



CHINA SHANSHUI CEMENT GROUP LIMITED

中國山水水泥集團有限公司

(於開曼群島註冊成立的有限公司)

(股份代號：691)

# 2019

China Shanshui Cement  
Group Limited

Environmental, Social and  
Governance Report





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# 01 About the Report

This Environmental, Social and Governance Report (“the Report”) mainly discloses the performance of China Shanshui Cement Group Limited (the “Company”) and its subsidiaries (collectively referred to as the “Group” or “China Shanshui Group”) relating to environmental, social and governance (“ESG”) in 2019, so as to enable each stakeholder to have a better understanding of the Group’s sustainability philosophy, management approach, measures, relevant performances, etc. The Report is to be read in conjunction with the “Corporate Governance Report” section<sup>1</sup> of *China Shanshui Cement Group Limited 2019 Annual Report* (“2019 Annual Report”), so as to have a holistic view on the Group’s ESG performance.

## Reporting Period

Unless otherwise stated, the Report’s reporting period is consistent with the 2019 Annual Report of the Group, which is 1 January 2019 to 31 December 2019 (the “Reporting Period”). Where necessary, some of the content goes beyond the aforesaid period so as to enhance the comparability of the ESG Report.

## Reporting Organizational Scope

The Report covers the Company and its subsidiaries. Unless otherwise stated, all information disclosed in the Report was sourced from the Group’s documents and statistical reports, and the currency mentioned was in RMB.

## Reporting Guideline

The Report was prepared based on the “ESG Reporting Guide” under Appendix 27 to the *Rules Governing the Listing of Securities* (“Listing Rules”) issued by The Stock Exchange of Hong Kong Limited (“SEHK”). Moreover, it was prepared based on the principles of materiality, quantitative, balance and consistency to determine and disclose its contents. The Report is prepared in accordance with the “comply or explain” provision set out in the “ESG Reporting Guide” issued by SEHK.

## Access to the Report

The Report is published in two languages - Traditional Chinese and English. If there is any inconsistency between the two versions, the Traditional Chinese version shall prevail. You are welcome to obtain the Traditional Chinese and English versions of the Report in a PDF format at the Company’s website, [www.sdsunnsygroup.com](http://www.sdsunnsygroup.com), and SEHK’s HKEX news website.

## Board Statement

The Board of Directors (the “Board”) of the Company is responsible for evaluating and determining the ESG-related risks, and ensuring that appropriate and effective ESG risk management and internal control systems are in place. It has overall responsibility for the Group’s ESG strategy and reporting. The Board believes that the Report is true, accurate and complete.

## Comments and Feedbacks

If there are any comments or feedback for the Group’s ESG report, you are welcome to contact the Group by email at [anitalee@sdshanshuigroup.com](mailto:anitalee@sdshanshuigroup.com).

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<sup>1</sup>Please refer to pages 63-83 in the 2019 Annual Report.



# 02

## About the Group

China Shanshui Group is a large-scale enterprise group with cement and clinker production as its main businesses and one of the 12 national large-scale cement enterprises with key supports received from the country.

The Group is headquartered in Jinan, Shandong, and has six operating regions including Eastern Shandong Operating Region, Western Shandong Operating Region, Southern Shandong Operating Region, Shanxi Operating Region, Northeast China Operating Region, and Xinjiang Operating Region, covering 10 provinces (municipalities, autonomous regions) including Shandong, Liaoning, Shanxi, Tianjin, Inner Mongolia, Xinjiang, etc. . Currently, the Group's total annual cement production capacity exceeds 100 million tonnes. While consolidating the development of the cement industry, the Group has also been extending its industrial chain, with the aggregates, compounding and machinery industries taking shape.

The Group has been adhering to the concept of scientific development and strives to establish itself as a resource-saving and environmentally friendly enterprise. The subsidiaries of the Group have been certified to be in conformity to ISO 9001 Quality Management System, ISO 14001 Environmental Management System, ISO 50001 Energy Management System and OHSAS 18001 Occupational Health and Safety Management Systems. In addition, the Company's cement brand, "Shanshui Dong Yue", is rated as Shandong Famous Trademark and acquired the National Certified Quality Credit AAA Gold Medal.

