifying invoices. Alcoa's obligations to its suppliers, including amounts due and payment terms, are not impacted by its suppliers' participation in these programs. The Company does not pledge any assets as security or provide any guarantees beyond payment of outstanding invoices at maturity under these arrangements. The Company does not pay fees to the financial institutions under these arrangements. At December 31, 2023 and December 31, 2022, qualifying supplier invoices outstanding under these programs were $104 and $185, respectively, and have payment terms ranging from 50 to 110 days. These obligations are included in Accounts payable, trade on the accompanying Consolidated Balance Sheet.

W. SUBSEQUENT EVENTS

On January 8, 2024, Alcoa announced the full curtailment of the Kwinana refinery beginning in the second quarter of 2024. The refinery has an annual nameplate capacity of 2.2 million metric tons and has been operating at approximately 80 percent of its nameplate capacity since January 2023, when the Company reduced production in response to a domestic natural gas shortage in Western Australia due to production challenges experienced by key gas suppliers. The Company's decision to fully curtail the refinery was made based on a variety of factors, including the refinery's age, scale, operating costs and current bauxite grades, in addition to current market conditions. The refinery currently has approximately 800 employees and this number will be reduced to approximately 250 in the third quarter of 2024, when alumina production will cease. Certain processes will continue until about the third quarter of 2025, when the employee number will be further reduced to approximately 50.

In the first quarter of 2024, Alcoa will record restructuring charges between $180 and $200 related to the curtailment of the refinery. The charges include approximately $81 for water management costs, $55 for employee related costs, $26 for asset retirement obligations, and $18 of other costs. Alcoa's share of related cash outlays of approximately $115 (which includes existing employee related liabilities and asset retirement obligations) is expected to be spent in 2024 ($80) and 2025 ($35).

C2. LETTER FROM THE CHAIRMAN OF THE BOARD AND LETTER FROM THE PRESIDENT AND CEO FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2023

Letter from the Chairman of the Board

Dear Stockholders,

Since our inception as a pure-play, upstream aluminum company in 2016, Alcoa has been focused on driving stockholder value by creating an optimized portfolio of assets supported by a strong balance sheet.

We are proud to be active in all aspects of the upstream aluminum industry, with bauxite mining, alumina refining, aluminum smelting and casting. We produce materials that are key for global decarbonization efforts and the related energy transition.

Long-term forecasts predict continued aluminum demand increases, both from primary and recycled sources. While the long-term prospect for our industry is very promising, we know we must focus now, and every day, on being well positioned for this growth. Put simply, meeting the demands of the future requires an even higher level of performance today.

In September, the Board of Directors appointed William F. Oplinger as Alcoa's President and Chief Executive Officer. Bill succeeds Roy C. Harvey, who served as Chief Executive Officer since November 2016 and as President since May 2017. We appreciate Roy's years of service and his work to make Alcoa stronger and more resilient.

Our Board has confidence in Bill's leadership abilities and business acumen to lead this organization now. Bill has deep roots at Alcoa, serving previously as Chief Financial Officer from November of 2016 to February 2023, when he was named Chief Operations Officer.

Following a smooth leadership transition, Bill, as President and CEO, is bringing renewed energy, inspiring our teams across the globe to act with a deliberate focus on operating with excellence. He and his team are focused on a performance-based culture with action-oriented, empowered employees who deliver results aligned with Alcoa's three strategic priorities: reduce complexity, drive returns, and advance sustainably.

Together, we are keenly focused on rigorous plans, both for the near-term and mid-term, to increase the competitiveness of our plants and business, which is imperative for a commodity-based industry.

Also, we continue to innovate for long-term benefit. Our technology roadmap, as an example, includes research and development projects that have the potential to revolutionize our industry and enable decarbonization.

What we do at Alcoa today matters for tomorrow – for our employees, our investors, and our communities.

Our steadfast commitment to operational excellence and financial success will enable us to realize our strategic objectives and to turn raw potential into real progress.

Thank you for your continued support.

Steven W. Williams
Chairman of the Board

Letter from the Present and CEO

Dear Stockholders,

I am honored to lead Alcoa, a company with an inspiring history and a promising future. Our employees invented this industry, and we recognize the potential of Alcoa and the role we play in delivering a critical material for today's and tomorrow's economy.

We aim to be the world's premier upstream aluminum producer. Though 2023 was a challenging year, we've set a clear strategy for improvement. Our markets are cyclical, and we understand the need to succeed through all market conditions.

We are making progress across many fronts. We made year-over-year gains in 2023 in our key safety metrics. We also set production records across our smelters in Canada (Baie Comeau, Becancour and Deschambault) and in Norway (Mosjøen).

At year's close, we obtained approvals for bauxite mining in Western Australia and appointed a new Chief Operations Officer. Earning approval for our bauxite mining in Australia was our top objective, and that positive outcome provides clarity for the future.

Moving forward, we know more needs to be done. So we are taking actions designed to position Alcoa for the future and improve our profitability, driving both near-term and medium-term improvements. We expect year-over-year savings in 2024 for raw materials, both from market improvement and actions from our procurement teams. We've also implemented a global productivity and competitiveness program that aims to reduce controllable operating costs across our organization.

Further, we continue work to improve the performance of our asset portfolio. We announced in January of 2024 the curtailment of our Kwinana refinery in Western Australia, and we continue to progress actions at a number of other locations. We have started discussions with stakeholders in Spain to find a long-term solution for the San Ciprián smelter and refinery, which remain unprofitable.

Our mid-term actions, beyond 2025, include realizing benefits from expected moves into new mine regions in Western Australia and continuing to position our Company for a low-carbon economy. Diligent environmental management, strong social performance, and excellent governance practices remain fundamental to our overall business strategy to enable long-term value creation.

Being a premier aluminum company requires leadership. We have a skilled team driving improvements today while laying the groundwork for an even better future. We are working to deliver our fullest potential, aligned with Alcoa's values to act with integrity, operate with excellence, care for people, and lead with courage.

Sincerely,

William F. Oplinger
President and Chief Executive Officer

C3. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATION FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2023

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.

(dollars in millions, except per-share amounts, average realized prices, and average cost amounts; dry metric tons in millions (mdmt); metric tons in thousands (kmt))

FORWARD-LOOKING STATEMENTS

This report contains statements that relate to future events and expectations and as such constitute forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements include those containing such words as "aims," "ambition," "anticipates," "believes," "could," "develop," "endeavors," "estimates," "expects," "forecasts," "goal," "intends," "may," "outlook," "potential," "plans," "projects," "reach," "seeks," "sees," "should," "strive," "targets," "will," "working," "would," or other words of similar meaning. All statements by Alcoa Corporation that reflect expectations, assumptions or projections about the future, other than statements of historical fact, are forward-looking statements, including, without limitation, forecasts concerning global demand growth for bauxite, alumina, and aluminum, and supply/demand balances; statements, projections or forecasts of future or targeted financial results, or operating performance (including our ability to execute on strategies related to environmental, social and governance matters); statements about strategies, outlook, and business and financial prospects; and statements about capital allocation and return of capital. These statements reflect beliefs and assumptions that are based on Alcoa Corporation's perception of historical trends, current conditions, and expected future developments, as well as other factors that management believes are appropriate in the circumstances.

Forward-looking statements are not guarantees of future performance and are subject to known and unknown risks, uncertainties, and changes in circumstances that are difficult to predict. Although Alcoa Corporation believes that the expectations reflected in any forward-looking statements are based on reasonable assumptions, it can give no assurance that these expectations will be attained and it is possible that actual results may differ materially from those indicated by these forward-looking statements due to a variety of risks and uncertainties. Such risks and uncertainties include, but are not limited to: (a) the impact of global economic conditions on the aluminum industry and aluminum end-use markets; (b) volatility and declines in aluminum and alumina demand and pricing, including global, regional, and product-specific prices, or significant changes in production costs which are linked to LME or other commodities; (c) the disruption of market-driven balancing of global aluminum supply and demand by non-market forces; (d) competitive and complex conditions in global markets; (e) our ability to obtain, maintain, or renew permits or approvals necessary for our mining operations; (f) rising energy costs and interruptions or uncertainty in energy supplies; (g) unfavorable changes in the cost, quality, or availability of raw materials or other key inputs, or by disruptions in the supply chain; (h) our ability to execute on our strategy to be a lower cost, competitive, and integrated aluminum production business and to realize the anticipated benefits from announced plans, programs, initiatives relating to our portfolio, capital investments, and developing technologies; (i) our ability to integrate and achieve intended results from joint ventures, other strategic alliances, and strategic business transactions; (j) economic, political, and social conditions, including the impact of trade policies and adverse industry publicity; (k) fluctuations in foreign currency exchange rates and interest rates, inflation and other economic factors in the countries in which we operate; (l) changes in tax laws or exposure to additional tax liabilities; (m) global competition within and beyond the aluminum industry; (n) our ability to obtain or maintain adequate insurance coverage; (o) disruptions in the global economy caused by ongoing regional conflicts; (p) legal proceedings, investigations, or changes in foreign and/or U.S. federal, state, or local laws, regulations, or policies; (q) climate change, climate change legislation or regulations, and efforts to reduce emissions and build operational resilience to extreme weather conditions; (r) our ability to achieve our strategies or expectations relating to environmental, social, and governance considerations; (s) claims, costs, and liabilities related to health, safety and environmental laws, regulations, and other requirements in the jurisdictions in which we operate; (t) liabilities resulting from impoundment structures, which could impact the environment or cause exposure to hazardous substances or other damage; (u) our ability to fund capital expenditures; (v) deterioration in our credit profile or increases in interest rates; (w) restrictions on our current and future operations due to our indebtedness; (x) our ability to continue to return capital to our stockholders through the payment of cash dividends and/or the repurchase of our common stock; (y) cyber attacks, security breaches, system failures, software or application vulnerabilities, or other cyber incidents; (z) labor market conditions, union disputes and other employee relations issues; (aa) a decline in the liability discount rate or lower-than-expected investment returns on pension assets; and (bb) the other risk factors discussed in Part 1 Item 1A of this Form 10-K and other reports filed by Alcoa Corporation with the SEC, including those described in this report.

We caution readers not to place undue reliance upon any such forward-looking statements, which speak only as of the date they are made. Alcoa Corporation disclaims any obligation to update publicly any forward-looking statements, whether in response to new information, future events or otherwise, except as required by applicable law. Market projections are subject to the risks described above and other risks in the market.

OVERVIEW

Our Business

Alcoa Corporation (Alcoa or the Company) is a vertically integrated aluminum company comprised of bauxite mining, alumina refining, aluminum production (smelting and casting), and energy generation. Aluminum is a commodity that is traded on the London Metal Exchange (LME) and priced daily. Additionally, alumina is subject to market pricing through the Alumina Price Index (API), which is calculated by the Company based on the weighted average of a prior month's daily spot prices published by the following three indices: CRU Metallurgical Grade Alumina Price, Platts Metals Daily Alumina PAX Price, and FastMarkets Metal Bulletin Non-Ferrous Metals Alumina Index. As a result, the price of both aluminum and alumina is subject to significant volatility and, therefore, influences the operating results of Alcoa Corporation.

Through direct and indirect ownership, Alcoa Corporation has 27 operating locations in nine countries around the world, situated primarily in Australia, Brazil, Canada, Iceland, Norway, Spain, and the United States. Governmental policies, laws and regulations, and other economic factors, including inflation and fluctuations in foreign currency exchange rates and interest rates, affect the results of operations in these countries.

Business Update

During 2023, average alumina and aluminum prices decreased by 6% and 17% respectively, and the cost for energy and raw materials, including carbon products, caustic soda, and other key inputs decreased. The lower costs for energy and raw materials reflect a decline from the elevated costs in 2022, which were driven by regional conflicts, inflation pressures and multiple supply chain disruptions.

Despite the alumina and aluminum pricing challenges, Alcoa made progress on its key objectives during 2023. In December 2023, the Company received mine plan approvals from the Western Australian government for its Huntly and Willowdale bauxite mines, delivering on a near- term objective for the Company. The approvals allow the Company to continue bauxite mining and downstream alumina refining in Western Australia, while enhancing the way it operates to meet evolving requirements and expectations.

Due to its production of commercial grade aluminum, in December 2023, the Company qualified for Section 45X of the Advanced Manufacturing Tax Credit, enacted as part of the Inflation Reduction Act, which improves the profitability of its smelters in the U.S. The Company has also requested revisions to the December 2023 regulations to allow for the inclusion of materials costs in the credit calculation. During 2023, the Company continued the controlled pace for the restart of the Alumar smelter in São Luís, Brazil and improved the operating stability of restarted pots. The Company also improved operational stability across the portfolio, while achieving annual and fourth quarter production records at four smelters in Canada and Norway.

During 2023, the Company targeted improvement of financial results for certain operations. The first announced action was initiated at the Kwinana refinery in the third quarter of 2023, to mitigate the financial impacts of lower bauxite grade and to optimize current operating levels. Further analysis in 2023 also led to the decision in early 2024 to fully curtail the Kwinana refinery by mid-2024. Also, in December 2023, Alcoa began engagement with government stakeholders and workers' representatives of the San Ciprián refinery and smelter regarding the sustained and ongoing financial losses in order to find a long-term solution for the combined operations.

In addition to the actions the Company has taken to date, it has identified additional opportunities to improve profitability in both the near term and medium term, as well as market opportunities with improved alumina and aluminum pricing.

Near term opportunities include savings in 2024 for key raw materials – caustic soda and lime for refining and anode carbon products for smelting – realizable due to favorable contractual negotiations and market pricing, as well as inventory lags. Additionally, in January 2024, the Company announced a productivity and competitiveness program aimed at reducing controllable operating costs across the organization (excluding raw materials, energy, and transportation). Near term opportunities also include expected savings from the Warrick smelter optimization, the Alumar smelter restart completion, and the Kwinana refinery curtailment.

Medium term opportunities are beyond 2024 and 2025 and include the benefit of better bauxite grades in Western Australia and a fully optimized Alumar refinery.

In 2019, the Company announced a five-year strategic portfolio review of its smelting and refining capacity to improve cost positioning or curtail, close, or divest 1.5 million and 4 million metric tons of smelting and refining capacity, respectively. Through January 2024, Alcoa continued to make progress on the portfolio review completing its review of refining capacity and reaching approximately 93 percent of its target for smelting capacity.

Despite a challenging market during 2023, the Company began to see evidence of stabilizing demand in the fourth quarter of 2023. Alcoa saw a significant increase in year-over-year demand for its EcoLum aluminum in 2023, which is part of our Sustana brand, through both increased margins and deliveries while still a relatively small portion of the Company's overall sales volume. The year-over-year volume increase for EcoLum, which is aluminum produced with no more than 4.0 metric tons of carbon dioxide equivalents per metric ton of aluminum produced, was driven mostly by the European market.

While the industry is seeing challenges in the short-term, the Company continues to project strong long-term demand for aluminum, as global decarbonization goals and renewable energy scarcity are expected to positively influence the aluminum industry's demand and supply fundamentals. Due to renewable energy sources and low carbon dioxide intensity in our operations, Alcoa believes that it is well positioned as a supplier of choice, especially in a world that is working to further reduce greenhouse gas emissions.

Australia Mine Plan Approvals

The Company seeks annual approvals from the Western Australian State Government for its rolling five-year mine plans to maintain continued operations at the Huntly and Willowdale bauxite mines. In December 2023, the Western Australian government approved Alcoa's latest five-year mine plan – known as the 2023-2027 Mining and Management Program (MMP) – for its Huntly and Willowdale bauxite mines that will allow the Company to continue bauxite mining and downstream alumina refining in Western Australia. Alcoa is subject to a range of stringent conditions addressing key environmental factors that includes enhanced protections for drinking water, including increased distances from reservoirs, and biodiversity along with accelerated forest rehabilitation. The accelerated forest rehabilitation will require an acceleration of cash spend of approximately $40 over the next three and half years from asset retirement obligations already recorded.

In addition, the Western Australian government granted an exemption that allows Alcoa to continue its mining operations while the Western Australian Environmental Protection Authority (WA EPA) assesses the environmental impact of parts of the MMP, following a third party's referral of the Company's future and existing mine plans in existing mine regions to the WA EPA in the first quarter of 2023.

At the request of the Western Australian government, the Company has committed to provide a bank guarantee for approximately $68 (A$100) demonstrating Alcoa's confidence that its operations will not impair drinking water supplies.

In the second quarter of 2023, Alcoa began mining lower grade bauxite in areas at the Huntly mine as it continued to work through the annual mine approvals process. The reduction in grade increased the use of caustic, energy, and bauxite, and decreased alumina output.

Separately, Alcoa has committed to continuing to work with the Western Australian government to modernize the approvals framework for its two bauxite mines and three alumina refineries in the state. This includes transitioning all proposed new major mining regions to the more contemporary EPA assessment and approvals process. Alcoa started this process in 2020, when it referred its next two proposed mine regions (Myara North and Holyoake) for WA EPA assessment. The Company expects the bauxite quality at Myara North and Holyoake to be more consistent with the historic higher quality at the existing Myara Central. Alcoa continues to work to secure approvals for these new regions and anticipates mining in the new regions no earlier than 2027. Until then, the Company expects bauxite quality similar to recent grades.

San Ciprián Operations

The San Ciprián smelter was curtailed in January 2022, as a result of an agreement with the workers' representatives in December 2021. In February 2023, under the terms of an amended viability agreement, Alcoa agreed to a phased restart of the smelter beginning in January 2024, to operate an initial complement of approximately 6 percent of total pots, to restart all pots by October 1, 2025 and to maintain 75 percent of the annual capacity of 228 kmt from October 1, 2025 until the end of 2026. Long-term economic viability of any ramp up beyond the initial 6 percent of total pots will depend upon the availability of affordable power, which currently does not exist in adequate supply. While the Company has met its commitments to enter into power purchase agreements for the necessary capacity, that capacity has not been fully permitted by the government or built by the power provider, putting an on-time restart at significant risk and causing the smelter to incur substantial operating losses for longer, all of which is rendering the smelter economically unviable. At the refinery, operating losses continue despite the mitigating action taken by the Company in the third quarter of 2022 to curtail capacity to 50 percent.

Since the smelter curtailed in January 2022, the Company has honored its commitments under the viability agreements signed in December 2021 and February 2023, including paying all employees, making capital investments, and restarting pots in 2024. However, current market conditions, including the cost for available energy, do not support an economically viable restart. Further, permitting and development of renewable energy projects, which were a critical component of the restart, have been delayed. The refinery and smelter incurred significant losses in 2023 and prior years which have been funded with internal credit lines that are now nearing their limits, and which the operations have no ability to repay. Based on current economic conditions, the San Ciprián operations are expected to incur substantial losses in 2024 and Alcoa anticipates that available funding will be exhausted in the second half of 2024.

As a result of the extended duration of the adverse economic environment, in December 2023, Alcoa began engagement with government stakeholders and workers' representatives of the San Ciprián refinery and smelter regarding the sustained and ongoing financial losses in order to find a long-term solution for the combined operations. Alcoa is seeking flexibility and support from Spanish stakeholders to identify all potential forms of relief and to work collaboratively on a long-term solution. If stakeholder discussions do not secure the long-term economic viability of the operations, it is expected that available funding will be exhausted in the second half of 2024 and difficult decisions will have to be considered regarding the future of the San Ciprián complex.

Productivity and Competitiveness Program

In January 2024, the Company initiated a productivity and competitiveness program across its global operations and functions. The program is a first step in the Company's objective and includes a target to save approximately 5 percent of operating costs, exclusive of raw materials, energy, and transportation costs which are already under active management and cost control programs. Total savings are expected to approximate $100 on a run rate basis and to be achieved by the first quarter of 2025.

Other Portfolio Actions

Kwinana refinery – On January 8, 2024, Alcoa announced the full curtailment of the Kwinana refinery beginning in the second quarter of 2024. The refinery has an annual nameplate capacity of 2.2 million metric tons and has been operating at approximately 80 percent of its nameplate capacity since January 2023, when the Company reduced production in response to a domestic natural gas shortage in Western Australia due to production challenges experienced by key gas suppliers. The Company's decision to fully curtail the refinery was made based on a variety of factors, including the refinery's age, scale, operating costs, and current bauxite grades, in addition to current market conditions. The refinery currently has approximately 800 employees and this number will be reduced to approximately 250 in the third quarter of 2024, when alumina production will cease. Certain processes will continue until about the third quarter of 2025, when the employee number will be further reduced to approximately 50.

Warrick smelter – During the fourth quarter 2023, the Company took actions to improve the competitiveness of its Warrick Operations site in Indiana. Alcoa began the restart of one line (54,000 mtpy) that was curtailed in July 2022, and also began the closure of a line (54,000 mtpy) that had not operated since 2016 to allow for future capital investments to improve casting capabilities.

Intalco smelter – The Company announced the closure of the previously curtailed Intalco aluminum smelter in March 2023 after evaluating various options for the asset. The facility has been fully curtailed since 2020.

Capital Returns

In each quarter of 2023, the Board of Directors declared a quarterly cash dividend of $0.10 per share of the Company's common stock, totaling $72 for the year.

Balance Sheet Actions

On January 17, 2024, the Company amended its Revolving Credit Facility to provide additional flexibility to implement portfolio actions during 2024, by providing for a temporary reduction of the minimum interest coverage ratio required thereunder from 4.00 to 1.00 to 3.00 to 1.00, and increasing the maximum addback for cash restructuring charges to Consolidated EBITDA (as defined in the Revolving Credit Facility), in each case for the 2024 fiscal year. In connection with the amendment, Alcoa also agreed to provide collateral for its obligations under the Revolving Credit Facility, with a ratings-based release mechanism that would apply starting in 2025.

In April 2023, the Company purchased group annuity contracts to transfer approximately $235 of pension obligations and assets associated with defined benefit pension plans for approximately 530 Canadian retirees and beneficiaries. As a result, Alcoa recognized a non-cash settlement loss of $21 ($16 after-tax) in Restructuring and other charges, net on the Statement of Consolidated Operations in the second quarter of 2023. See Part II Item 8 of this Form 10-K in Note O to the Consolidated Financial Statements for additional information.

Other Matters

In July 2023, the Supreme Court of Spain ratified the Global Settlement Agreement (GSA) with the workers of the divested Avilés and La Coruña facilities to settle various legal disputes related to the 2019 divestiture of those facilities. Upon completion of the remaining administrative and judicial approvals, the Company made cash payments of $76 to the former employees of the facilities in 2023 in accordance with the GSA. The remaining payments will be made in early 2024.

In the first quarter of 2023, the Company recorded an adjustment related to the Company's Ma'aden Aluminum joint venture for the settlement of a dispute with an industrial utility for periods in 2021 and 2022. Alcoa's share of this adjustment was $41 which is included in Other expenses (income), net on the Statement of Consolidated Operations for year ended December 31, 2023. Alcoa's total share of this dispute of $62 includes $21 that was recorded in the fourth quarter of 2022.

In April 2023, the Company entered into a one-year unsecured revolving credit facility for $250 (available to be drawn in Japanese yen).

See the below sections for additional details on the above-described actions.

BASIS OF PRESENTATION

The Consolidated Financial Statements of Alcoa Corporation are prepared in conformity with accounting principles generally accepted in the United States of America (GAAP). In accordance with GAAP, certain situations require management to make estimates based on judgments and assumptions, which may affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements. They also may affect the reported amounts of revenues and expenses during the reporting periods. Management uses historical experience and all available information to make these estimates. Management regularly evaluates the judgments and assumptions used in its estimates, and results could differ from those estimates upon future events and their effects or new information.

RESULTS OF OPERATIONS

The discussion that follows includes a comparison of our results of operations and liquidity and capital resources for the fiscal years ended December 31, 2023 and 2022. For a comparison of changes for the fiscal years ended December 31, 2022 and 2021, refer to Management's Discussion and Analysis of Financial Condition and Results of Operation in Part II Item 7 of Alcoa Corporation's Annual Report on Form 10-K for the year ended December 31, 2022 (filed February 23, 2023).

	For the year ended December 31,	
Statement of Operations	**2023**	**2022**
Sales	$ 10,551	$ 12,451
Cost of goods sold (exclusive of expenses below)	9,813	10,212
Selling, general administrative, and other expenses	226	204
Research and development expenses	39	32
Provision for depreciation, depletion, and amortization	632	617
Restructuring and other charges, net	184	696
Interest expense	107	106
Other expenses (income), net	134	(118)
Total costs and expenses	11,135	11,749
(Loss) income before income taxes	(584)	702
Provision for income taxes	189	664
Net (loss) income	(773)	38
Less: Net (loss) income attributable to non-controlling interest	(122)	161
Net loss attributable to Alcoa Corporation	$ (651)	$ (123)

Selected Financial Metrics		2023		2022
Diluted loss per share attributable to Alcoa Corporation common shareholders	$	(3.65)	$	(0.68)
Third-party shipments of alumina (kmt)		8,698		9,169
Third-party shipments of aluminum (kmt)		2,491		2,570
Average realized price per metric ton of alumina	$	358	$	384
Average realized price per metric ton of aluminum	$	2,828	$	3,457
Average Alumina Price Index (API)[(1)]	$	343	$	365
Average London Metal Exchange (LME) 15-day lag[(2)]	$	2,249	$	2,726

(1) API (Alumina Price Index) is a pricing mechanism that is calculated by the Company based on the weighted average of a prior month's daily spot prices published by the following three indices: CRU Metallurgical Grade Alumina Price; Platts Metals Daily Alumina PAX Price; and FastMarkets Metal Bulletin Non-Ferrous Metals Alumina Index.

(2) LME (London Metal Exchange) is a globally recognized exchange for commodity trading, including aluminum. The LME pricing component represents the underlying base metal component, based on quoted prices for aluminum on the exchange.

Annual Comparison

Overview

Net loss attributable to Alcoa Corporation increased $528 primarily as a result of:

- Lower average realized prices of aluminum and alumina
- Higher production costs across both segments
- Lower equity investment earnings
- Absence of favorable mark-to-market results on derivative instruments

Partially offset by:

- Lower restructuring charges
- Lower taxes on lower earnings and a lower net charge for valuation allowances on certain deferred tax assets in 2023
- Lower energy costs, primarily in Europe
- Favorable currency impacts

Annual Comparison

Sales

Sales decreased $1,900 primarily as a result of:

- Lower average realized prices of aluminum and alumina
- Lower shipments across both segments
- Lower trading activities
- Decrease in value add product sales

Partially offset by:

- Higher volumes and price from bauxite offtake and supply agreements

Cost of goods sold

Cost of goods sold as a percentage of sales increased 11% primarily as a result of:

- Lower average realized prices of aluminum and alumina
- Higher production costs primarily related to operating certain of the Australian refineries with lower grade bauxite, the partial curtailment of the San Ciprián refinery, and increased maintenance
- Decrease in value add product sales

Partially offset by:

- Lower energy costs
- Favorable currency impacts

Selling, general administrative, and other expenses

Selling, general administrative, and other expenses increased $22 primarily as a result of:

- Higher labor costs and external legal fees

Provision for depreciation, depletion, and amortization

The Provision for depreciation, depletion, and amortization increased $15 primarily as a result of:

- Higher depreciation in Brazil and Australia for mine reclamation and bauxite residue storage asset retirement obligations
- Write offs of assets for projects no longer being pursued

Partially offset by:

- Lower depreciation resulting from the permanent closure of the Intalco aluminum smelter
- Favorable currency impacts

Annual Comparison

Interest expense

Interest expense increased $1 in comparison to 2022.

Other expenses (income), net

Other expenses (income), net was $134 in 2023, compared with $(118) in 2022. The unfavorable change of $252 was primarily a result of:

- Mark-to-market results on derivative instruments primarily due to the absence of prior year gains driven by elevated power prices in 2022
- Decrease in equity earnings from the Ma'aden aluminum joint venture primarily due to a charge for a utility settlement, lower shipments, and lower aluminum prices
- Higher equity losses from the Ma'aden bauxite and alumina joint venture primarily due to lower alumina prices and higher raw material costs partially offset by higher shipments
- Higher ELYSIS capital contributions, which triggered loss recognition

Partially offset by:

- Lower pension expense primarily due to a decrease in recognized net actuarial losses subsequent to pension annuity transactions
- Favorable currency revaluation impacts driven by the absence of losses recognized in the prior year due to the U.S. dollar strengthening against most currencies, and gains recognized in the current year primarily due to the U.S. dollar weakening against the Brazilian real

Restructuring and other charges, net

In 2023, Restructuring and other charges, net of $184 primarily related to:

- $101 for the permanent closure of the previously curtailed Intalco aluminum smelter
- $53 related to the updated viability agreement for the San Ciprián aluminum smelter
- $21 for the settlement of certain pension benefits
- $15 to record net additional environmental and asset retirement obligation reserves at previously closed locations
- $11 for employee termination and severance costs, primarily related to Kwinana refinery productivity program

Partially offset by:

- $19 for the sale of unused carbon credits at a previously closed location

Annual Comparison

In 2022, Restructuring and other charges, net of $696 primarily related to:

- $632 for U.S. pension group annuity contracts and lump sum settlements
- $79 for the accrual related to the GSA for the workers of the divested Avilés and La Coruña facilities
- $58 for an asset impairment related to the sale of the Company's interest in the MRN mine
- $29 for the permanent closure of the previously curtailed magnesium smelter in Addy (Washington)

Partially offset by:

- $83 for the reversal of state VAT valuation allowance associated with the restart of the Alumar smelter
- $10 for changes in estimated take-or-pay contract costs at the curtailed Intalco smelter and closed Wenatchee (Washington) smelter
- $9 net reversal of environmental and ARO obligations and previously closed locations

Provision for income taxes

The Provision for income taxes in 2023 was $189 on a loss before taxes of $(584) or (32.4)%. In comparison, the 2022 Provision for income taxes was $664 on income before taxes of $702 or 94.6%.

The decrease in tax expense of $475 was primarily attributable to lower income in the jurisdictions where taxes were paid. Additionally, tax expense in 2023 included a charge of $152 to record a full valuation allowance against the deferred tax assets of Alcoa World Alumina Brasil Ltda. (AWAB), partially offset by the full reversal of the valuation allowance of $58 recorded against the deferred tax assets of the Company's subsidiaries in Iceland. Tax expense in 2022 included charges of $217 to record a full valuation allowance against the deferred tax assets of Alcoa Alumínio (Alumínio) and $30 primarily to write off the deferred tax assets of Alcoa Norway ANS due to a legal entity restructuring, partially offset by a tax benefit of $33 due to changes in the utilization of the tax holiday rate in AWAB.

In December 2023, Alcoa recorded a valuation allowance of $154 against the net deferred tax assets of AWAB, of which $106 related to the balance as of December 31, 2022. The 2023 full valuation allowance was a result of AWAB's three-year cumulative loss position for the period ended December 31, 2023. The majority of AWAB's net deferred tax assets relate to prior net operating losses; the loss carryforwards are not subject to an expiration period. AWAB's profitability in future periods could prompt the Company to evaluate the realizability of the deferred tax asset and assess the possibility of a reversal of the valuation allowance, which could have a significant impact on net income in the quarter the valuation allowance is reversed.

The Company's subsidiaries in Iceland had a full valuation allowance recorded against deferred tax assets, which was established in 2015 and 2017, as the Company believed it was more likely than not that these tax benefits would not be realized. During 2023, after considering all positive and negative evidence, including the expectation that the jurisdiction will remain in a three-year cumulative income position, the Company determined that it is more likely than not that the net deferred tax assets will be realized. Based on this conclusion, the Company reversed the valuation allowance totaling $58 during 2023, generating a non-cash benefit from income taxes.

In 2022, a valuation allowance of $217 was recorded against the net deferred tax assets of Alumínio. Management concluded that it was more likely than not that Alumínio's net deferred tax assets, which consisted primarily of tax loss carryforwards, would not be realized as a result of Alumínio's three-year cumulative loss position for the period ended December 31, 2022.

Non-controlling Interest

Net (loss) income attributable to non-controlling interest was $(122) in 2023 compared with $161 in 2022. These amounts are entirely related to Alumina Limited's 40% ownership interest in several affiliated operating entities.

The change is primarily a result of higher production costs, lower average realized price of alumina, unfavorable mark-to-market results on derivative instruments, higher elimination of intercompany profit in inventory, partially offset by lower energy costs and lower taxes.

Segment Information

Alcoa Corporation is a producer of bauxite, alumina, and aluminum products. In January 2023, the financial information provided to the Chief Operating Decision Maker (CODM) for the activities of the bauxite mines and the alumina refineries was combined into the Alumina segment, and accordingly the Company changed its operating segments. Beginning in the first quarter of 2023, the Company's operations consisted of two worldwide reportable segments: Alumina and Aluminum. Segment information for all prior periods presented was updated to reflect the new segment structure.

Segment performance under Alcoa Corporation's management reporting system is evaluated based on a number of factors; however, the primary measure of performance is the Adjusted EBITDA (Earnings before interest, taxes, depreciation, and amortization) for each segment. The Company calculates Segment Adjusted EBITDA as Total sales (third-party and intersegment) minus the following items: Cost of goods sold; Selling, general administrative, and other expenses; and Research and development expenses. Alcoa Corporation's Segment Adjusted EBITDA may not be comparable to similarly titled measures of other companies. The CODM function regularly reviews the financial information, including Adjusted EBITDA, of these two operating segments to assess performance and allocate resources.

Segment Adjusted EBITDA totaled $734 in 2023 and $2,280 in 2022. The following information provides production, shipments, sales, and Segment Adjusted EBITDA data for each reportable segment, as well as certain realized price and average cost data, for each of the two years in the period ended December 31, 2023.

Alumina

	2023	2022
Bauxite production (mdmt)	41.0	42.1
Third-party bauxite shipments (mdmt)	7.6	3.5
Alumina production (kmt)	10,908	12,544
Third-party alumina shipments (kmt)	8,698	9,169
Intersegment alumina shipments (kmt)	4,125	3,958
Total alumina shipments (kmt)	12,823	13,127
Third-party bauxite sales	$ 484	$ 204
Third-party alumina sales	3,129	3,520
Total segment third-party sales	$ 3,613	$ 3,724
Intersegment alumina sales	1,648	1,708
Total sales	$ 5,261	$ 5,432
Segment Adjusted EBITDA	$ 273	$ 788
Average realized third-party price per metric ton of alumina	$ 358	$ 384
Operating costs	$ 4,524	$ 4,406
Average cost per metric ton of alumina shipped	$ 353	$ 336

In the above table, total alumina shipments include metric tons that were not produced by the Alumina segment. Such alumina was purchased to satisfy certain customer commitments. The Alumina segment bears the risk of loss of the purchased alumina until control of the product has been transferred to this segment's customers. Additionally, operating costs in the table above includes all production-related costs: raw materials consumed; conversion costs, such as labor, materials, and utilities; depreciation and amortization; and plant administrative expenses.

Overview. This segment represents the Company's global bauxite mining operations and worldwide refining system, which processes bauxite into alumina.

The alumina produced by this segment is sold primarily to internal and external aluminum smelter customers; a portion of the alumina is sold to external customers who process it into industrial chemical products. Approximately two-thirds of the production of alumina is sold under supply contracts to third parties worldwide, while the remainder is used internally by the Aluminum segment. Alumina produced by this segment and used internally is transferred to the Aluminum segment at prevailing market prices. A portion of this segment's third-party sales are completed through the use of alumina traders.

Generally, this segment's sales are transacted in U.S. dollars while costs and expenses are transacted in the local currency of the respective operations, which are the Australian dollar, the Brazilian real, and the euro. Most of the operations that comprise the Alumina segment are part of AWAC (see non-controlling Interest above).

A portion of this segment's bauxite production represents the offtake from equity method investments in Brazil (prior to the MRN sale in April 2022) and Guinea, as well as AWAC's share of bauxite production related to an equity investment in Saudi Arabia. Bauxite mined is primarily used internally within the Alumina segment; a portion of the bauxite is sold to external customers. Bauxite sales to third-parties are conducted on a contract basis.