The Group's products are widely used in key national projects such as railways, highways, airports and water conservancy, as well as urban and rural real estate markets, and have been successfully exported to more than 60 countries and regions such as the United States, Russia, Europe, Australia, the Middle East and Africa.

Over the years, the Group has been awarded the honorary titles of "Advanced Group of National Building Material System", "National May 1st Labor Certificate", "National Advanced Grassroots Party Organization", "National Model Worker's Home", "Shandong Role Model in Ethical and Cultural Progress", "Shandong 60 Years and 60 Brands", "Shandong Top 100 Taxpaying Enterprises", "Top 100 Listed Companies in Hong Kong", "China Top 500" and so on.





# 03

## Responsible Governance

### 3.1 Responsible System







Good corporate standards provide a fundamental framework for enterprises to enhance corporate value, to formulate its business strategies and policies, and to enhance its transparency and accountability, but they are also essential elements to promote its sustainable development. The Board is committed to maintaining good corporate governance standards. During the Reporting Period, pursuant to the requirements of the Company Laws, the Articles of Association, the requirements of the SEHK and relevant laws and regulations, with an aim to establish a comprehensive corporate governance structure and to speed up the improvement of internal management, the Group has continuously endeavored to amend and improve various systems, thereby it has established a relatively sound internal control system. The Board has established four committees, namely, the Audit Committee, Remuneration Committee, Nomination Committee and Executive Committee, for overseeing specific aspects of the Company's affairs. The audit department of the Group proceeded with supervision and examination on the implementation of the risk management and internal control system. In the future, the Group will continuously improve the establishment and implementation of the risk management and internal control system with reference to the guidelines of the listed companies issued by SEHK.

On legal, market and other aspects, enterprises will be affected by ESG-related issues including climate change, and thus need to respond and manage the caused impacts of varying extents. Therefore, the Group further strengthens the internal risk management and monitoring systems, in response to the market dynamics.

The Group highly values the management works of ESG and has built an environmental and social responsibility system involving top-down participation with a clear division of responsibilities, consisting of the Company's senior management, all relevant functional departments and subsidiaries that have significant impacts on the Group's ESG issues. By doing so, it ensures the determination, organization and implementation of the Group's ESG matters. The Group will continue to carry out ESG management works, to enable the ESG management works to be more professional and systematic.

## 3.2 Stakeholder Communication

It is an essential part of the Group's sustainable development to maintain communication with stakeholders. Stakeholders of the Group include shareholders and investors, employees, government, customers, suppliers, community and the public, etc. The Group maintains a good communication with stakeholders proactively through various channels, actively gathering stakeholders' comments and expectation regarding the Group's sustainability performance, and actively organizing and undertaking corresponding ESG actions in response.

Stakeholders	Expectation	Communication Channels	Frequency	Actions of the Group
 <b>Shareholders and investors</b>	Business capability Profitability Corporate governance	Shareholders' meetings Regular reports Results announcements	Annual/quarterly/irregular	Increasing production and operation quality and sustainable profitability Keeping optimizing corporate governance Conducting regular communication and strengthening information disclosure
 <b>Employees</b>	Employee rights and benefits Occupational health and safety Training and development	Employment contracts Employee activities Training courses	Regular/irregular	Constantly improving the human resource management system and protecting employee rights and benefits Improving employee occupational health and safety work Proactively implementing training to foster employees' knowledge and skills
 <b>Government</b>	Legal compliance Compliant operation Implementation of national policies	Policy formulation Work reporting Information disclosure	Regular/irregular	Strictly complying with laws and regulations and proactively cooperating with regulatory departments Strengthening corporate's compliant operation
 <b>Customers</b>	Product quality Service guarantee Product research and development	Customer feedback mechanism Customer service The Company's website	Annual/quarterly/irregular	Enhancing the quality assurance system to guarantee product quality Improving the customer service and feedback mechanism Promoting technological research and innovation to increase efficiency in production
 <b>Suppliers</b>	Fair and just procurement Cooperation with mutual benefits Sustainable win-win development	Contracts and agreements Meetings Supplier assessment	Regular/irregular	Strengthening procurement management measures and ensuring fair and transparent bidding and procurement processes Fulfilling contracts and agreements Holding procurement meetings for communication
 <b>Community and the public</b>	Community investment Harmonious development Environmental protection	Community support Community visits Philanthropic activities	Regular/irregular	Engaging in community support activities, such as targeted poverty alleviation Proactively organizing philanthropic activities such as volunteering activities Implementing environmental protection works