This segment also includes AWAC's 25.1% ownership interest in the mining and refining joint venture company in Saudi Arabia.

Business Update. The average API of $343 per metric ton trended unfavorably compared to 2022 reflecting a 6% sequential decrease.

During 2023, the Alumina segment experienced higher production costs primarily due to operating certain of the Australian refineries with lower grade bauxite and the partial curtailment of the San Ciprián refinery in 2022, partially offset by lower energy costs compared to 2022.

Alumina production decreased 13% in 2023 compared to 2022 primarily due to the partial curtailment of capacity at the San Ciprián refinery in 2022, partial curtailment of the Kwinana refinery in the first quarter of 2023, and reduced production at the Australia refineries due to lower grade bauxite. Production at the Alumar refinery in 2023 was less than 2022 primarily due to unplanned equipment maintenance.

Australia Mine Plan Approvals

In December 2023, the Western Australian (WA) Government approved Alcoa's latest five-year mine plan – known as the 2023-2027 Mining and Management Program (MMP) – for its Huntly and Willowdale bauxite mines. Alcoa is subject to a range of stringent conditions addressing key environmental factors that includes enhanced protections for drinking water, including increased distances from reservoirs, and biodiversity along with accelerated forest rehabilitation. The accelerated forest rehabilitation will require an acceleration of cash spend of approximately $40 over the next three and half years from asset retirement obligations already recorded.

In addition, the WA Government granted an exemption that allows Alcoa to continue its mining operations while the WA EPA assesses the environmental impact of parts of the MMP, following a third party's referral of the Company's future and existing mine plans in existing mine regions to the WA EPA in the first quarter of 2023.

In the second quarter of 2023, Alcoa began mining lower grade bauxite in areas at the Huntly mine (that supplies the Pinjarra and Kwinana refineries) as it continued to work through the annual mine approvals process. The reduction in grade increases the use of caustic, energy, and bauxite, and decreases alumina output.

Separately, Alcoa has committed to continuing to work with the Western Australian government to modernize the approvals framework for its two bauxite mines and three alumina refineries in the state. This includes transitioning all proposed new major mining regions to the more contemporary EPA assessment and approvals process. Alcoa started this process in 2020, when it referred its next two proposed mine regions (Myara North and Holyoake) for WA EPA assessment. The Company expects the bauxite quality at Myara North and Holyoake to be more consistent with the historic higher quality at the existing Myara Central. Alcoa continues to work to secure approvals for these new regions and anticipates mining in the new regions no earlier than 2027. Until then, the Company expects bauxite quality similar to recent grades.

Kwinana Refinery

On January 8, 2024, the Company announced the full curtailment of the Kwinana refinery beginning in the second quarter of 2024. The refinery has an annual nameplate capacity of 2.2 million metric tons and has been operating at approximately 80 percent of its nameplate capacity since January 2023, when the Company reduced production by decreasing process flows and taking offline one of five digesters in response to a domestic natural gas shortage in Western Australia due to production challenges experienced by key gas suppliers. While the supply of natural gas improved in April 2023, the Company kept the one digester offline due to the prolonged annual mine plan approvals process.

The full curtailment will include a phased reduction of the workforce from around 800 employees at the start of 2024 to approximately 250 in the third quarter of 2024, when all alumina production will cease. Certain processes will continue until about the third quarter of 2025, when employee numbers will be further reduced to approximately 50.

In the first quarter of 2024, Alcoa will record restructuring charges between $180 and $200 related to the curtailment of the refinery. The charges include approximately $81 for water management costs, $55 for employee related costs, $26 for asset retirement obligations, and $18 of other costs. Alcoa's share of related cash outlays of approximately $115 (which includes existing employee related liabilities and asset retirement obligations) is expected to be spent in 2024 ($80) and 2025 ($35).

The Kwinana refinery recorded a net loss (pretax and non-controlling interest) of approximately $130 in 2023. The Company expects annual improvements of approximately $70 (pretax and non-controlling interest) beginning in the third quarter of 2024 as a result of the curtailment.

During the third quarter of 2023, the Company initiated productivity programs across its operations in Australia to mitigate the financial impacts of lower bauxite grade and to optimize current operating levels. The first announced action under the productivity programs was initiated at the Kwinana refinery. In connection with this program, the Company recorded a charge of $6 in Restructuring and other charges, net on the Statement of Consolidated Operations in the third quarter of 2023 for employee termination and severance costs for approximately 90 employees at the Kwinana refinery, which is expected to be paid through the second quarter of 2024.

Alumar Refinery

During 2023, the Alumar refinery experienced several challenges impacting production levels, maintenance, and production costs. During the fourth quarter of 2023, the Alumar refinery experienced periodic instability in power supply since the nationwide power outage that occurred on August 15, 2023, which caused lower production and other incremental costs to stabilize operations. In early July 2023, the repair of the ship-to-shore conveyance system that failed on March 25, 2023 and other unplanned equipment maintenance was completed at the Alumar refinery. As a result of the conveyance system event, bauxite discharge at the Alumar port was temporarily halted and the refinery operated on existing inventory until initial repairs were completed on April 8, 2023. Bauxite flows to the refinery were fully restored by the end of April 2023. The pier was not damaged and could still berth vessels.

Capacity. The Alumina segment had a base refining capacity of 13,843 kmt with 1,452 kmt of curtailed capacity. In the first quarter of 2023, curtailed capacity increased 438 kmt due to the reduction in production at the Kwinana refinery (see above).

Annual Comparison

Production

Alumina production decreased 13% primarily as a result of:

- The curtailment of capacity at the San Ciprián refinery in the third quarter of 2022
- The partial curtailment at the Kwinana refinery in the first quarter of 2023
- Reduced production at the Australia refineries due to lower grade bauxite
- Unplanned equipment maintenance and periodic instability in power supply at the Alumar refinery in 2023

Third-party sales

Third-party sales decreased $111 primarily as a result of:

- Lower shipments of alumina primarily due to lower production at the Australian refineries, partially offset by increased trading opportunities
- Lower average realized price of $26/ton principally driven by a lower average API
- Unfavorable currency impacts

Partially offset by:

- Higher volumes and price from bauxite offtake and supply agreements primarily caused by the shift to third-party sales due to reduced production at the San Ciprián refinery

Intersegment sales

Intersegment sales decreased $60 primarily as a result of:

- Lower average API on sales to the Aluminum segment

Partially offset by:

- Higher alumina shipments primarily due to the Alumar smelter restart

Segment Adjusted EBITDA

Segment Adjusted EBITDA decreased $515 primarily as a result of:

- Higher production costs primarily related to operating certain of the Australian refineries with lower grade bauxite, the partial curtailment of the San Ciprián refinery, and increased maintenance
- Lower average realized price of $26/ton principally driven by a lower average API

Partially offset by:

- Lower energy costs, primarily in Europe
- Favorable currency impacts

Forward Look. For 2024, the Company is providing projections for both production and shipments. Alcoa expects alumina production to range between 9.8 and 10.0 million metric tons and alumina shipments to range between 12.7 and 12.9 million metric tons in 2024. The difference between production and shipments reflects trading volumes and externally sourced alumina to fulfill customer contracts due to the curtailment of the Kwinana refinery.

Further, in 2024, the Alumina segment expects to benefit from lower raw material costs.

Aluminum

		2023		2022
Production (kmt)		2,114		2,010
Total shipments (kmt)		2,491		2,570
Third-party aluminum sales	$	7,045	$	8,887
Other[(1)]		(120)		(152)
Total segment third-party sales	$	6,925	$	8,735
Intersegment sales		15		27
Total sales	$	6,940	$	8,762
Segment Adjusted EBITDA	$	461	$	1,492
Average realized third-party price per metric ton	$	2,828	$	3,457
Operating costs	$	6,419	$	7,278
Average cost per metric ton of aluminum shipped	$	2,577	$	2,831

(1) Other includes third-party sales of energy, as well as realized gains and losses related to embedded derivative instruments designated as cash flow hedges of forward sales of aluminum.

In the above table, total aluminum third-party shipments include metric tons that were not produced by the Aluminum segment. Such aluminum was purchased by this segment to satisfy certain customer commitments. The Aluminum segment bears the risk of loss of the purchased aluminum until control of the product has been transferred to this segment's customer. Additionally, Total shipments includes offtake from a joint venture supply agreement.

The average realized third-party price per metric ton of aluminum includes three elements: a) the underlying base metal component, based on quoted prices from the LME; b) the regional premium, which represents the incremental price over the base LME component that is associated with the physical delivery of metal to a particular region (e.g., the Midwest premium for metal sold in the United States); and c) the product premium, which represents the incremental price for receiving physical metal in a particular shape (e.g., billet, slab, rod, etc.) or alloy.

Operating costs includes all production-related costs: raw materials consumed; conversion costs, such as labor, materials, and utilities; depreciation and amortization; and plant administrative expenses.

Overview. This segment consists of the Company's (i) worldwide smelting and casthouse system, which processes alumina into primary aluminum, and the (ii) portfolio of energy assets in Brazil, Canada, and the United States.

Aluminum's combined smelting and casting operations produce primary aluminum products, virtually all of which are sold to external customers and traders. The smelting operations produce molten primary aluminum, which is then formed by the casting operations into either common alloy ingot (e.g., t-bar, sow, standard ingot) or into value add ingot products (e.g., foundry, billet, rod, and slab). A variety of external customers purchase the primary aluminum products for use in fabrication operations, which produce products primarily for the transportation, building and construction, packaging, wire, and other industrial markets. Results from the sale of aluminum powder and scrap are also included in this segment, as well as the impacts of embedded aluminum derivatives related to energy supply contracts.

The energy assets supply power to external customers in Brazil and, to a lesser extent, in the United States, as well as internal customers in the Aluminum (Canadian smelters and Warrick smelter) and Alumina segments (Brazilian refineries).

Generally, this segment's aluminum sales are transacted in U.S. dollars while costs and expenses of this segment are transacted in the local currency of the respective operations, which are the U.S. dollar, the euro, the Norwegian krone, the Icelandic króna, the Canadian dollar, the Brazilian real, and the Australian dollar.

This segment also includes Alcoa Corporation's 25.1% ownership interest in the smelting joint venture company in Saudi Arabia.

Business Update. Aluminum prices decreased sequentially with LME prices on a 15-day lag averaging $2,249 per metric ton in 2023.

Due to its production of commercial grade aluminum, in December 2023, the Company qualified for Section 45X of the Advanced Manufacturing Tax Credit, enacted as part of the Inflation Reduction Act, which improves the profitability of its smelters in the U.S. In the fourth quarter of 2023, the Company recorded a full year benefit in Cost of goods sold totaling $36 related to its Massena West (New York) smelter and its Warrick smelter. The Company has also requested revisions to the December 2023 regulations to allow for the inclusion of materials costs in the credit calculation.

In December 2023, the Norwegian government approved a budget proposal that limits carbon dioxide compensation to be paid in 2024 based on 2023 power purchased and used in production. The Company recorded an adjustment of $18 in the fourth quarter of 2023 to Cost of goods sold to reverse amounts accrued for 2023 credits earned through September 30, 2023, under the prior carbon dioxide compensation program.

During the fourth quarter of 2023, the Company took actions to improve the competitiveness of its Warrick smelter. Alcoa began the restart of one line (54,000 mtpy) that was curtailed in July 2022, and also began the closure of one line (54,000 mtpy) that had not operated since 2016 to allow for future capital investments to improve casting capabilities. Restructuring charges related to the closure totaled $1 in the fourth quarter of 2023 to establish reserves related to demolition obligations. Additionally, Alcoa recorded $1 in Cost of goods sold to write-off the remaining net book value of related inventory.

In the fourth quarter of 2023, Alcoa began the restart of 16,000 mtpy of previously curtailed capacity at the Portland smelter. The smelter had previously been operating at approximately 75 percent of the site's total annual capacity of 197 kmt (Alcoa share) since March 2023 due to instability and challenges related to the production of rodded anodes. The smelter was operating at approximately 79 percent of its capacity at December 31, 2023.

During 2023, the Company continued the controlled pace for the restart of the Alumar smelter in São Luís, Brazil, which was announced in September 2021. The site was operating at approximately 69 percent of the site's total annual capacity of 268 kmt (Alcoa share) as of December 31, 2023. Alcoa incurred restart expenses of $33 during 2023.

In March 2023, Alcoa announced the closure of the Intalco aluminum smelter (279 kmt of previously curtailed capacity). Charges related to the closure totaled $117 in the first quarter of 2023 and included a charge of $16 for the write down of remaining inventories to net realizable value recorded in Cost of goods sold on the Statement of Consolidated Operations and a charge of $101 recorded in Restructuring and other charges, net on the Statement of Consolidated Operations. The restructuring charges were comprised of $50 of asset impairments, $50 to establish reserves related to environmental and demolition obligations, and $1 of severance and employee termination costs. Cash outlays related to the permanent closure of the site are expected to be approximately $85 in 2024 and 2025. The Company spent $2 against the reserves in 2023.

San Ciprián Smelter

The San Ciprián smelter was curtailed in January 2022, as a result of an agreement with the workers' representatives in December 2021. In February 2023, under the terms of an amended viability agreement, Alcoa agreed to a phased restart of the smelter beginning in January 2024, to operate an initial complement of approximately 6 percent of total pots, to restart all pots by October 1, 2025 and to maintain 75 percent of the annual capacity of 228 kmt from October 1, 2025 until the end of 2026. Long-term economic viability of any ramp up beyond the initial 6 percent of total pots will depend upon the availability of affordable power, which currently does not exist in adequate supply. While the Company has met its commitments to enter into power purchase agreements for the necessary capacity, that capacity has not been fully permitted by the government or built by the power provider, putting an on-time restart at significant risk and causing the smelter to incur substantial operating losses for longer, all of which is rendering the smelter economically unviable.

Under the terms of both agreements, the Company is responsible for certain employee obligations from 2022 through 2025. As a result, the Company recorded charges of $53 and $62 in 2023 and 2021, respectively, in Restructuring and other charges, net on the Statement of Consolidated Operations to establish the related reserves. Cash payments were $38 and $26 in 2023 and 2022, respectively. The remaining reserves of $48 at December 31, 2023 relate to employee commitments in 2024 and 2025. Additionally, in connection with the agreements, the Company committed to capital improvements of $146 and smelter restart costs of $35, and incurred capital improvement expenditures of $28 during 2023. At December 31, 2023, the Company has restricted cash of $91 to be made available for the remaining capital improvements of $118 and smelter restart costs of $35.

Capacity. At December 31, 2023, the Aluminum segment had 465 kmt of idle smelting capacity on a base capacity of 2,645 kmt, a decrease from 2022 of 403 kmt in idle capacity primarily due to the permanent closure of the previously curtailed Intalco smelter, closure of one line at the Warrick smelter, and the Alumar and Warrick smelter restarts, partially offset by the partial curtailment of the Portland smelter (see above). The Company updated nameplate capacity of certain facilities to reflect capital expenditures, upgrades, or other investments which expanded production capacity, and productivity initiatives and process and supply changes that improved capacity in a sustained manner.

Annual Comparison

Production

Production increased 5% primarily as a result of:

- Alumar smelter restart

Partially offset by:

- Partial curtailment of the Lista (Norway) smelter in August 2022

Third-party sales

Third-party sales decreased $1,810 primarily as a result of:

- Lower average realized price of $629/ton driven by a lower average LME (on a 15-day lag) and lower regional premiums
- Lower trading activities
- Lower shipments primarily due to the absence of sales of accumulated inventory in 2022 from the San Ciprián smelter due to the strike in 2021 and partial curtailment of the Lista smelter
- Decrease in value add product sales due to overall lower market demand and product premiums in both Europe and North America
- Lower Warrick power plant energy sales

Partially offset by:

- Higher shipments due to the Alumar smelter restart and improved availability of railcars or vessels for outbound product from North American smelters

Segment Adjusted EBITDA

Segment Adjusted EBITDA decreased $1,031 primarily as a result of:

- Lower average realized price based on LME (on a 15-day lag) and lower regional premiums
- Lower Warrick power plant energy sales
- Decrease in value add product sales
- Higher production costs primarily associated with higher labor costs and increased maintenance costs

Partially offset by:

- Favorable raw material costs primarily on lower average alumina input costs
- Lower energy costs, primarily in Europe
- Favorable currency impacts

Forward Look. For 2024, the Company is providing projections for both production and shipments. The Aluminum segment is expected to produce between 2.2 to 2.3 million metric tons of aluminum, an increase from 2023 due to smelter restarts. In 2024, aluminum shipments are expected to be between 2.5 and 2.6 million metric tons, consistent with 2023, as increased shipments from smelter restarts are offset by lower trading volumes.

Additionally, the Company engages in aluminum commodity trading activity when favorable market conditions allow. Availability of trading opportunities in 2024 may impact the Company's shipment projection.

Further, in 2024, the Aluminum segment expects benefits from lower raw material and energy costs, primarily in Brazil and Norway, to be partially offset by lower value add aluminum product sales.

Reconciliations of Certain Segment Information

Reconciliation of Total Segment Third-Party Sales to Consolidated Sales

	2023	2022
Alumina	$ 3,613	$ 3,724
Aluminum	6,925	8,735
Total segment third-party sales	$ 10,538	$ 12,459
Other	13	(8)
Consolidated sales	$ 10,551	$ 12,451

Reconciliation of Total Segment Operating Costs to Consolidated Cost of Goods Sold

	2023	2022
Alumina	$ 4,524	$ 4,406
Aluminum	6,419	7,278
Other[(1)]	1,006	721
Total segment operating costs	11,949	12,405
Eliminations[(2)]	(1,670)	(1,874)
Provision for depreciation, depletion, and amortization[(3)]	(610)	(595)
Other[(4)]	144	276
Consolidated cost of goods sold	$ 9,813	$ 10,212

(1) Other largely relates to the Aluminum segment's energy product division and the Alumina segment's purchases of bauxite from offtake or other supply agreements that is sold to third-parties.

(2) Represents the elimination of Cost of goods sold related to intersegment sales between Alumina and Aluminum.

(3) Provision for depreciation, depletion, and amortization is included in the operating costs used to calculate average cost for each of the alumina and aluminum product divisions (see Alumina and Aluminum above). However, for financial reporting purposes, Provision for depreciation, depletion, and amortization is presented as a separate line item on Alcoa Corporation's Statement of Consolidated Operations.

(4) Other includes costs related to Transformation, and certain other items that are not included in the operating costs of segments (see footnotes 1 and 3 in the Reconciliation of Total Segment Adjusted EBITDA to Consolidated Net (Loss) Income Attributable to Alcoa Corporation below).

Reconciliation of Total Segment Adjusted EBITDA to Consolidated Net Loss Attributable to Alcoa Corporation

	2023	2022
Total Segment Adjusted EBITDA	$ 734	$ 2,280
Unallocated amounts:		
Transformation[(1)]	(80)	(66)
Intersegment eliminations	7	138
Corporate expenses[(2)]	(133)	(128)
Provision for depreciation, depletion, and amortization	(632)	(617)
Restructuring and other charges, net	(184)	(696)
Interest expense	(107)	(106)
Other (expenses) income, net	(134)	118
Other[(3)]	(55)	(221)
Consolidated (loss) income before income taxes	(584)	702
Provision for income taxes	(189)	(664)
Net loss (income) attributable to non-controlling interest	122	(161)
Consolidated net loss attributable to Alcoa Corporation	$ (651)	$ (123)

(1) Transformation includes, among other items, the Adjusted EBITDA of previously closed operations.

(2) Corporate expenses are composed of general administrative and other expenses of operating the corporate headquarters and other global administrative facilities, as well as research and development expenses of the corporate technical center.

(3) Other includes certain items that are not included in the Adjusted EBITDA of the reportable segments.

ENVIRONMENTAL MATTERS

See Part II Item 8 of this Form 10-K in Note S to the Consolidated Financial Statements under caption Contingencies – Environmental Matters.

LIQUIDITY AND CAPITAL RESOURCES

Alcoa Corporation's primary future cash flows are centered on operating activities, particularly working capital, as well as capital expenditures and capital returns. Alcoa's ability to fund its cash needs depends on the Company's ongoing ability to generate and raise cash in the future.

In 2023, the Company generated lower profitability due to lower prices for aluminum and alumina and higher production costs, partially offset by lower restructuring charges. Despite the challenging year, the Company maintained a strong cash position and successfully completed the following actions:

- Entered into a Receivables Purchase Agreement facility and sold gross customer receivables of $591, and reinvested collections of $477 from previously sold receivables, resulting in net cash proceeds from the financial institution of $114;

- Funded $531 in capital expenditures to sustain and grow our operations;

- Entered into a revolving credit facility for $250 (available to be drawn in Japanese yen) (Japanese Yen Revolving Credit Facility);

- Purchased group annuity contracts to transfer the obligation to pay remaining retirement benefits for approximately 530 retirees and beneficiaries from certain Canadian defined benefit pension plans. Transferred approximately $235 in both plan obligations and plan assets;

- Returned capital to stockholders of $72. In each quarter of 2023, the Board of Directors declared and paid a quarterly cash dividend of $0.10 per share of the Company's common stock; and,

- Entered into multiple agreements with a financial institution for the sale and subsequent repurchase of aluminum inventory resulting in net short-term borrowings of $56 in 2023.

In January 2024, the Company initiated the following actions:

- Amended its Revolving Credit Facility to provide additional flexibility to implement portfolio actions during 2024, by providing for a temporary reduction of the minimum interest coverage ratio required thereunder from 4.00 to 1.00 to 3.00 to 1.00, and increasing the maximum addback for cash restructuring charges to Consolidated EBITDA (as defined in the Revolving Credit Facility), in each case for the 2024 fiscal year. In connection with the amendment, Alcoa also agreed to provide collateral for its obligations under the Revolving Credit Facility, with a ratings-based release mechanism that would apply starting in 2025.

- Initiated a productivity and competitiveness program across its global operations and functions. The program is a first step in the Company's objective to improve competitiveness and includes a target to save approximately 5 percent of operating costs, exclusive of raw materials, energy and transportation costs which are already under active management and cost control programs. Total savings are expected to approximate $100 on a run rate basis and to be achieved by the first quarter of 2025.

- Initiated several operational changes to improve profitability, including engaging with government stakeholders and workers' representatives to discuss ongoing financial difficulties at the San Ciprián operations, optimizing the Warrick smelter operations, completing the Alumar restart, and announcing the curtailment of the Kwinana refinery.

Management believes that the Company's cash on hand, projected cash flows, and liquidity options, combined with its strategic actions, will be adequate to fund its short-term (at least 12 months) and long-term operating and investing needs. On January 24, 2024, ANHBV drew $201 against the Japanese Yen Revolving Credit Facility to fund working capital requirements and reductions to date in the Company's Cash and cash equivalents. The Company plans to opportunistically access liquidity sources to support its cash position and ongoing cash needs. Further, the Company has flexibility related to its use of cash; the Company has no significant debt maturities until 2027 and no significant cash contribution requirements related to its pension plan obligations (refer to Material Cash Requirements, below, for more information).

Although management believes that Alcoa's projected cash flows and other liquidity options will provide adequate resources to fund operating and investing needs, the Company's access to, and the availability of, financing on acceptable terms in the future will be affected by many factors, including: (i) Alcoa Corporation's credit rating; (ii) the liquidity of the overall capital markets; (iii) the current state of the economy and commodity markets, and (iv) short- and long-term debt ratings. There can be no assurances that the Company will continue to have access to capital markets on terms acceptable to Alcoa Corporation.

Changes in market conditions caused by global or macroeconomic events, such as ongoing regional conflicts, high inflation, and changing global monetary policies could have adverse effects on Alcoa's ability to obtain additional financing and cost of borrowing. Inability to generate sufficient earnings could impact the Company's ability to meet the financial covenants in our outstanding debt and revolving credit facility agreements and limit our ability to access these sources of liquidity or refinance or renegotiate our outstanding debt or credit agreements on terms acceptable to the Company. Additionally, the impact on market conditions from such events could adversely affect the liquidity of Alcoa's customers, suppliers, and joint venture partners and equity method investments, which could negatively impact the collectability of outstanding receivables and our cash flows.

At December 31, 2023, the Company's cash and cash equivalents were $944, of which $801 was held outside the United States. Alcoa Corporation has a number of commitments and obligations related to the Company's operations in various foreign jurisdictions, resulting in the need for cash outside the United States. Alcoa Corporation continuously evaluates its local and global cash needs for future business operations, which may influence future repatriation decisions. See Part II Item 8 of this Form 10-K in Note Q to the Consolidated Financial Statements for additional information related to undistributed net earnings.

Cash from Operations

Cash provided from operations was $91 in 2023 compared with $822 in 2022. Notable changes to the sources and (uses) of cash include:

- ($1,323) lower net income, excluding the impacts from restructuring charges, primarily due to lower aluminum pricing, higher production costs, partially offset by lower energy costs;

- $690 in certain working capital accounts, primarily an increase in inventories in 2022 on higher raw material prices and a decrease in inventories in 2023 primarily on lower raw material prices; and,

- $216 less income taxes paid on prior year earnings, as well as on lower current year earnings in the jurisdictions where taxes are paid.

In the third quarter of 2020, AofA paid approximately $74 (A$107) to the ATO related to the tax dispute described in Note S to the Consolidated Financial Statements in Part II Item 8 of this Form 10-K. Upon payment, AofA recorded a non-current prepaid tax asset, as the Company continues to believe it is more likely than not that AofA's tax position will be sustained and therefore is not recognizing any tax expense in relation to this matter. In accordance with Australian tax laws, the initial interest assessment and additional interest are deductible against AofA's taxable income. AofA applied this deduction beginning in the third quarter of 2020, reducing cash tax payments. If AofA is ultimately successful, the interest deduction would become taxable as income in the year the dispute is resolved. In addition, should the ATO decide in the interim to reduce any interest already assessed, the reduction would be taxable as income at that point in time. During 2023, AofA continued to record its tax provision and tax liability without effect of the ATO assessment, since it expects to prevail. The tax payable will remain on AofA's balance sheet as a non-current liability, increased by the tax effect of subsequent periods' interest deductions, until dispute resolution, which is expected to take several years. At December 31, 2023 and December 31, 2022, the non-current liability resulting from the cumulative interest deductions was approximately $199 (A$293) and $174 (A$260), respectively.

The Company utilizes a Receivables Purchase Agreement facility to sell up to $130 of certain receivables through a special purpose entity (SPE) to a financial institution on a revolving basis. Alcoa Corporation guarantees the performance obligations of the Company subsidiaries, and unsold customer receivables are pledged as collateral to the financial institution to secure the sold receivables. At December 31, 2023, the SPE held unsold customer receivables of $104 pledged as collateral against the sold receivables.

The Company continues to service the customer receivables that were transferred to the financial institution. As Alcoa collects customer payments, the SPE transfers additional receivables to the financial institution rather than remitting cash. In 2023, the Company sold gross customer receivables of $591, and reinvested collections of $477 from previously sold receivables, resulting in net cash proceeds from the financial institution of $114. Cash collections from previously sold receivables yet to be reinvested of $99 were included in Accounts payable, trade on the accompanying Consolidated Balance Sheet as of December 31, 2023. Cash received from sold receivables under the agreement are presented within operating activities in the Statement of Consolidated Cash Flows. See Part II Item 8 of this Form 10-K in Note I to the Consolidated Financial Statements for additional information related to this facility.

Financing Activities

Cash provided from financing activities was $57 in 2023 compared with cash used for financing activities of $768 in 2022.

The source of cash in 2023 was primarily $158 of net contributions from Alumina Limited (see non-controlling interest above) and $55 primarily related to the net issuance of short-term borrowings (see below), partially offset by $72 of dividends paid, $52 in financial contributions primarily related to the sale of the Warrick Rolling Mill, and $34 for payments related to tax withholding on stock-based compensation awards.

The use of cash in 2022 was primarily $165 of net cash paid to Alumina Limited, $500 for the repurchase of common stock, and $72 of dividends paid.

Credit Facilities.

Revolving Credit Facility

On June 27, 2022, Alcoa Corporation and Alcoa Nederland Holding B.V. (ANHBV), a wholly owned subsidiary of Alcoa Corporation and the borrower, entered into an amendment and restatement agreement (the Third Amendment and Restatement) (as amended and restated, the Revolving Credit Facility) that provided additional flexibility to the Company and ANHBV by (i) extending the maturity date of the Revolving Credit Facility from November 2023 to June 2027, (ii) reducing the aggregate commitments under the facility from $1,500 to $1,250, (iii) releasing the collateral package that had previously secured the Revolving Credit Facility, which would have continued so long as certain credit ratings were maintained, (iv) increasing the maximum leverage ratio from 2.75 to 1.00 to 3.25 to 1.00, which increased following material acquisitions for four consecutive fiscal quarters following an acquisition, (v) providing a debt to capitalization ratio not to exceed 0.60 to 1.00 to replace the maximum leverage ratio upon a ratings upgrade to investment grade by Moody's Investor Service (Moody's) or Standard and Poor's Global Ratings (S&P), and (vi) providing flexibility for dividends and other restricted payments, to make investments, and to incur additional indebtedness. The Revolving Credit Facility implemented a sustainability adjustment to the applicable margin and commitment fee that may result in a positive or negative adjustment based on two of the Company's existing sustainability metrics.

On July 26, 2022, Moody's upgraded the rating of ANHBV's senior unsecured notes to Baa3 (investment grade).

In addition to the financial covenants, the Revolving Credit Facility includes several customary affirmative and negative covenants (applicable to Alcoa Corporation and certain subsidiaries described as restricted), that, subject to certain exceptions, include limitations on (among other things): indebtedness, liens, investments, sales of assets, restricted payments, entering into restrictive agreements, a covenant prohibiting reductions in the ownership of AWAC entities, and certain other specified restricted subsidiaries of Alcoa Corporation, below an agreed level. The Revolving Credit Facility also contains customary events of default, including failure to make payments under the Revolving Credit Facility, cross-default and cross-judgment default, and certain bankruptcy and insolvency events.

As of December 31, 2023, the Company was in compliance with all financial covenants. The Company may access the entire amount of commitments under the Revolving Credit Facility. There were no borrowings outstanding at December 31, 2023 and 2022, and no amounts were borrowed during 2023 and 2022 under the Revolving Credit Facility.

On January 17, 2024, Alcoa Corporation, ANHBV, and certain subsidiaries of the Company entered into Amendment No. 1 (Amendment No. 1) to the Revolving Credit Facility (Amended Revolving Credit Facility). The Amended Revolving Credit Facility provides additional flexibility to the Company and the Borrower by temporarily (i) reducing the minimum interest coverage ratio required thereunder from 4.00 to 1.00 to 3.00 to 1.00 and (ii) providing for a maximum addback for cash restructuring charges in Consolidated EBITDA (as defined in the Revolving Credit Facility) of $450, in each case for the 2024 fiscal year. As of January 1, 2025, the minimum interest coverage ratio requirement will revert to 4.00 to 1.00 and the maximum addback for cash restructuring charges in Consolidated EBITDA will revert to 15% of Consolidated EBITDA. The requirement that the Company maintain a debt to capitalization ratio not to exceed 0.60 to 1.00 was not changed by Amendment No. 1. In connection with Amendment No. 1, the Company also agreed to provide collateral for its obligations under the Amended Revolving Credit Facility, which will require it to execute all security documents to re-secure collateral under the Amended Revolving Credit Facility by, subject to certain exceptions, a first priority security interest in substantially all assets of the Company, the Borrower, the material domestic wholly-owned subsidiaries of the Company, and the material foreign wholly-owned subsidiaries of the Company located in Australia, Brazil, Canada, Luxembourg, the Netherlands, Norway, and Switzerland including equity interests of certain subsidiaries that directly hold equity interests in AWAC entities. The collateral would be released if, on or after January 1, 2025, the Company or the Borrower (as applicable) (i) has at least two of the following three designated ratings: (x) Baa3 from Moody's, (y) BBB- from S&P and (z) BBB- from Fitch Ratings and (ii) does not have any designated rating lower than: (x) Ba1 from Moody's, (y) BB+ from S&P and (z) BB+ from Fitch Ratings.

The Amended Revolving Credit Facility contains customary affirmative covenants, negative covenants, and events of default substantially comparable to the Revolving Credit Facility (other than those that are described above and other minor changes). The representations, warranties and covenants contained in the Amended Revolving Credit Facility were made only for purposes of Amendment No. 1 and as of specific dates and were solely for the benefit of the parties to the Amended Revolving Credit Facility.

Japanese Yen Revolving Credit Facility

In April 2023, the Company entered into a one-year unsecured revolving credit facility for $250 (available to be drawn in Japanese yen) (the Japanese Yen Revolving Credit Facility). Subject to the terms and conditions under the facility, the Company or ANHBV may borrow funds. The facility included covenants that are substantially the same as those included in the Revolving Credit Facility.

As of December 31, 2023, the Company was in compliance with all financial covenants. The Company may access the entire amount of commitments under the facility. There were no borrowings outstanding at December 31, 2023 and $10 was borrowed and subsequently repaid in 2023.

On January 17, 2024, Alcoa Corporation and ANHBV, entered into Amendment No. 1 to the Japanese Yen Revolving Credit Facility (Amended Japanese Yen Revolving Credit Facility) which contains changes that are substantially the same as those included in the Amended Revolving Credit Facility (as described above). Also in connection with this amendment, the Company agreed to provide collateral for its obligations with the same conditions as the Amended Revolving Credit Facility. On January 24, 2024, ANHBV drew $201 against this facility.

The Company may draw on these facilities periodically to ensure working capital needs are met. See Part II Item 8 of this Form 10-K in Note M to the Consolidated Financial Statements for additional information related to these facilities.

Guarantees of Third Parties. As of December 31, 2023 and 2022, the Company had no outstanding potential future payments for guarantees issued on behalf of a third-party.

Bank Guarantees and Letters of Credit. Alcoa Corporation and its subsidiaries have outstanding bank guarantees and letters of credit related to, among others, energy contracts, environmental obligations, legal and tax matters, leasing obligations, workers compensation, and customs duties. The total amount committed under these instruments, which automatically renew or expire at various dates between 2024 and 2025, was $294 (includes $86 issued under a standby letter of credit agreement – see below) at December 31, 2023. Additionally, ParentCo has outstanding bank guarantees and letters of credit related to the Company of $13 at December 31, 2023. In the event ParentCo would be required to perform under any of these instruments, ParentCo would be indemnified by Alcoa Corporation in accordance with the Separation and Distribution Agreement. Likewise, the Company has outstanding bank guarantees and letters of credit related to ParentCo of $8 at December 31, 2023. In the event Alcoa Corporation would be required to perform under any of these instruments, the Company would be indemnified by ParentCo in accordance with the Separation and Distribution Agreement.

In December 2023, AofA committed to provide a bank guarantee for approximately $68 (A$100) which demonstrates Alcoa's confidence that its operations will not impair drinking water supplies.

In August 2017, Alcoa Corporation entered into a standby letter of credit agreement, which expires on June 27, 2024 (amended in August 2018, May 2019, May 2021, June 2022, and January 2024), with three financial institutions. The agreement provides for a $200 facility used by the Company for matters in the ordinary course of business. Alcoa Corporation's obligations under this facility are secured in the same manner as obligations under the Company's revolving credit facility. Additionally, this facility contains similar representations and warranties and affirmative, negative, and financial covenants as the Company's Revolving Credit Facility. See Part II Item 8 of this Form 10-K in Note M to the Consolidated Financial Statements for additional information related to the Company's debt. As of December 31, 2023, letters of credit aggregating $86 were issued under this facility.