To gather wider stakeholder responses regarding to the Group's sustainability work, during the Reporting Period, the Group identified the pool of issues with reference to the SEHK's ESG Reporting Guide. The Group reviewed different groups of stakeholders and identified key stakeholders. Considering the practical situation, the Group firstly invited stakeholders including employees and the management to participate in a survey, to understand their opinions towards the Group's materiality of different issues. The Group understands the importance of continuous communication with stakeholders and will broaden the communication channels to maintain good and smooth communication.

A total of 485 responses were collected. According to the survey responses, the Group reviewed and validated the materiality of issues, and formulated the materiality matrix of issues for China Shanshui Group. The disclosure focus of this report is also drafted and reported based on the results of this materiality assessment.

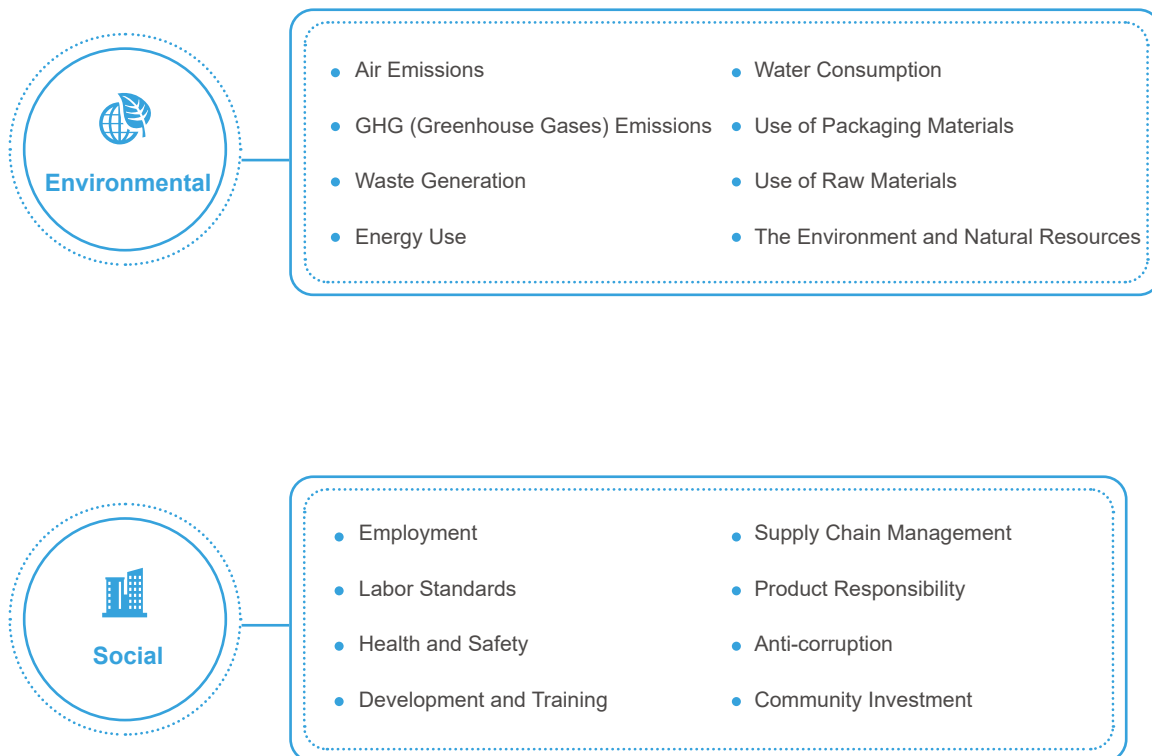
### The Group's 2019 Materiality Matrix







The material issues for this year are as follows. This report will report the Group's ESG performance during the Reporting Period, based on the issues and the requirements of related reporting guidelines.