Surety Bonds. Alcoa Corporation has outstanding surety bonds primarily related to tax matters, contract performance, workers compensation, environmental-related matters, and customs duties. The total amount committed under these bonds, which automatically renew or expire at various dates between 2024 and 2028, was $190 at December 31, 2023. Additionally, ParentCo has outstanding surety bonds related to the Company of $8 at December 31, 2023. In the event ParentCo would be required to perform under any of these instruments, ParentCo would be indemnified by Alcoa Corporation in accordance with the Separation and Distribution Agreement. Likewise, the Company has outstanding surety bonds related to ParentCo of $5 at December 31, 2023. In the event Alcoa Corporation would be required to perform under any of these instruments, the Company would be indemnified by ParentCo in accordance with the Separation and Distribution Agreement.

Debt. As of December 31, 2023, Alcoa Corporation had three outstanding series of Notes maturing at varying times. A summary of the Notes and other long-term debt is shown below. See Part II Item 8 of this Form 10-K in Note M to the Consolidated Financial Statements for additional information related to the Company's debt.

December 31,	**2023**	**2022**
5.500% Notes, due 2027	$ 750	$ 750
6.125% Notes, due 2028	500	500
4.125% Notes, due 2029	500	500
Other	82	84
Unamortized discounts and deferred financing costs	(21)	(27)
Total	1,811	1,807
Less: amount due within one year	79	1
Long-term debt, less amount due within one year	$ 1,732	$ 1,806

During 2023, the Company entered into multiple agreements with a financial institution for the sale and subsequent repurchase of aluminum inventory. The Company did not record sales upon each shipment of inventory, and the net cash received of $56 was recorded in Short-term borrowings within Other current liabilities on the Consolidated Balance Sheet.

During 2023, the Company recorded borrowings of $117 and repurchased $61 of inventory related to these agreements. The cash received and subsequently paid under the inventory repurchase agreements is included in Cash provided from financing activities on the Statement of Consolidated Cash Flows in 2023.

Ratings. Alcoa Corporation's cost of borrowing and ability to access the capital markets are affected not only by market conditions but also by the short- and long-term debt ratings assigned to Alcoa Corporation's debt by the major credit rating agencies.

On January 12, 2024, Moody's affirmed a Baa3 (investment grade) rating of ANHBV's long-term debt and revised the outlook from stable to negative.

On December 20, 2023, Fitch Ratings affirmed a BBB- rating for Alcoa Corporation's long-term debt and revised the outlook from stable to negative.

On September 13, 2023, S&P affirmed the BB+ rating of Alcoa's long-term debt and affirmed the current outlook as positive.

Ratings are not a recommendation to buy or hold any of our securities and they may be revised or revoked at any time at the sole discretion of the rating organization.

Dividend. In each quarter of 2023, the Board of Directors declared and paid a quarterly cash dividend of $0.10 per share of the Company's common stock, totaling $72 for the year.

The details of any future cash dividend declaration, including the amount of such dividend and the timing and establishment of the record and payment dates, will be determined by the Board of Directors. The decision of whether to pay future cash dividends and the amount of any such dividends will be based on the Company's financial position, results of operations, cash flows, capital requirements, business conditions, the requirements of applicable law, and any other factors the Board of Directors may deem relevant.

Common Stock Repurchase Program.

In October 2021, Alcoa Corporation's Board of Directors approved a common stock repurchase program under which the Company may purchase shares of its outstanding common stock up to an aggregate transactional value of $500, depending on cash availability, market conditions, and other factors.

On July 20, 2022, Alcoa Corporation announced that its Board of Directors approved an additional common stock repurchase program under which the Company may purchase shares of its outstanding common stock up to an aggregate transactional value of $500, depending on the Company's continuing analysis of market, financial, and other factors (the July 2022 authorization). Prior to this authorization, $150 remained available for common stock repurchases at the end of the second quarter of 2022 from the prior authorization in October 2021 of $500 which was fully exhausted in 2022 with the Company's repurchase activity (see below).

No shares were repurchased in 2023.

In 2022, the Company repurchased 8,565,200 shares of its common stock for $500; the shares were immediately retired.

In 2021, the Company repurchased 3,184,300 shares of its common stock for $150; the shares were immediately retired.

As of the date of this report, the Company is currently authorized to repurchase up to a total of $500, in the aggregate, of its outstanding shares of common stock under the July 2022 authorization. Repurchases under this program may be made using a variety of methods, which may include open market purchases, privately negotiated transactions, or pursuant to a Rule 10b5-1 plan. This program may be suspended or discontinued at any time and does not have a predetermined expiration date. Alcoa Corporation intends to retire repurchased shares of common stock.

Investing Activities

Cash used for investing activities was $585 in 2023 compared to cash used for investing activities of $495 in 2022.

In 2023, the use of cash was primarily attributable to $531 related to capital expenditures and $70 of cash contributions to the ELYSIS^{TM} partnership.

In 2022, the use of cash was primarily attributable to $480 related to capital expenditures and $32 of cash contributions to the ELYSIS partnership, partially offset by the sale of the Company's interest in the MRN mine of $10.

In 2024, Alcoa expects capital expenditures of approximately $550 related to sustaining capital projects and return-seeking capital projects. The timing and amount of capital expenditures may fluctuate as a result of the Company's normal operations.

Material Cash Requirements

As discussed above, the Company relies primarily on operating cash flows to fund its cash commitments and management believes its cash on hand, projected cash flows, and liquidity options combined with its strategic actions, will be adequate to fund its short-term (at least 12 months) and long-term operating and investing needs. On January 24, 2024, ANHBV drew $201 against the Japanese Yen Revolving Credit Facility to fund working capital requirements and reductions to date in the Company's Cash and cash equivalents. The Company plans to opportunistically access liquidity sources to support its cash position and ongoing cash needs.

The Company has committed cash outflows related to pension and postretirement benefit obligations, asset retirement obligations, environmental remediation, and operating lease agreements. See Part II Item 8 of this Form 10-K in Notes O, R, S, and T, respectively, to the Consolidated Financial Statements for additional information. As of December 31, 2023, a summary of Alcoa Corporation's outstanding material cash requirements are as follows:

	Total	2024	2025-2026	2027-2028	Thereafter
Operating activities:					
Energy-related purchase obligations	$ 13,997	$ 1,420	$ 2,542	$ 2,298	$ 7,737
Raw material purchase obligations	4,720	1,874	884	500	1,462
Other purchase obligations	1,429	658	258	185	328
Interest related to debt	422	98	185	129	10
Financing activities:					
Long-term debt and Short-term borrowings	1,888	135	2	1,250	501
Totals	$ 22,456	$ 4,185	$ 3,871	$ 4,362	$ 10,038

Purchase obligations – Energy-related purchase obligations consist primarily of electricity and natural gas contracts with expiration dates ranging from 1 year to 24 years. Raw material obligations consist mostly of bauxite (relates to AWAC's bauxite mine interests in Guinea and Brazil), caustic soda, lime, alumina, aluminum fluoride, calcined petroleum coke, anodes, and cathode blocks with expiration dates ranging from less than 1 year to 11 years. Other purchase obligations consist principally of freight for bauxite and alumina with expiration dates ranging from 1 to 11 years. Many of these purchase obligations contain variable pricing components, and, as a result, actual cash payments may differ from the estimates provided in the preceding table. In accordance with the terms of several of these supply contracts, obligations may be reduced as a result of an interruption to operations, such as a plant curtailment or a force majeure event.

Interest related to total debt – Interest is based on interest rates in effect as of December 31, 2023 and is calculated on debt with maturities that extend to 2029.

Long-term debt and Short-term borrowings – Total debt amounts in the preceding table represent the principal amounts of all outstanding long-term debt and Short-term borrowings, which have maturities that extend to 2029.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

The preparation of the Company's Consolidated Financial Statements in accordance with GAAP requires management to make certain estimates based on judgments and assumptions regarding uncertainties that affect the amounts reported in the Consolidated Financial Statements and disclosed in the Notes to the Consolidated Financial Statements. Areas that require such estimates include the review of properties, plants, and equipment and goodwill for impairment, and accounting for each of the following: asset retirement and environmental obligations; litigation matters; pension plans and other postretirement benefits obligations; derivatives and hedging activities; and income taxes.

Management uses historical experience and all available information to make these estimates; actual results may differ from those used to prepare the Company's Consolidated Financial Statements at any given time. Despite these inherent limitations, management believes that the amounts recorded in the financial statements related to these items are based on its best estimates and judgments using all relevant information available at the time.

A summary of the Company's significant accounting policies is included in Part II Item 8 of this Form 10-K in Note B to the Consolidated Financial Statements.

Properties, Plants, and Equipment. Properties, plants, and equipment are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of such assets (asset group) may not be recoverable, including in the period when assets have met the criteria to be classified as held for sale. The model used to determine recoverability of an asset or asset group would leverage the model that management uses for planning and strategic review of the entire business, including related inputs and assumptions. Management's impairment assessment process is described in Part II Item 8 of this Form 10-K in Note B to the Consolidated Financial Statements. Refer to Part II Item 8 of this Form 10-K in Note K to the Consolidated Financial Statements for more information regarding properties, plants, and equipment.

Goodwill. Goodwill is reviewed for impairment annually (in the fourth quarter) or more frequently if indicators of impairment exist or if a decision is made to sell or exit a business. A significant amount of judgment is involved in determining if an indicator of impairment has occurred. Such indicators may include, among others, deterioration in general economic conditions, negative developments in equity and credit markets, adverse changes in the markets in which an entity operates, increases in input costs that have a negative effect on earnings and cash flows, or a trend of negative or declining cash flows over multiple periods. The fair value that could be realized in an actual transaction may differ from that used to evaluate goodwill for impairment.

Under the qualitative impairment test, management considers a number of factors in its assessment, such as: general economic conditions, equity and credit markets, industry and market conditions, and earnings and cash flow trends.

Under the quantitative impairment test, management uses a discounted cash flow (DCF) model to estimate the current fair value of its reporting units. A number of significant assumptions and estimates are involved in the application of the DCF model to forecast operating cash flows, including markets and market share, sales volumes and prices, production costs, production capability, tax rates, capital spending, discount rate, and working capital changes. The model used for the goodwill impairment test leverages the model, including related inputs and assumptions, that management uses for planning and strategic review of the entire business.

Management will test goodwill on a qualitative or quantitative basis. Refer to Part II Item 8 of this Form 10-K in Note B to the Consolidated Financial Statements for more information regarding management's impairment assessment process.

As a result of the January 2023 segment change, the Company reviewed the recoverability of the carrying value of goodwill of its Alumina reporting unit in the first quarter of 2023. The estimated fair value of the Alumina reporting unit substantially exceeded the reporting unit's carrying value, resulting in no impairment.

Management performed a quantitative assessment for the Alumina reporting unit in the fourth quarter of 2023. As a result of the assessment, the estimated fair value of the Alumina reporting unit was substantially in excess of its carrying value, resulting in no impairment.

The impact on the estimated fair values of an increase in the discount rate of 1% would not result in a change in the conclusions reached for the impairment assessments performed in 2023, the estimated fair values would remain in excess of carrying values.

Further, in all years presented, there have been no triggering events that necessitated an impairment test for the Alumina reporting unit, except for the segment change in the first quarter of 2023 described above. Refer to Part II Item 8 of this Form 10-K in Note L to the Consolidated Financial Statements for more information regarding goodwill.

Asset Retirement and Environmental Obligations. Estimates are used to record environmental remediation and asset retirement obligation (ARO) reserves based on the best available information at the time of recognition. Several assumptions are used to estimate the costs required to demolish, environmentally remediate, reclaim, or restore the site, including:

- Engineering designs for construction or closure;
- Materials and services costs;
- Volume of regulated materials to be removed (asbestos, PCB fluids, spent potlining);
- Disposition of demolition materials;
- Extent of contamination based on available data;

- Scope of remediation to mitigate human health or environmental risks and/or to meet regulatory requirements;
- Timing to complete construction or closure; and,
- Commercial availability and pricing for off-site treatment or disposal applications.

As the site is demolished, remediated, reclaimed, or restored, the assumptions and estimates used to record the reserve may change to account for:

- Actual site conditions that require more or less remediation or reclamation;
- Legislation that becomes more or less stringent;
- Regulative authorities requiring updates to final design prior to completion;
- Alternative disposal methods for demolition waste;
- Technological changes which allow remediation to be more efficient;
- Market factors; and,
- Variances in work that is atypical from prior work experience.

Changes to the estimates may result in material changes to the reserve that may require an increase to or a reversal of a previously recorded reserve. Refer to Part II Item 8 of this Form 10-K in Note R and Note S to the Consolidated Financial Statements for more information regarding current reserves.

Litigation Matters. For asserted claims and assessments, liabilities are recorded when an unfavorable outcome of a matter is deemed to be probable and the loss is reasonably estimable. Management determines the likelihood of an unfavorable outcome based on many factors such as, among others, the nature of the matter, available defenses and case strategy, progress of the matter, views and opinions of legal counsel and other advisors, applicability and success of appeals processes, and the outcome of similar historical matters. Once an unfavorable outcome is deemed probable, management weighs the probability of estimated losses, and the most reasonable loss estimate is recorded. If an unfavorable outcome of a matter is deemed to be reasonably possible, then the matter is disclosed, and no liability is recorded. With respect to unasserted claims or assessments, management must first determine that the probability that an assertion will be made is likely, then, a determination as to the likelihood of an unfavorable outcome and the ability to reasonably estimate the potential loss is made. Legal matters are reviewed on a continuous basis to determine if there has been a change in management's judgment regarding the likelihood of an unfavorable outcome or the estimate of a potential loss. Refer to Part II Item 8 of this Form 10-K in Note B to the Consolidated Financial Statements for more information regarding management's litigation matters policy.

Pension and Other Postretirement Benefits. Liabilities and expenses for pension and other postretirement benefits are determined using actuarial methodologies and incorporate significant assumptions, including the interest rate used to discount the future estimated liability, the expected long-term rate of return on plan assets, and several assumptions relating to the employee workforce (salary increases, health care cost trend rates, retirement age, and mortality).

The yield curve model used to develop the discount rate parallels the plans' projected cash flows and has a weighted average duration of 10 years. The underlying cash flows of the high-quality corporate bonds included in the model exceed the cash flows needed to satisfy the Company's plan obligations multiple times. If a deep market of high-quality corporate bonds does not exist in a country, then the yield on government bonds plus a corporate bond yield spread is used. The impact of a change in the weighted average discount rate of ¼ of 1% would be approximately $70 on combined pension and other postretirement liabilities and immaterial to pretax earnings in the following year.

The expected long-term rate of return on plan assets is generally applied to a five-year market-related value of plan assets (a four-year average or the fair value at the plan measurement date is used for certain non-U.S. plans). The process used by management to develop this assumption is one that relies on forward-looking investment returns by asset class. Management incorporates expected future investment returns on current and planned asset allocations using information from various external investment managers and consultants, as well as management's own judgment. A change in the assumption for the weighted average expected long-term rate of return on plan assets of ¼ of 1% would impact pretax earnings by approximately $6 for 2024.

Mortality rate assumptions are based on mortality tables and future improvement scales published by third parties, such as the Society of Actuaries, and consider other available information including historical data as well as studies and publications from reputable sources.

Refer to Part II Item 8 of this Form 10-K in Note O to the Consolidated Financial Statements for more information regarding pension and other postretirement benefits including accounting impacts of current year actions.

Derivatives and Hedging. To calculate the fair value of certain derivatives, management uses discounted cash flow (DCF) and other simulation models that consider the following inputs and assumptions: quoted market prices (e.g., aluminum prices on the 10-year London Metal Exchange (LME) forward curve and energy prices), information concerning time premiums and volatilities for certain option type embedded derivatives and regional premiums for aluminum contracts, aluminum and energy prices beyond those quoted in the market, and the estimated credit spread between Alcoa and the counterparty. The quoted market prices used in the valuation models are dependent on market fundamentals, the relationship between supply and demand at any point in time, seasonal conditions, inventories, and interest rates. For periods beyond the term of quoted market prices, management estimates the price of aluminum by extrapolating the 10-year LME forward curve and estimates the Midwest premium based on recent transactions.

Changes in estimates can have a material impact on the derivative valuations. Refer to Part II Item 8 of this Form 10-K in Note P to the Consolidated Financial Statements for more information regarding derivatives and hedging and related activity during the period.

Income Taxes. Valuation allowances are recorded to reduce deferred tax assets when it is more likely than not (greater than 50%) that a tax benefit will not be realized. In evaluating the need for a valuation allowance, management applies judgment in assessing all available positive and negative evidence and considers all potential sources of taxable income, including income available in carryback periods, future reversals of taxable temporary differences, projections of taxable income, and income from tax planning strategies. Positive evidence includes factors such as a history of profitable operations, projections of future profitability within the carryforward period, including from tax planning strategies, and Alcoa Corporation's experience with similar operations. Existing favorable contracts and the ability to sell products into established markets are additional positive evidence. Negative evidence includes items such as cumulative losses, projections of future losses, or carryforward periods that are not long enough to allow for the utilization of a deferred tax asset based on existing projections of income. In certain jurisdictions, deferred tax assets related to cumulative losses may exist without a valuation allowance where in management's judgment the weight of the positive evidence more than offsets the negative evidence of the cumulative losses. Upon changes in facts and circumstances, management may conclude that deferred tax assets for which no valuation allowance is currently recorded may not be realized, resulting in a future charge to establish a valuation allowance. Financial information utilized in this analysis leverages the same financial information, including related inputs and assumptions, that management uses for planning and strategic review of the entire business.

Tax benefits related to uncertain tax positions taken or expected to be taken on a tax return are recorded when such benefits meet a more likely than not threshold. Otherwise, these tax benefits are recorded when a tax position has been effectively settled, which means that the statute of limitations has expired, or the appropriate taxing authority has completed their examination even though the statute of limitations remains open.

Changes in estimates can have a material impact on the deferred taxes and uncertain tax positions. Refer to Part II Item 8 of this Form 10-K in Note Q to the Consolidated Financial Statements for more information regarding income taxes and deferred tax assets and related activity during the period.

RELATED PARTY TRANSACTIONS

Alcoa Corporation buys products from and sells products to various related companies, consisting of entities in which Alcoa Corporation retains a 50% or less equity interest, at negotiated prices between the two parties. These transactions were not material to the financial position or results of operations of Alcoa Corporation for all periods presented.

RECENTLY ADOPTED ACCOUNTING GUIDANCE

See Part II Item 8 of this Form 10-K in Note B to the Consolidated Financial Statements under caption Recently Adopted Accounting Guidance.

RECENTLY ISSUED ACCOUNTING GUIDANCE

See Part II Item 8 of this Form 10-K in Note B to the Consolidated Financial Statements under caption Recently Issued Accounting Guidance.

D1. UNAUDITED CONSOLIDATED FINANCIAL STATEMENTS OF ALCOA FOR THE THREE MONTHS ENDED 31 MARCH 2024

ALCOA CORPORATION AND SUBSIDIARIES
STATEMENT OF CONSOLIDATED OPERATIONS (UNAUDITED)
(dollars in millions, except per-share amounts)

	Quarter Ended		
	March 31, 2024	**December 31, 2023**	**March 31, 2023**
Sales	$ 2,599	$ 2,595	$ 2,670
Cost of goods sold (exclusive of expenses below)	2,404	2,425	2,404
Selling, general administrative, and other expenses	60	64	54
Research and development expenses	11	14	10
Provision for depreciation, depletion, and amortization	161	163	153
Restructuring and other charges, net	202	(11)	149
Interest expense	27	28	26
Other expenses (income), net	59	(11)	54
Total costs and expenses	2,924	2,672	2,850
Loss before income taxes	(325)	(77)	(180)
(Benefit from) provision for income taxes	(18)	150	52
Net loss	(307)	(227)	(232)
Less: Net loss attributable to non-controlling interest	(55)	(77)	(1)
NET LOSS ATTRIBUTABLE TO ALCOA CORPORATION	$ (252)	$ (150)	$ (231)

	Quarter Ended		
	March 31, 2024	December 31, 2023	March 31, 2023
EARNINGS PER SHARE ATTRIBUTABLE TO ALCOA CORPORATION COMMON SHAREHOLDERS:			
Basic:			
Net loss	$ (1.41)	$ (0.84)	$ (1.30)
Average number of shares	179,285,359	178,466,610	178,012,784
Diluted:			
Net loss	$ (1.41)	$ (0.84)	$ (1.30)
Average number of shares	179,285,359	178,466,610	178,012,784

ALCOA CORPORATION AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEET (UNAUDITED)
(in millions)

	March 31, 2024	December 31, 2023
ASSETS		
Current assets:		
Cash and cash equivalents	$ 1,358	$ 944
Receivables from customers	869	656
Other receivables	132	152
Inventories	2,048	2,158
Fair value of derivative instruments	22	29
Prepaid expenses and other current assets[(1)]	452	466
Total current assets	4,881	4,405
Properties, plants, and equipment	19,959	20,381
Less: accumulated depreciation, depletion, and amortization	13,382	13,596
Properties, plants, and equipment, net	6,577	6,785
Investments	969	979
Deferred income taxes	295	333
Fair value of derivative instruments	1	3
Other non-current assets[(2)]	1,605	1,650
Total assets	$ 14,328	$ 14,155
LIABILITIES		
Current liabilities:		
Accounts payable, trade	$ 1,586	$ 1,714
Accrued compensation and retirement costs	331	357
Taxes, including income taxes	94	88
Fair value of derivative instruments	205	214
Other current liabilities	746	578
Long-term debt due within one year	79	79
Total current liabilities	3,041	3,030

	March 31, 2024	December 31, 2023
Long-term debt, less amount due within one year	2,469	1,732
Accrued pension benefits	267	278
Accrued other postretirement benefits	437	443
Asset retirement obligations	718	772
Environmental remediation	197	202
Fair value of derivative instruments	925	1,092
non-current income taxes	134	193
Other non-current liabilities and deferred credits	606	568
Total liabilities	8,794	8,310
EQUITY		
Alcoa Corporation shareholders' equity:		
Common stock	2	2
Additional capital	9,184	9,187
Accumulated deficit	(1,564)	(1,293)
Accumulated other comprehensive loss	(3,628)	(3,645)
Total Alcoa Corporation shareholders' equity	3,994	4,251
Non-controlling interest	1,540	1,594
Total equity	5,534	5,845
Total liabilities and equity	$ 14,328	$ 14,155

(1) This line item includes $31 and $32 of current restricted cash at March 31, 2024 and December 31, 2023, respectively.

(2) This line item includes $66 and $71 of non-current restricted cash at March 31, 2024 and December 31, 2023, respectively.

ALCOA CORPORATION AND SUBSIDIARIES
STATEMENT OF CONSOLIDATED CASH FLOWS (UNAUDITED)
(in millions)

	Three Months Ended March 31,	
	2024	**2023**
CASH FROM OPERATIONS		
Net loss	$ (307)	$ (232)
Adjustments to reconcile net loss to cash from operations:		
Depreciation, depletion, and amortization	161	153
Deferred income taxes	(63)	(24)
Equity loss, net of dividends	23	93
Restructuring and other charges, net	202	149
Net loss from investing activities – asset sales	11	18
Net periodic pension benefit cost	3	1
Stock-based compensation	10	10
Loss (gain) on mark-to-market derivative financial contracts	2	(18)
Other	20	48
Changes in assets and liabilities, excluding effects of divestitures and foreign currency translation adjustments:		
(Increase) decrease in receivables	(212)	40
Decrease in inventories	71	17
(Increase) decrease in prepaid expenses and other current assets	(6)	4
Decrease in accounts payable, trade	(98)	(273)
Decrease in accrued expenses	(22)	(45)
Increase (decrease) in taxes, including income taxes	18	(13)
Pension contributions	(6)	(4)
Decrease (increase) in non-current assets	9	(29)
Decrease in non-current liabilities	(39)	(58)
CASH USED FOR OPERATIONS	(223)	(163)

	Three Months Ended March 31,	
	2024	2023
FINANCING ACTIVITIES		
Additions to debt	965	25
Payments on debt	(221)	(1)
Proceeds from the exercise of employee stock options	–	1
Dividends paid on Alcoa common stock	(19)	(18)
Payments related to tax withholding on stock-based compensation awards	(15)	(34)
Financial contributions for the divestiture of businesses	(7)	(14)
Contributions from non-controlling interest	61	86
Distributions to non-controlling interest	(6)	(6)
Other	(4)	1
CASH PROVIDED FROM FINANCING ACTIVITIES	754	40
INVESTING ACTIVITIES		
Capital expenditures	(101)	(83)
Proceeds from the sale of assets	1	1
Additions to investments	(17)	(20)
CASH USED FOR INVESTING ACTIVITIES	(117)	(102)
EFFECT OF EXCHANGE RATE CHANGES ON CASH AND CASH EQUIVALENTS AND RESTRICTED CASH	(6)	2
Net change in cash and cash equivalents and restricted cash	408	(223)
Cash and cash equivalents and restricted cash at beginning of year	1,047	1,474
CASH AND CASH EQUIVALENTS AND RESTRICTED CASH AT END OF PERIOD	$ 1,455	$ 1,251

ALCOA CORPORATION AND SUBSIDIARIES
SEGMENT INFORMATION (UNAUDITED)
(dollars in millions, except realized prices; dry metric tons in millions (mdmt); metric tons in thousands (kmt))

	1Q23	2Q23	3Q23	4Q23	2023	1Q24
Alumina:						
Bauxite production (mdmt)	9.9	10.0	10.7	10.4	41.0	10.1
Third-party bauxite shipments (mdmt)	1.9	1.8	1.9	2.0	7.6	1.0
Alumina production (kmt)	2,755	2,559	2,805	2,789	10,908	2,670
Third-party alumina shipments (kmt)	1,929	2,136	2,374	2,259	8,698	2,397
Intersegment alumina shipments (kmt)	1,039	944	966	1,176	4,125	943
Average realized third-party price per metric ton of alumina	$ 371	$ 363	$ 354	$ 344	$ 358	$ 372
Third-party bauxite sales	$ 136	$ 113	$ 111	$ 124	$ 484	$ 64
Third-party alumina sales	$ 721	$ 781	$ 846	$ 781	$ 3,129	$ 897
Intersegment alumina sales	$ 421	$ 397	$ 381	$ 449	$ 1,648	$ 395
Segment Adjusted EBITDA[(1)]	$ 103	$ 33	$ 53	$ 84	$ 273	$ 139
Depreciation and amortization	$ 77	$ 80	$ 89	$ 87	$ 333	$ 87
Equity loss	$ (17)	$ (11)	$ (9)	$ (11)	$ (48)	$ (11)
Aluminum:						
Aluminum production (kmt)	518	523	532	541	2,114	542
Total aluminum shipments (kmt)	600	623	630	638	2,491	634
Average realized third-party price per metric ton of aluminum	$ 3,079	$ 2,924	$ 2,647	$ 2,678	$ 2,828	$ 2,620
Third-party sales	$ 1,810	$ 1,788	$ 1,644	$ 1,683	$ 6,925	$ 1,638
Intersegment sales	$ 3	$ 4	$ 4	$ 4	$ 15	$ 4
Segment Adjusted EBITDA[(1)]	$ 184	$ 110	$ 79	$ 88	$ 461	$ 50
Depreciation and amortization	$ 70	$ 68	$ 69	$ 70	$ 277	$ 68
Equity (loss) income	$ (57)	$ (16)	$ (15)	$ (18)	$ (106)	$ 2

	1Q23	2Q23	3Q23	4Q23	2023	1Q24
Reconciliation of total segment Adjusted EBITDA to consolidated net loss attributable to Alcoa Corporation:						
Total Segment Adjusted EBITDA[1]	$ 287	$ 143	$ 132	$ 172	$ 734	$ 189
Unallocated amounts:						
Transformation[2]	(8)	(17)	(29)	(26)	(80)	(14)
Intersegment eliminations	(8)	31	(4)	(12)	7	(8)
Corporate expenses[3]	(30)	(24)	(33)	(46)	(133)	(34)
Provision for depreciation, depletion, and amortization	(153)	(153)	(163)	(163)	(632)	(161)
Restructuring and other charges, net	(149)	(24)	(22)	11	(184)	(202)
Interest expense	(26)	(27)	(26)	(28)	(107)	(27)
Other (expenses) income, net	(54)	(6)	(85)	11	(134)	(59)
Other[4]	(39)	(22)	2	4	(55)	(9)
Consolidated loss before income taxes	(180)	(99)	(228)	(77)	(584)	(325)
(Provision for) benefit from income taxes	(52)	(22)	35	(150)	(189)	18
Net loss attributable to non-controlling interest	1	19	25	77	122	55
Consolidated net loss attributable to Alcoa Corporation	$ (231)	$ (102)	$ (168)	$ (150)	$ (651)	$ (252)

The difference between segment totals and consolidated amounts is in Corporate.

(1) Alcoa Corporation's definition of Adjusted EBITDA (Earnings before interest, taxes, depreciation, and amortization) is net margin plus an add-back for depreciation, depletion, and amortization. Net margin is equivalent to Sales minus the following items: Cost of goods sold; Selling, general administrative, and other expenses; Research and development expenses; and Provision for depreciation, depletion, and amortization. The Adjusted EBITDA presented may not be comparable to similarly titled measures of other companies.

(2) Transformation includes, among other items, the Adjusted EBITDA of previously closed operations.

(3) Corporate expenses are composed of general administrative and other expenses of operating the corporate headquarters and other global administrative facilities, as well as research and development expenses of the corporate technical center.

(4) Other includes certain items that are not included in the Adjusted EBITDA of the reportable segments.

ALCOA CORPORATION AND SUBSIDIARIES
CALCULATION OF FINANCIAL MEASURES (UNAUDITED)
(in millions, except per-share amounts)

Adjusted Income	(Loss) Income Quarter ended			Diluted EPS[4] Quarter ended		
	March 31, 2024	December 31, 2023	March 31, 2023	March 31, 2024	December 31, 2023	March 31, 2023
Net loss attributable to Alcoa Corporation	$ (252)	$ (150)	$ (231)	$ (1.41)	$ (0.84)	$ (1.30)
Special items:						
Restructuring and other charges, net	202	(11)	149			
Other special items[1]	22	(2)	25			
Discrete and other tax items impacts[2]	–	102	2			
Tax impact on special items[3]	(60)	1	6			
non-controlling interest impact[3]	(57)	(40)	8			
Subtotal	107	50	190			
Net loss attributable to Alcoa Corporation – as adjusted	$ (145)	$ (100)	$ (41)	$ (0.81)	$ (0.56)	$ (0.23)

Net loss attributable to Alcoa Corporation – as adjusted and Diluted EPS – as adjusted are non-GAAP financial measures. Management believes these measures are meaningful to investors because management reviews the operating results of Alcoa Corporation excluding the impacts of restructuring and other charges, various tax items, and other special items (collectively, "special items"). There can be no assurances that additional special items will not occur in future periods. To compensate for this limitation, management believes it is appropriate to consider Net loss attributable to Alcoa Corporation and Diluted EPS determined under GAAP as well as Net loss attributable to Alcoa Corporation – as adjusted and Diluted EPS – as adjusted.

(1) Other special items include the following:

- for the quarter ended March 31, 2024, an adjustment to the gain on sale of the Warrick Rolling Mill in Evansville, Indiana for additional site separation costs ($11), a net unfavorable change in mark-to-market energy derivative instruments ($4), external costs related to portfolio actions ($4), costs related to the restart process at the Warrick Operations site in Indiana ($3), costs related to the restart process at the San Ciprián, Spain smelter ($2), and a net benefit for other special items ($2);

- for the quarter ended December 31, 2023, a net favorable change in mark-to-market energy derivative instruments ($7), costs related to the restart process at the Warrick Operations site ($3), and net charges for other special items ($2); and,

- for the quarter ended March 31, 2023, a net favorable change in mark-to-market energy derivative instruments ($23), costs related to the restart process at the Alumar, Brazil smelter ($19), an adjustment to the gain on sale of the Warrick Rolling Mill for additional site separation costs ($17), costs related to the closure of the Intalco, Washington smelter ($16), and a net benefit for other special items ($4).

(2) Discrete and other tax items are generally unusual or infrequently occurring items, changes in law, items associated with uncertain tax positions, or the effect of measurement-period adjustments and include the following:

- for the quarter ended December 31, 2023, a charge to record a valuation allowance on AWAB's deferred tax assets due to cumulative losses ($104) and a net benefit for other discrete tax items ($2); and,
- for the quarter ended March 31, 2023, net charge for discrete tax items ($2).

(3) The tax impact on special items is based on the applicable statutory rates in the jurisdictions where the special items occurred. The non-controlling interest impact on special items represents Alcoa's partner's share of certain special items.

(4) In any period with a Net loss attributable to Alcoa Corporation (GAAP or as adjusted), the average number of shares applicable to diluted earnings per share exclude certain share equivalents as their effect is anti-dilutive.

Adjusted EBITDA	**Quarter ended**		
	March 31, 2024	**December 31, 2023**	**March 31, 2023**
Net loss attributable to Alcoa Corporation	$ (252)	$ (150)	$ (231)
Add:			
Net loss attributable to non-controlling interest	(55)	(77)	(1)
(Benefit from) provision for income taxes	(18)	150	52
Other expenses (income), net	59	(11)	54
Interest expense	27	28	26
Restructuring and other charges, net	202	(11)	149
Provision for depreciation, depletion, and amortization	161	163	153
Adjusted EBITDA	124	92	202
Special items[1]	8	(3)	38
Adjusted EBITDA, excluding special items	$ 132	$ 89	$ 240

Alcoa Corporation's definition of Adjusted EBITDA (Earnings before interest, taxes, depreciation, and amortization) is net margin plus an add-back for depreciation, depletion, and amortization. Net margin is equivalent to Sales minus the following items: Cost of goods sold; Selling, general administrative, and other expenses; Research and development expenses; and Provision for depreciation, depletion, and amortization. Adjusted EBITDA is a non-GAAP financial measure. Management believes this measure is meaningful to investors because Adjusted EBITDA provides additional information with respect to Alcoa Corporation's operating performance and the Company's ability to meet its financial obligations. The Adjusted EBITDA presented may not be comparable to similarly titled measures of other companies.

(1) Special items include the following (see reconciliation of Adjusted Income above for additional information):

- for the quarter ended March 31, 2024, external costs related to portfolio actions ($4), costs related to the restart process at the Warrick Operations site in Indiana ($3), costs related to the restart process at the San Ciprián, Spain smelter ($2), and a benefit for other special items ($1);
- for the quarter ended December 31, 2023, the mark-to-market contracts associated with the Portland smelter generated losses ($9) in Other expenses (income), net which economically increase the cost of power recorded in Cost of goods sold. This non-GAAP reclass presents the total cost of power within Cost of goods sold. This was partially offset by costs related to the restart process at the Warrick Operations site ($3) and net charges for other special items ($3); and,
- for the quarter ended March 31, 2023, costs related to the restart process at the Alumar, Brazil smelter ($19), costs related to the closure of the Intalco, Washington smelter ($16), and net cost of power associated with the Portland smelter ($3).

Free Cash Flow	**Quarter ended**		
	March 31, 2024	**December 31, 2023**	**March 31, 2023**
Cash (used for) provided from operations	$ (223)	$ 198	$ (163)
Capital expenditures	(101)	(188)	(83)
Free cash flow	$ (324)	$ 10	$ (246)

Free Cash Flow is a non-GAAP financial measure. Management believes this measure is meaningful to investors because management reviews cash flows generated from operations after taking into consideration capital expenditures, which are necessary to maintain and expand Alcoa Corporation's asset base and are expected to generate future cash flows from operations. It is important to note that Free Cash Flow does not represent the residual cash flow available for discretionary expenditures since other non-discretionary expenditures, such as mandatory debt service requirements, are not deducted from the measure.