# 04

## Adhering to Green Development

### 4.1 Tightening Emissions Management

The Group strictly abides by relevant laws, regulations, standards and provincial, municipal and local implementation provisions of environmental protection that have significant impacts on the Group relating to air and GHG emissions, discharges into water and land, generation and disposal of waste and minimizing significant impacts on the environment and natural resources, which include but are not limited to: the *Environmental Protection Law of the PRC*, the *Atmospheric Pollution Prevention and Control Law of the PRC*, the *Water Pollution Prevention and Control Law of the PRC*, the *Law of the PRC on the Prevention and Control of Environmental Pollution by Solid Waste*, the *Law of the PRC on Prevention and Control of Pollution from Environmental Noise*, the *Environmental Protection Tax Law of the PRC*, the *Clean Production Law of the PRC*, the *Energy Conservation Law of the PRC*, the *Emission Standards of Air Pollutants for Cement Industry*, the *Technical Specification for Application and Issuance of Pollutant Permit Cement Industry (HJ 847-2017)*, and the *Comprehensive Emission Standard for Regional Air Pollutants in Shandong Province*.

In accordance with the relevant legislation and rules, the Group formulated and implemented the *Environmental Protection and Energy Management System of Shanshui Group*, including two parts: environmental protection management and energy management. The main components of the environmental protection management system include: environmental protection management work procedures and requirements, organizational management and job responsibilities requirements, pollutant management and control, environmental protection equipment management requirements, pollutant emission standards, etc.; the main components of the energy management system include: work objectives and principles, organizational structure and responsibility, energy use management, system certification and carbon emissions, etc.

On November 6, 2019, the Group issued the *Notice on Strengthening the Group's Environmental Protection Management Work*, requiring all operating regions and subsidiaries to strengthen their fundamental environmental protection management and to achieve refined environmental management.

- ✔ To establish environmental protection management organizations to fully implement environmental protection responsibilities: Each operating region and subsidiary (branch) company establishes an environmental protection department with a dedicated environmental supervisor.
- ✔ To establish and improve the environmental protection management systems, to improve the environmental protection management filing, and to ensure that the environmental protection management ledger is complete.
- ✔ To strengthen on-site management to meet the requirements of environmental protection: Focusing on the sealed storage of raw materials and the covering of materials piled in the open air; dust and noise control in the production process; safe operation of environmental protection equipment, etc.
- ✔ To meet the discharge standards of pollutants and emissions shall not exceed the aggregate indicators: formulating a self-monitoring plan and strictly implementing the monitoring plan.
- ✔ To organize environmental protection training to improve the environmental awareness of all employees.
- ✔ To standardize the Group's environmental management process and to establish a reporting system for environmental issues.

In order to strengthen environmental management, to reduce pollutant emissions and to save resources, the Group continued to increase investment in environmental protection facilities. A total of 67 environmental protection technological improvement projects were approved in this year, including 9 dust removal facility improvements, 2 denitration and nitrogen reduction projects, 1 desulfurization improvement project, 9 noise control projects, 1 emission reduction project, and 41 unorganized dust seal improvement projects, 4 water saving and emission reduction wastewater projects, with a total investment of RMB187 million.

During the reporting period, the Group incurred two fines due to the impact of dust, with a total amount of RMB80,000. For this matter, the Group seriously investigated the causes, strengthened environmental protection investment, and strictly prevented the incident from happening again. Apart from this, the Group has not violated the above-mentioned relevant laws and regulations regarding the emission of exhaust gas and greenhouse gases, the discharge to water and land, the generation and disposal of waste.