Net Debt	March 31, 2024	December 31, 2023
Short-term borrowings	$ 52	$ 56
Long-term debt due within one year	79	79
Long-term debt, less amount due within one year	2,469	1,732
Total debt	2,600	1,867
Less: Cash and cash equivalents	1,358	944
Net debt	$ 1,242	$ 923

Net debt is a non-GAAP financial measure. Management believes this measure is meaningful to investors because management assesses Alcoa Corporation's leverage position after considering available cash that could be used to repay outstanding debt. When cash exceeds total debt, the measure is expressed as net cash.

Adjusted Net Debt and Proportional Adjusted Net Debt

	March 31, 2024			December 31, 2023		
	Consolidated	NCI	Alcoa Proportional	Consolidated	NCI	Alcoa Proportional
Short-term borrowings	$ 52	$ –	$ 52	$ 56	$ –	$ 56
Long-term debt due within one year	79	31	48	79	31	48
Long-term debt, less amount due within one year	2,469	–	2,469	1,732	–	1,732
Total debt	2,600	31	2,569	1,867	31	1,836
Less: Cash and cash equivalents	1,358	142	1,216	944	141	803
Net debt (net cash)	1,242	(111)	1,353	923	(110)	1,033
Plus: Net pension/OPEB liability	637	17	620	657	17	640
Adjusted net debt (net cash)	$ 1,879	$ (94)	$ 1,973	$ 1,580	$ (93)	$ 1,673

Net debt is a non-GAAP financial measure. Management believes that this measure is meaningful to investors because management assesses Alcoa Corporation's leverage position after considering available cash that could be used to repay outstanding debt. When cash exceeds total debt, the measure is expressed as net cash.

Adjusted net debt and proportional adjusted net debt are also non-GAAP financial measures. Management believes that these additional measures are meaningful to investors because management also assesses Alcoa Corporation's leverage position after considering available cash that could be used to repay outstanding debt and net pension/OPEB liability, net of the portion of those items attributable to non-controlling interest (NCI).

DWC Working Capital and Days Working Capital

	Quarter ended		
	March 31, 2024	December 31, 2023	March 31, 2023
Receivables from customers	$ 869	$ 656	$ 753
Add: Inventories	2,048	2,158	2,395
Less: Accounts payable, trade	(1,586)	(1,714)	(1,489)
DWC working capital	$ 1,331	$ 1,100	$ 1,659
Sales	$ 2,599	$ 2,595	$ 2,670
Number of days in the quarter	91	92	90
Days working capital[(1)]	47	39	56

DWC working capital and Days working capital are non-GAAP financial measures. Management believes that these measures are meaningful to investors because management uses its working capital position to assess Alcoa Corporation's efficiency in liquidity management.

(1) Days working capital is calculated as DWC working capital divided by the quotient of Sales and number of days in the quarter.

D2. FINANCIAL RESULTS AND HIGHLIGHTS, FIRST QUARTER 2024 RESULTS, KEY ACTIONS FOR THE THREE MONTHS ENDED 31 MARCH 2024 AND 2024 OUTLOOK

FINANCIAL RESULTS AND HIGHLIGHTS

M, except per share amounts		1Q24		4Q23		1Q23
Revenue	$	2,599	$	2,595	$	2,670
Net loss attributable to Alcoa Corporation	$	(252)	$	(150)	$	(231)
Loss per share attributable to Alcoa Corporation	$	(1.41)	$	(0.84)	$	(1.30)
Adjusted net loss	$	(145)	$	(100)	$	(41)
Adjusted loss per share	$	(0.81)	$	(0.56)	$	(0.23)
Adjusted EBITDA excluding special items	$	132	$	89	$	240

- Entered into binding agreement to acquire Alumina Limited in all-stock transaction
- Initiated process for the potential sale of the San Ciprián complex
- Completed restart of one potline at Warrick Operations
- Announced curtailment of Kwinana refinery in Australia to be completed in the second quarter 2024
- Implemented productivity and competitiveness program
- Paid quarterly cash dividend of $0.10 per share of common stock, totaling $19 million
- Finished the first quarter 2024 with cash balance of $1.4 billion, includes $737 million in net proceeds from March 2024 green bond issuance

"In the first quarter of 2024, we finalized the terms of our acquisition of Alumina Limited, which will bring strategic, operational, and financial flexibility," said Alcoa President and CEO William F. Oplinger. "Raw material prices and markets are improving, and we are implementing near-term improvements to further strengthen Alcoa for the future."

FIRST QUARTER 2024 RESULTS

- Production: Alumina production decreased 4 percent sequentially to 2.67 million metric tons on lower production from the Australia refineries. In Aluminum, Alcoa produced 542,000 metric tons, consistent with the fourth quarter's strong output.

- Shipments: In the Alumina segment, third-party shipments of alumina increased 6 percent sequentially primarily due to increased trading. In Aluminum, total shipments decreased 1 percent sequentially.

- Revenue: The Company's total third-party revenue of $2.6 billion was consistent with the prior quarter. In the Alumina segment, third-party revenue increased 6 percent due to the higher average realized third-party price for alumina and higher shipments. In the Aluminum segment, third-party revenue decreased 3 percent due to the lower average realized third-party price for aluminum, driven by the unfavorable sequential impact of the Alumar smelter restart hedge program which ended in December 2023 and timing of shipments.

- Net loss attributable to Alcoa Corporation was $252 million, or $1.41 per share. Sequentially, the results reflect lower average realized third-party prices for aluminum and higher production costs, partially offset by lower energy and raw material costs. Additionally, the results include a charge of $197 million related to the curtailment of the Kwinana refinery, and reflect the non-recurrence of a charge to tax expense of $152 million to record a valuation allowance on Alcoa World Alumina Brasil Ltda. (AWAB) deferred tax assets in the fourth quarter 2023.

- Adjusted net loss was $145 million, or $0.81 per share, excluding the impact from net special items of $107 million. Notable special items include $197 million related to the curtailment of the Kwinana refinery discussed above, partially offset by tax and non-controlling interest impacts of $117 million.

- Adjusted EBITDA excluding special items was $132 million, a sequential increase of $43 million primarily due to lower energy and raw material costs, partially offset by lower average realized third-party price for aluminum and higher production costs.

Production costs increased primarily due to the non-recurrence of the full year benefit of $36 million for the credit related to Section 45X of the Inflation Reduction Act recorded in the fourth quarter 2023.

- Cash: Alcoa ended the quarter with a cash balance of $1.4 billion. Cash used for operations was $223 million. Cash provided from financing activities was $754 million primarily related to the net proceeds from the debt issuance of $737 million. Cash used for investing activities was $117 million primarily related to capital expenditures of $101 million.

- Working capital: For the first quarter, Receivables from customers of $0.9 billion, Inventories of $2.0 billion and Accounts payable, trade of $1.6 billion comprised DWC working capital. Alcoa reported 47 days working capital, a sequential increase of eight days. The increase is primarily due to typical first quarter increase in accounts receivable and a decrease in accounts payable.

KEY ACTIONS

Strategic

- Alumina Limited: On March 11, 2024, Alcoa announced that it entered into a binding Scheme Implementation Deed with Alumina Limited (ASX: AWC), under which Alcoa will acquire Alumina Limited in an all-scrip, or allstock, transaction. The acquisition of Alumina Limited will enhance Alcoa's position as a leading pure play, upstream aluminum company globally, while simplifying the Company's corporate structure and governance, resulting in greater operational flexibility and strategic optionality.

Operational

- San Ciprián complex: During the first quarter of 2024, Alcoa completed the restart of approximately 6 percent of pots at the smelter in compliance with the February 2023 updated viability agreement. Although both energy and API prices improved during the quarter, the improvements are insufficient for the long-term viability of the complex for Alcoa. Additionally, near-term government support remains unlikely. While continuing to optimize the smelter and refinery operations and preserve cash, and as part of Alcoa's efforts to find a long-term solution for the complex, Alcoa initiated a process for the potential sale of the complex during the first quarter of 2024 and anticipates completing the bid process by June 2024.

- Warrick Operations: During the first quarter 2024, the Company completed the restart of one potline (54,000 mtpy) that was curtailed in July 2022.

- Kwinana refinery: On January 8, 2024, the Company announced the decision to curtail the Kwinana refinery in Australia to be completed in the second quarter of 2024.

Financial

- Green bond issuance: On March 21, 2024, the Company closed an offering of $750 million aggregate principal amount of 7.125 percent senior notes due in 2031. This was the Company's first notes issuance under its new Green Finance Framework, which prioritizes climate change mitigation expenditures related to circular or low carbon products, pollution prevention technologies, renewable energy, and water management. Net proceeds from the issuance, which can be allocated to qualifying expenditures on a two year look back and three year look forward, are expected to cover expenses associated with both new and existing decarbonization and water management projects, research and development, renewable energy, and the production of low carbon alumina and aluminum products. The Company does not expect to allocate part of the net proceeds to significant capital investments in breakthrough technologies as those are not expected to occur in the remainder of this decade.

- Productivity and competitiveness program: In January 2024, the Company initiated a productivity and competitiveness program across its global operations and functions. The program is part of the Company's objective to improve overall competitiveness and profitability and includes a target to save approximately 5 percent of operating costs, exclusive of raw materials, energy and transportation costs, which are already under active management and cost control programs. Total savings are expected to approximate $100 million on a run rate basis and to be achieved by the first quarter of 2025.

2024 OUTLOOK

The following outlook does not include reconciliations of the forward-looking non- GAAP financial measures Adjusted EBITDA and Adjusted Net Income, including transformation, intersegment eliminations and other corporate Adjusted EBITDA; operational tax expense; and other expense; each excluding special items, to the most directly comparable forward-looking GAAP financial measures because it is impractical to forecast certain special items, such as restructuring charges and mark-to-market contracts without unreasonable efforts due to the variability and complexity associated with predicting the occurrence and financial impact of such special items. For the same reasons, the Company is unable to address the probable significance of the unavailable information, which could be material to future results.

Alcoa expects 2024 total Alumina segment production and shipments to remain unchanged from the prior projection, ranging between 9.8 and 10.0 million metric tons, and between 12.7 and 12.9 million metric tons, respectively. The difference between production and shipments reflects trading volumes and externally sourced alumina to fulfill customer contracts due to the curtailment of the Kwinana refinery.

Alcoa expects 2024 total Aluminum segment production and shipments to remain unchanged from the prior projection, ranging between 2.2 and 2.3 million metric tons, and between 2.5 and 2.6 million metric tons, respectively.

Within second quarter 2024 Alumina Segment Adjusted EBITDA, the Company expects sequential unfavorable impacts of $20 million related to higher seasonal maintenance and other mining costs for the Australia operations.

Within second quarter 2024 Aluminum Segment Adjusted EBITDA, the Company expects favorable raw material prices and production costs to be fully offset by higher energy costs. Alumina costs in the Aluminum segment are expected to be unfavorable by $15 million sequentially.

Alcoa expects Interest expense to approximate $145 million for the year, an increase from the prior projection as a result of the green bond issuance.

Other expenses for the first quarter of 2024 included unfavorable impacts of approximately $20 million related to foreign currency losses that may not recur.

Based on current alumina and aluminum market conditions, Alcoa expects second quarter operational tax expense to approximate $40 million to $50 million, which may vary with market conditions and jurisdictional profitability.

A. UNAUDITED PRO FORMA FINANCIAL INFORMATION OF THE GROUP

The following is an illustrative unaudited pro forma consolidated statement of assets and liabilities of the Group (the "**Unaudited Pro Forma Financial Information**"), which has been prepared by the Directors based on the audited consolidated statement of financial position of the Group as at 31 December 2023 after giving effect to the pro forma adjustments described in the accompanying note and in accordance with Rules 4.29 of the Hong Kong Listing Rules.

The Unaudited Pro Forma Financial Information has been prepared to illustrate the effects of the Transaction on the Group's Financial Information as at 31 December 2023 as if the Transaction had taken place on 31 December 2023.

The Unaudited Pro Forma Financial Information has been prepared by the Directors for illustrative purposes only and, because of its hypothetical nature, it may not give a true picture of the financial position of the Group had the Transaction been completed on 31 December 2023, or any future dates.

The Unaudited Pro Forma Financial Information should be read in conjunction with the historical financial information of the Group as set out in the published annual report of the Company for the year ended 31 December 2023 and other financial information included elsewhere in this circular.

Unaudited Pro Forma Consolidated Statement of Assets and Liabilities of the Group

	The Group as at 31 December 2023 *HK$'000* *(Note 1)*	Pro forma adjustments *HK$'000* *(Note 2)*	Unaudited pro forma consolidated statements of assets and liabilities of the Group after the Transaction *HK$'000*
Non-current assets			
Property, plant and equipment	3,988,055	–	3,988,055
Right-of-use assets	49,003	–	49,003
Mining rights	242,232	–	242,232
Exploration, evaluation and development expenditures	61,876	–	61,876
Investment in an associate	1,821,296	(1,821,296)	–
Investment in a joint venture	2,786,632	–	2,786,632
Financial asset at fair value through other comprehensive income	–	2,110,941	2,110,941
Prepayments, deposits and other receivables	44,090	–	44,090
Time deposit	118,497	–	118,497
Deferred tax assets	171,640	(86,893)	84,747
Penion assets	4,704	–	4,704
Total non-current assets	9,288,025	202,752	9,490,777
Current assets			
Inventories	435,861	–	435,861
Trade receivables	239,688	–	239,688
Prepayments, deposit and other receivables	104,310	–	104,310
Derivative financial instruments	72,691	–	72,691
Cash and deposits	1,483,816	(4,407)	1,479,409
Total current assets	2,336,366	(4,407)	2,331,959

	The Group as at 31 December 2023	Pro forma adjustments	Unaudited pro forma consolidated statements of assets and liabilities of the Group after the Transaction
	HK$'000	*HK$'000*	*HK$'000*
	(Note 1)	*(Note 2)*	
Current liabilities			
Accounts payable	242,729	–	242,729
Tax payable	91,167	–	91,167
Accrued liabilities and other payables	606,026	–	606,026
Bank and other borrowings	350,000	–	350,000
Lease liabilities	24,663	–	24,663
Provisions for long-term employee benefits	32,120	–	32,120
Provisions	11,531	–	11,531
Total current liabilities	1,358,236	–	1,358,236
Net current assets	978,130	(4,407)	973,723
Total assets less current liabilities	10,266,155	198,345	10,464,500
Non-current liabilities			
Bank and other borrowings	1,439,880	–	1,439,880
Lease liabilities	16,196	–	16,196
Deferred tax liabilities	339,927	–	339,927
Provisions for long-term employee benefits	23,965	–	23,965
Provisions	604,764	–	604,764
Total non-current liabilities	2,424,732	–	2,424,732
Net assets	7,841,423	198,345	8,039,768

Notes to the Unaudited Pro Forma Consolidated Statement of Assets and Liabilities of the Group

Notes:

1. The balances have been extracted from the audited consolidated statement of financial position of the Group as at 31 December 2023 as set out in its 2023 annual report.

2. The adjustment represents the derecognition of the AWC Shares as an investment in an associate upon the completion of the Transaction. The consideration for the disposal of AWC shares of HK$2,110,941,000 is satisfied by the acquisition of the Alcoa Shares, which is expected to be classified as a financial asset at fair value through other comprehensive income. The consideration is determined based on the market price of Alcoa Shares as at 31 December 2023. The Transaction would result in a pre tax loss on disposal of HK$28,506,000, being the consideration of HK$2,110,941,000 net off with the derecognition of the investment in an associate of HK$1,821,296,000, the reclassification of pre-tax other comprehensive income to profit or loss of HK$313,744,000 and the estimated transaction costs of approximately HK$4,407,000, assuming that these had been paid by cash on 31 December 2023. The corresponding tax impact of the Transaction is HK$7,230,000, being the tax impact of HK$86,893,000 arising from the gain on disposal before the reclassification of pre-tax other comprehensive income to profit or loss net off with the tax impact of HK$94,123,000 arising from the reclassification of deferred tax expense previously recognised in other comprehensive income to loss on disposal.

   If the consideration is determined based on the market price of Alcoa's Shares of US$39.3 as at the Latest Practicable Date, the Transaction would result in a pre-tax gain on disposal of HK$300,553,000, including the reclassification of pre-tax other income to profit or loss of HK$313,744,000. The corresponding tax impact of the Transaction is HK$91,488,000.

3. No adjustment has been made to reflect any trading result or other transaction of the Group entered into subsequent to 31 December 2023.

B. REPORT FROM THE REPORTING ACCOUNTANTS ON THE UNAUDITED PRO FORMA FINANCIAL INFORMATION OF THE GROUP

The following is the text of a report on the unaudited pro forma financial information of the Group received from PricewaterhouseCoopers, Certified Public Accountants, Hong Kong, for the purpose of incorporation in this circular.

INDEPENDENT REPORTING ACCOUNTANT'S ASSURANCE REPORT ON THE COMPILATION OF UNAUDITED PRO FORMA FINANCIAL INFORMATION

羅兵咸永道

To the Directors of CITIC Resources Holdings Limited

We have completed our assurance engagement to report on the compilation of unaudited pro forma financial information of CITIC Resources Holdings Limited (the "**Company**") and its subsidiaries (collectively the "**Group**") by the directors of the Company (the "**Directors**") for illustrative purposes only. The unaudited pro forma financial information consists of the unaudited pro forma consolidated statement of assets and liabilities as at 31 December 2023 and related notes (the "**Unaudited Pro Forma Financial Information**") as set out on pages 515 to 518 of the Company's circular dated 17 July 2024, in connection with the proposed acquisition of the equity interest in Alcoa Corporation and proposed disposal of the equity interest in Alumina Limited (the "**Transaction**") by the Company. The applicable criteria on the basis of which the Directors have compiled the Unaudited Pro Forma Financial Information are described on pages 515 to 518 of the Circular.

The Unaudited Pro Forma Financial Information has been compiled by the Directors to illustrate the impact of the Transaction on the Group's financial position as at 31 December 2023 as if the Transaction had taken place at 31 December 2023. As part of this process, information about the Group's financial position has been extracted by the Directors from the Group's financial statements for the year ended 31 December 2023, on which an audit report has been published.