A total of

**67** environmental protection technological improvement projects were approved in this year



## Air Pollutants

The major air pollutants generated during the Group's operation included nitrogen oxides, sulfur dioxide and soot. The clinker production companies under the Group have all been issued with pollutant discharge permits, and regularly entrust independent environmental monitoring agencies to monitor the emissions. The Group complies with the national integrated plan of industrial development and the overall deployment of urban air pollution control, and national and local environmental protection requirements, and through the use of advanced pollution control technology and refined management equips top quality air pollution prevention devices in each cement production line to strictly control the pollution and to reduce their impact on the environment.

The Group closely followed the release of new national and local environmental protection requirements and grasped the relevant policy requirements in time. In response to new or updated laws and regulations, the Group formulated emission reduction plans and adopted corresponding measures. Through sharing information, issuing notices, and monthly notifications in the group of environmental protection personnel of the Group, the Group provided to each subsidiary with suggestions and requirements for environmental protection management. By contacting them by phone, reviewing monthly production safety reports by operating regions and monthly environmental projection reports, the Group understood the implementation status of its subsidiaries and supervised them to facilitate implementation.



In 2019, the Shandong Provincial Government conducted a special campaign to focus on air pollution control. From April 16 to May 17, Shandong sent eight inspection teams to 16 cities to carry out a one-month special campaign on air pollution control. The Group paid close attention to the scope and inspection content of the special action, and shared information to the Group's environmental protection group. It required each subsidiary in Shandong to properly carry out the operation of particulate pollution prevention facilities, compliant discharge of pollutants, and to conduct the management and control of fugitive emissions of materials, road dust, and dust from open-pit mining and other aspects.



On April 14, 2019, the Shandong Provincial Department of Ecology and Environment issued the *Notice on Carrying Out Special Actions for the Investigation on Treatment of Potential Environmental Safety Hazards in the Companies with Environmental Risk Sources in the Province*. The Group correspondingly issued the *Notice on Properly Carrying out Environmental Hazard Investigation and Governance*, requiring the Group's subsidiaries in Shandong Province to refer to the "Hazard Checklist" for self-inspection and cooperate for inspection, and timely rectify the hidden environmental risks discovered by the self-inspection.

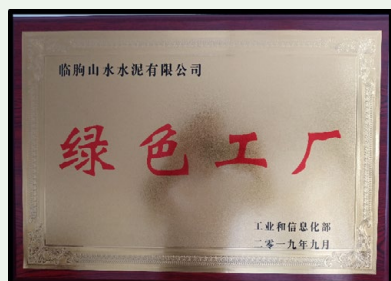


In May 2019, the Jinan Municipal Bureau of Ecology and Environment issued the *Notice on Properly Carrying out the Implementation of the Fourth Time Limit of Air Pollutant Emission Standards in Shandong Province*. The Group communicated information in a timely manner and shared it to the Group's environmental protection group, and requested subsidiaries in Shandong to determine whether they are located in the key control area determined by the local government. For subsidiaries that do not meet the emission limits for the fourth period of time, they should consider the upgrading plans ahead of time, and implement them during the downtime for staggered production halt in June and August.





Installing sealing covers to the belt conveyers



Linqu Shanshui was awarded the title of Green Factory. In 2019, the Group has four subsidiaries in total that were awarded the title of the fourth batch of Green Factories, including Pinyin Shanshui, Liaocheng Shanshui, Yishui Shanshui and Linqu Shanshui.

During the Reporting Period, the Group carried out technical improvements such as denitration, ammonia reduction and desulfurization to reduce atmospheric pollutant emissions and to reduce the use of ammonia water.