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Directors' Responsibility for the Unaudited Pro Forma Financial Information

The Directors are responsible for compiling the Unaudited Pro Forma Financial Information in accordance with paragraph 4.29 of the Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited (the "**Listing Rules**") and with reference to Accounting Guideline 7 *Preparation of Pro Forma Financial Information for Inclusion in Investment Circulars* ("**AG 7**") issued by the Hong Kong Institute of Certified Public Accountants ("**HKICPA**").

Our Independence and Quality Management

We have complied with the independence and other ethical requirements of the *Code of Ethics for Professional Accountants* issued by the HKICPA, which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

Our firm applies Hong Kong Standard on Quality Management (HKSQM) 1, *Quality Management for Firms that Perform Audits or Reviews of Financial Statements, or Other Assurance or Related Services Engagements*, issued by the HKICPA, which requires the firm to design, implement and operate a system of quality management including policies or procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Reporting Accountant's Responsibilities

Our responsibility is to express an opinion, as required by paragraph 4.29(7) of the Listing Rules, on the Unaudited Pro Forma Financial Information and to report our opinion to you. We do not accept any responsibility for any reports previously given by us on any financial information used in the compilation of the Unaudited Pro Forma Financial Information beyond that owed to those to whom those reports were addressed by us at the dates of their issue.

We conducted our engagement in accordance with Hong Kong Standard on Assurance Engagements 3420, *Assurance Engagements to Report on the Compilation of Pro Forma Financial Information Included in a Prospectus*, issued by the HKICPA. This standard requires that the reporting accountant plans and performs procedures to obtain reasonable assurance about whether the Directors have compiled the Unaudited Pro Forma Financial Information in accordance with paragraph 4.29 of the Listing Rules and with reference to AG 7 issued by the HKICPA.

For purposes of this engagement, we are not responsible for updating or reissuing any reports or opinions on any historical financial information used in compiling the Unaudited Pro Forma Financial Information, nor have we, in the course of this engagement, performed an audit or review of the financial information used in compiling the Unaudited Pro Forma Financial Information.

The purpose of unaudited pro forma financial information included in a circular is solely to illustrate the impact of a significant event or transaction on unadjusted financial information of the entity as if the event had occurred or the transaction had been undertaken at an earlier date selected for purposes of the illustration. Accordingly, we do not provide any assurance that the actual outcome of the Transaction at 31 December 2023 would have been as presented.

A reasonable assurance engagement to report on whether the unaudited pro forma financial information has been properly compiled on the basis of the applicable criteria involves performing procedures to assess whether the applicable criteria used by the directors in the compilation of the unaudited pro forma financial information provide a reasonable basis for presenting the significant effects directly attributable to the event or transaction, and to obtain sufficient appropriate evidence about whether:

- The related pro forma adjustments give appropriate effect to those criteria; and
- The unaudited pro forma financial information reflects the proper application of those adjustments to the unadjusted financial information.

The procedures selected depend on the reporting accountant's judgment, having regard to the reporting accountant's understanding of the nature of the company, the event or transaction in respect of which the unaudited pro forma financial information has been compiled, and other relevant engagement circumstances.

The engagement also involves evaluating the overall presentation of the unaudited pro forma financial information.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Opinion

In our opinion:

(a) the Unaudited Pro Forma Financial Information has been properly compiled by the Directors on the basis stated;

(b) such basis is consistent with the accounting policies of the Group; and

(c) the adjustments are appropriate for the purposes of the Unaudited Pro Forma Financial Information as disclosed pursuant to paragraph 4.29(1) of the Listing Rules.

PricewaterhouseCoopers
Certified Public Accountants

Hong Kong, 17 July 2024

1. RESPONSIBILITY STATEMENT

This circular, for which the Directors collectively and individually accept full responsibility, includes particulars given in compliance with the Hong Kong Listing Rules for the purpose of giving information with regard to the Company.

The Directors, having made all reasonable enquiries, confirm that to the best of their knowledge and belief, the information contained in this circular is accurate and complete in all material respects and not misleading or deceptive, and there are no other matters the omission of which would make any statement herein or this circular misleading.

The issuance of this circular has been approved by the Directors.

2. DISCLOSURE OF DIRECTORS' AND CHIEF EXECUTIVE'S INTERESTS

As at the Latest Practicable Date, the interests and short positions of the Directors and chief executive of the Company in the shares, underlying shares and debentures of the Company or its associated corporations (within the meaning of Part XV of the SFO) which are required to be notified to the Company and the SEHK pursuant to Divisions 7 and 8 of Part XV of the SFO (including interests and short positions which they are deemed or taken to have under such provisions of the SFO) or which are required, pursuant to section 352 of the SFO, to be entered in the register referred to therein or which are required, pursuant to the Model Code for Securities Transactions by Directors of Listed Issuers (the "**Model Code**") as set out in Appendix C3 to the Hong Kong Listing Rules, and which have been notified to the Company and the SEHK are as follows:

Long positions in shares and underlying shares of the Company

Name of Director	Name of interest	Number of ordinary shares	Number of underlying shares pursuant to share options	Percentage of the total issued share capital of the Company
Mr. Chan Kin ("**Mr. Chan**")	Interest of controlled corporation	786,558,488*	–	10.01
Mr. Lu Dequan	Beneficial owner	908,000	–	0.01

* *The figure represents an attributable interest of Mr. Chan through his interest in Argyle Street Management Holdings Limited ("**ASM Holdings**"). Mr. Chan is a significant shareholder of ASM Holdings.*

Long positions in shares and underlying shares of associated corporations of the Company

Name of Director	Nature of associated corporation	Shares/equity derivatives	Number of shares/equity derivatives held	Nature of interest	Percentage of the total issued share capital of the associated corporation
Mr. Hao Weibao	CITIC Limited	Ordinary shares	62,000	Beneficial owner	–

Save as disclosed herein and so far as is known to the Directors, as at the Latest Practicable Date, none of the Directors or chief executive of the Company had an interest or a short position in the shares, underlying shares or debentures of the Company or any of its associated corporations (within the meaning of Part XV of the SFO) which are required to be notified to the Company and the SEHK pursuant to Divisions 7 and 8 of Part XV of the SFO (including interests and short positions which they are deemed or taken to have under such provisions of the SFO) or which are required, pursuant to section 352 of the SFO, to be entered in the register referred to therein or which are required, pursuant to the Model Code, to be notified to the Company and the SEHK.

Save as disclosed herein and so far as is known to the Directors, as at the Latest Practicable Date, none of the Directors was a director or employee of a company which had an interest or a short position in Shares or underlying Shares which would fall to be disclosed to the Company under the provisions of Divisions 2 and 3 of Part XV of the SFO.

3. DISCLOSURE OF INTEREST OF SUBSTANTIAL SHAREHOLDERS

As at the Latest Practicable Date, according to the register kept by the Company pursuant to section 336 of the SFO, and so far as is known to the Directors, the persons or entities who had or was deemed or taken to have an interest and/or short position in the Shares or the underlying Shares which would fall to be disclosed to the Company under the provisions of Division 2 and 3 of Part XV of the SFO, or who were, directly or indirectly, interested in 5% or more of the nominal value of any class of share capital of the Company carrying rights to vote in all circumstances at general meetings of the Company are as follows:

Name	Capacity/ Nature of Interest	Number of Share	Percentage of the total issued share capital of the Company
CITIC Group	Interest of controlled corporation	4,675,605,697[(1)]	59.50
CITIC Limited	Interest of controlled corporation	4,675,605,697[(2)]	59.50
CITIC Corporation Limited	Interest of controlled corporation	4,675,605,697[(3)]	59.50
CITIC Projects Management (HK) Limited	Interest of controlled corporation	3,895,083,904[(4)]	49.57
Keentech	Beneficial owner	3,895,083,904[(5)]	49.57
CA	Beneficial owner	750,413,793[(6)]	9.55
Argyle Street Management Holdings Limited	Interest of controlled corporation	786,558,488[(7)]	10.01
Argyle Street Management Limited	Interest of controlled corporation	786,558,488[(8)]	10.01
ASM Connaught House General Partner Limited	Interest of controlled corporation	786,558,488[(9)]	10.01
ASM Connaught House General Partner II Limited	Interest of controlled corporation	786,558,488[(10)]	10.01
ASM Connaught House Fund LP	Interest of controlled corporation	786,558,488[(11)]	10.01
ASM Connaught House Fund II LP	Interest of controlled corporation	786,558,488[(12)]	10.01

Name	Capacity/ Nature of Interest	Number of Share	Percentage of the total issued share capital of the Company
ASM Connaught House (Master) Fund II LP	Interest of controlled corporation	786,558,488(13)	10.01
Sea Cove Limited	Interest of controlled corporation	786,558,488(14)	10.01
TIHT Investment Holdings III Pte. Ltd.	Beneficial owner	786,558,488(15)	10.01

Notes:

1. The figure represents an attributable interest of CITIC Group through its interest in CITIC Limited. CITIC Group is a company established in the PRC.

2. The figure represents an attributable interest of CITIC Limited through its interest in CITIC Corporation Limited ("**CITIC Corporation**"). CITIC Limited, a company incorporated in Hong Kong and listed on the Main Board of the SEHK (Stock Code: 267), is owned as to 32.53% by CITIC Polaris Limited ("**CITIC Polaris**") and 25.60% by CITIC Glory Limited ("**CITIC Glory**"). CITIC Polaris and CITIC Glory, companies incorporated in the British Virgin Islands (the "**BVI**"), are direct wholly-owned subsidiaries of CITIC Group.

3. The figure represents an attributable interest of CITIC Corporation through its interest in CITIC Projects Management (HK) Limited ("**CITIC Projects**"), CA and Fortune Class Investments Limited ("**Fortune Class**"). Fortune Class holds 30,108,000 shares representing 0.38% of the total issued share capital of the Company. CITIC Corporation, a company established in the PRC, is a direct wholly-owned subsidiary of CITIC Limited. Fortune Class, a company incorporated in the BVI, is an indirect wholly-owned subsidiary of CITIC Corporation.

4. The figure represents an attributable interest of CITIC Projects through its interest in Keentech. CITIC Projects, a company incorporated in the BVI, is a direct wholly-owned subsidiary of CITIC Corporation.

5. Keentech, a company incorporated in the BVI, is a direct wholly-owned subsidiary of CITIC Projects.

6. CA, a company incorporated in Australia, is a direct wholly-owned subsidiary of CITIC Corporation.

7. The figure represents an attributable interest of ASM Holdings through its interest in Argyle Street Management Limited ("**ASM Limited**"), ASM Connaught House General Partner Limited ("**ASM General Partner**") and ASM Connaught House General Partner II Limited ("**ASM General Partner II**"). ASM Holdings is a company incorporated in the BVI.

8. The figure represents an attributable interest of ASM Limited through its control of, by virtue of its position as investment manager of, ASM Connaught House Fund LP ("**ASM Fund LP**"), ASM Connaught House Fund II LP ("**ASM Fund II**") and ASM Connaught House (Master) Fund II LP ("**ASM (Master) Fund II**"). ASM Limited, a company incorporated in the BVI, is a direct wholly-owned subsidiary of ASM Holdings.

9. The figure represents an attributable interest of ASM General Partner through its role as general partner of ASM Fund LP. ASM General Partner, a company incorporated in the Cayman Islands, is a direct wholly-owned subsidiary of ASM Holdings.

10. The figure represents an attributable interest of ASM General Partner II through its role as general partner in ASM Fund II and ASM (Master) Fund II.

11. The figure represents an attributable interest of ASM Fund LP through its interest in Albany Road Limited ("**Albany**"). Albany, a company incorporated in the BVI, is a direct wholly-owned subsidiary of ASM Fund LP.

12. The figure represents an attributable interest of ASM Fund II through its interest in ASM (Master) Fund II.

13. The figure represents an attributable interest of ASM (Master) Fund II through its interest in Caroline Hill Limited ("**Caroline**"). Caroline, a company incorporated in the BVI, is a direct wholly-owned subsidiary of ASM (Master) Fund II.

14. The figure represents an attributable interest of Sea Cove Limited ("**Sea Cove**") through its interest in TIHT Investment Holdings III Pte. Ltd. ("**TIHT**"). Sea Cove, a company incorporated in the BVI, is owned as to more than one-third of the total issued share capital by Caroline and more than one-third of the total issued share capital by Albany.

15. TIHT, a company incorporated in Singapore, is a direct wholly-owned subsidiary of Sea Cove.

16. The information in the above table is based on information publicly available to the Company as at the Latest Practicable Date.

17. The numbers in the above table have been subject to rounding adjustments. Any discrepancies in the numbers are due to roundings.

4. MATERIAL ADVERSE CHANGE

As at the Latest Practicable Date, the Directors had confirmed that there was no material adverse change in the financial or trading position of the Group since 31 December 2023, being the date to which the latest published audited financial statements of the Group were made up.

5. DIRECTORS' SERVICE CONTRACTS

As at the Latest Practicable Date, none of the Directors had entered, or proposed to enter, into a service contract with any member of the Group, other than service contracts expiring or terminable by the relevant member of the Group within one year without payment of compensation other than statutory compensation.

6. DIRECTORS' INTERESTS IN ASSETS

As at the Latest Practicable Date, none of the Directors had any direct or indirect interests in any assets which have been acquired or disposed of by, or leased to, or which were proposed to be acquired or disposed of by, or leased to, any member of the Group since 31 December 2023, being the date to which the latest published audited financial statements of the Group were made up.

7. DIRECTORS' INTERESTS IN CONTRACTS

None of the Directors was materially interested in any contract or arrangement subsisting as at the Latest Practicable Date which is significant in relation to the business of the Group.

8. DIRECTOR'S INTERESTS IN COMPETING BUSINESS

As of the Latest Practicable Date, the following director of the Company was considered to have interests in a business which competes or is likely to compete, either directly or indirectly, with the business of the Group, pursuant to the Hong Kong Listing Rules as set out below:

Name of Director	Entity ("Entity") whose business is considered to compete or likely to compete with the business of the Group	Description of business of the Entity	Nature of interest of the Director in the Entity
Mr. Hao Weibao	CITIC Metal Group Limited (中信金屬集團有限公司)	Commodity Trading and Mining	Vice chairman and general manager

As the Board is independent of the board of the above-mentioned Entity and the above director of the Company cannot control the Board, the Group is therefore capable of carrying on its businesses independently of, and at arm's length from the businesses of this Entity.

Save as disclosed above, as at the Latest Practicable Date, so far as the Directors were aware, none of the Directors and their respective close associates (as defined under the Hong Kong Listing Rules) had interest in any business, apart from the Group's businesses, which competes or is likely to compete, either directly or indirectly, with the business of the Group.

9. LITIGATION

Weihai City Commercial Bank Co., Ltd（威海市商業銀行股份有限公司）filed claims against CA Commodity Trading Pty Ltd, an indirectly wholly-owned subsidiary of the Company, the details of which were disclosed in the announcements of the Company dated 1 September 2020, 7 January 2021, 21 May 2021 and 27 February 2023. A hearing was held at the Shandong Court in January 2024 and CACT submitted to the court all requisite evidence for the purpose of fact finding of the case. The Shandong Court will issue its finding after consideration of all evidence, which is likely to take place in the later part of the year 2024. CACT maintains the view that the claims are without merit and groundless.

Save as disclosed above, as at the Latest Practicable Date, no member of the Group was engaged in any litigation or claims of material importance, nor was any litigation or claims of material importance known to the Directors to be pending or threatened against any member of the Group.

10. EXPERT AND CONSENT

The following are the qualifications of the expert who has given opinion or advice which is contained in this circular:

Name	Qualifications
PricewaterhouseCoopers	Certified Public Accountants under the Professional Accountants Ordinance (Chapter 50 of the Laws of Hong Kong) and Registered Public Interest Entity Auditor under the Accounting and Financial Reporting Council Ordinance (Chapter 588 of the Laws of Hong Kong)

The above expert has given and has not withdrawn its written consent to the issue of this circular with the inclusion of its letter and references to its name, opinion, logo and qualifications, in the form and context in which they appear.

As at the Latest Practicable Date, the above expert:

(a) did not have any direct or indirect, interest in any assets which have been since 31 December 2023 (being the date to which the latest published audited financial statements of the Company were made up), acquired or disposed of by or leased to, or which were proposed to be acquired or disposed of by or leased to, any member of the Group; and

(b) did not have any shareholding, in any member of the Group or any right (whether legally enforceable or not) to subscribe for or to nominate persons to subscribe for securities in any member of the Group.

11. MATERIAL CONTRACTS

In the two years immediately preceding the date of this circular and up to the Latest Practicable Date, there was no material contract (not being contracts entered into in the ordinary course of business) entered into by the Company or any of its subsidiaries which are or may be material.

12. MISCELLANEOUS

(a) The company secretary of the Company is Mr. Wat Chi Ping Issac. He became a qualified solicitor in Hong Kong and in England and Wales in November 1998 and March 1999, respectively. He has over 23 years of legal and compliance experience from private practice in law firms as well as serving as company counsels in renowned multinational companies and Chinese Central Government-owned enterprises.

(b) The registered office of the Company is situated at Clarendon House, 2 Church Street, Hamilton HM 11, Bermuda and its head office and principal place of business is at Suites 6701-02 & 08B, 67/F, International Commerce Centre, 1 Austin Road West, Kowloon, Hong Kong.

(c) The share registrar and transfer office of the Company in Hong Kong, Tricor Tengis Limited, at 17/F, Far East Finance Centre, 16 Harcourt Road, Hong Kong.

(d) Unless otherwise stated, all references to times and dates in this circular refer to Hong Kong times and dates.

13. DOCUMENTS AVAILABLE ON DISPLAY

Copies of the following documents are available on display on the SEHK's website at ***www.hkexnews.hk*** and the Company's website at ***http://resources.citic/*** for the period of 14 days from the date of this circular:

(a) the report from PricewaterhouseCoopers on the unaudited pro forma financial information of the Group, the text of which is set out in Appendix III to this circular; and

(b) the written consent referred to in paragraph headed "10. Expert and Consent" in this appendix.