Huixian Shanshui implemented ultra-low emission standards for pollutants in 2019: the concentration of nitrogen oxides shall not exceed 100 mg / m<sup>3</sup>, the concentration of sulfur dioxide shall not exceed 35 mg / m<sup>3</sup>, and the concentration of soot shall not exceed 10 mg / m<sup>3</sup>. Huixian Shanshui carried out a stage by stage combustion improvement of the denitration system, which effectively reduced the original concentration of nitrogen oxides. Without spraying ammonia water, the concentration of nitrogen oxides decreased from 700-750 mg / m<sup>3</sup> before improvement to 350-400 mg / m<sup>3</sup> after improvement.

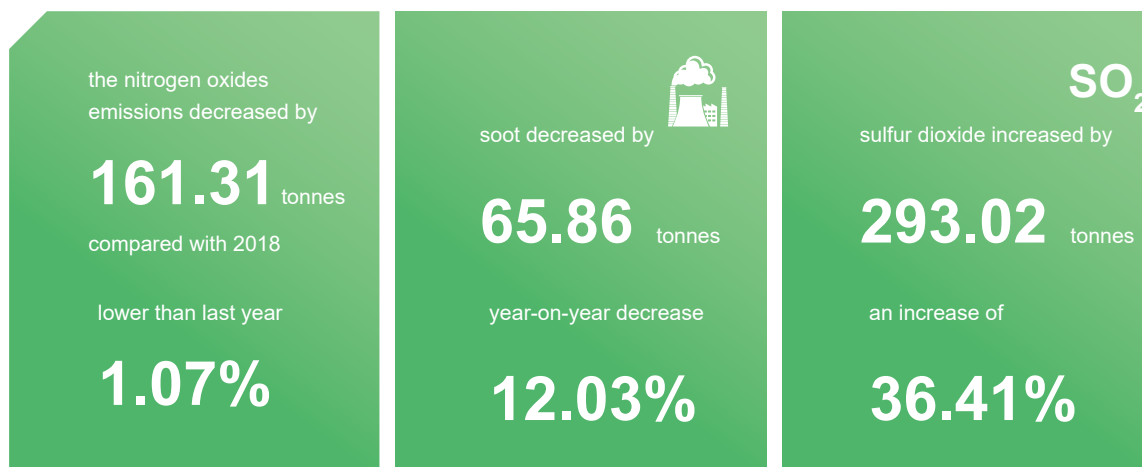


In 2019, Linfen City issued the *Notice on the Implementation of Differential Production Management and Control of Key Regional Industrial Enterprises in the Non-Heating Season*. In order to meet the regulatory requirements, Linfen Shanshui improved the denitration system, and the converted concentration of nitrogen oxides was reduced from 141 mg / m<sup>3</sup> in April 2019 to 64 mg / m<sup>3</sup> in May, reaching the ultra-low emission standards.



In order to meet the requirement of the fourth period limit of atmospheric pollutants in Shandong Province, which requires that the nitrogen oxides emission concentration should be less than 100 mg / m<sup>3</sup>, Zibo Shanshui carried out the denitration improvement for kiln 2 and kiln 1 in April and May respectively. After the technical improvement, with the nitrogen oxides emission control standard of 150 mg / m<sup>3</sup> remaining unchanged, the ammonia water consumption was reduced from 900 kg / h to 600 kg / h, saving about 300 kg of ammonia water per hour and saving nearly 7 tonnes of ammonia water per day. The emission concentration of nitrogen oxides of the two kilns were steadily controlled at 80-90 mg / m<sup>3</sup>, which reached the ultra-low emission standard. The nitrogen oxides emissions were reduced by 800 kg per day than before the renovation, which also effectively reduced fugitive emission of ammonia.

The Group's clinker production in 2019 increased by 13.57% compared with 2018, but the nitrogen oxides emissions decreased by 161.31 tonnes compared with 2018 and 1.07% lower than last year; soot decreased by 65.86 tonnes, a 12.03% year-on-year decrease; sulfur dioxide increased by 293.02 tonnes, an increase of 36.41% compared to 2018. The increase in sulphur dioxide emissions was due to the use of limestone with a higher sulphur content, and coal gangue, which has high sulfur content (Please refer to footnote 4 of Section 4.4 for details).



## GHG

The Group strictly implements the "13th Five-Year" plan outline, conscientiously implements the Party Central Committee and the State Council's deployment, and firmly focuses on the five-sphere integrated plan and the four-pronged comprehensive strategy, firmly establishes the development ideals of innovation, coordination, green, open and sharing, implements the basic national policy of resource conservation and environmental protection, accelerates the conversion of old and new kinetic energy, cultivates and practices the concept of resource saving and recycling, and actively carries out carbon emission verification to promote green and low-carbon development.

In order to ensure the accomplishment of the "13th Five-Year" energy-saving and emission-reduction targets, the Group has established an internal energy management system and formulated an energy management policy of "complying with laws, cherishing resources, saving energy and reducing consumption, and competing for the best in indicators". The Group actively promotes energy-saving technological improvement of subsidiaries to improve energy efficiency, to reduce energy consumption, and to achieve the overall targets of energy conservation and consumption reduction. For details of related energy saving measures, please refer to the part of Energy in Section 4.2 of this report.

During the reporting period, the Group's clinker production increased by 13.57% compared with 2018. The carbon dioxide emissions of all clinker production companies was 34,535,335 tonnes, an increase of 12.3% from 2018. The carbon dioxide emissions per tonne of clinker production was 0.86 tonnes, a decrease of 1.1% from 2018.



## Wastes

The major non-hazardous wastes generated by the Group are general production and domestic wastes, while the major hazardous waste is used machine oil from large reducers. All wastes have been classified and treated by the Group according to national environmental protection requirements, and they were recycled and reused as much as they could, according to the three principles, reduce, reuse and recycle, so as to minimize the environmental impacts. In the course of operation, the Group purchases and uses high-quality and long-life fittings, which reduces the frequency of replacement. It also conducts oil sampling analysis of large equipment, replaces the oil based on its quality, and extends the oil change interval of some equipment from 2 years to 4 years, reducing waste oil generation and new oil consumption.

The Group preferentially recycles recyclable wastes and then re-uses the same, and for non-recyclable wastes, depending on their nature they are either burned in kilns or treated by entrusted qualified institutions. The waste engine oil is recycled and used for lubricating equipment parts such as stackers and reclaimers, chain conveyors, tracks of inclined bucket chain clinker conveyers, etc., which do not require high lubrication accuracy.

The Group also attaches great importance to the comprehensive utilization of resources in the production process and actively consumes industrial waste. The Group effectively uses converter slag and electric furnace slag produced by iron and steel companies, fly ash and desulfurized gypsum from coal-fired power plants, and sulfuric acid slag and fluorogypsum from chemical plants: sulfuric acid slag, converter slag, steel slag, etc. are used as part of raw materials to replace traditional iron raw materials, while fly ash replaces natural shale as aluminum raw material, all of which is ground into raw material and calcined into cement clinker; the use of fly ash and coal-fired slag as volcanic ash mixture, and to replace natural dihydrate gypsum with desulfurized gypsum and fluorine gypsum; after processing with advanced production technology, various types of high-quality cement can be produced. This process reduces the environmental pollution of industrial solid waste while turning waste into treasure, which has both economic benefits and social and environmental benefits. During the reporting period, more than 11.33 million tonnes of industrial solid waste were processed.



more than

**11.33** million

tonnes of industrial solid waste were processed

## 4.2 Cherishing and Saving Resources

### Energy

In order to improve energy efficiency and to reduce energy consumption, the Group continuously carries out energy-saving technological improvement and production optimization. In 2019, the Group invested RMB127 million for energy-saving technological upgrades, upgrading grate coolers, air compressors and preheaters, and for electrochemical water treatment facilities to use waste heat power generated, all of which improved energy efficiency and reduced the consumption of coal, electricity and water and costs, and contributed to the national energy conservation and consumption reduction work.

During the Reporting Period, the Group's equivalent consumption of standard coal was 4,517,434 tonnes, and its energy consumption per RMB10,000 of output value was 1.59 tonnes of standard coal. The physical coal consumption of clinker was 124.4 kg/tonne, which was 2 kg/tonne lower than in 2018. At the same time, in 2019, China Shanshui Group's waste heat power generation amounted to 1.324 billion kWh, equivalent to saving 162,700 tonnes of standard coal and reducing 405,000 tonnes of carbon dioxide emissions.

Yishui Shanshui and Zaozhuang Chuangxin won the CEM Insight Awards for Leadership in Energy Management

Yishui Shanshui and Zaozhuang Chuangxin, subsidiaries of the Group, were awarded the CEM Insight Awards for Leadership in Energy Management in 2019, issued by CEM (Clean Energy Ministerial), for elevating global awareness of the benefits of certification to the ISO 50001 energy management system standard and contributing to global knowledge of energy management implementation.

## Water Resources

The Group advocates saving water and making full use of water resources, and strictly complies with the requirements of the environmental assessment and approval, actively cooperates with local environmental protection departments, and strives to achieve no sewage discharge. All water used for production is recycled in the process of waste heat power generation and equipment cooling, and domestic wastewater is treated for road spraying, greenery irrigation, landscape beautification and other aspects. The Group stipulates that the water used for road spraying and greenery shall be given priority to use recycled water, and avoid the use of water resources such as groundwater and tap water.

The Group continues to carry out domestic sewage treatment to ensure that the sewage reached the requisite standard and was reused, and at the same time, repairs or replaces the faulty equipment in a timely manner. The work completed during the year included: Yingkou Shanshui, Bohai Cement, Panjin Shanshui, Juye Shanshui, etc. invested a total of more than RMB1.3 million to replace domestic sewage treatment facilities and to ensure zero sewage discharge; To strengthen the multiple recycling of sewage, Jining Shanshui replaced the sludge filter system, Aqi Shanshui built a new drainage basin, and Dalian Shanshui added a waste heat power generation cooling tower.

During the Reporting Period, with an increase in clinker and cement production, the use of water resources was reduced by 2.9 million cubic meters throughout the year. In terms of water sourcing, the Group takes full consideration of water sourcing during design stages of projects and understands local water stresses and adopts appropriate water withdrawal measures. There were no difficulties in sourcing water.



invested a total of more than

RMB **1.3** million

to replace domestic sewage treatment facilities



the use of water resources was reduced by

**2.9** million cubic meters

## 4.3 Constructing Ecological Mines

The mining of the Group adheres to the concept of green and harmonious development, and constructs green mines according to local conditions, in order to reduce the impact of mining activities on the mining area and the surrounding environment. As China pays increasing attention to the management of mine resources, relevant departments have put forward new requirements for limestone mining, that green mine construction must be carried out for the use of mines. The Shandong provincial government also stipulates that by the end of 2020, the green mine construction rate of large, medium and small mines in the province should reach 90%, 80% and 50% respectively. The Group strictly promotes the construction of green mines in strict accordance with relevant regulations to meet relevant requirements and to fulfill its corporate social responsibilities. Some of the pioneering mines have undergone tremendous changes in the mining area, and the construction of green mines received recognitions from the local government and authorities.

In August 2019, the Group deployed engineering and technical personnel from the Southern Shandong and the Eastern Shandong Operating Regions to establish a mine resource management office to supervise and provide technical guidance to the mine resources management of all clinker-producing subsidiaries within the Group. Especially to address the higher requirements put forward by the country on green mine construction, the Group requires relevant subsidiaries to prepare and review the green mine implementation plan in accordance with the green mine construction requirements, and to construct according to the plan approved by the local natural resources bureaus and experts. After the construction is completed, the enterprise self-assessment as well as a third-party green mine construction assessment shall be carried out, and to receive the green mine acceptance by the provincial and municipal natural resources departments. As of the end of 2019, a total of 4 mining areas of the Group passed the selection and acceptance of national-level green mines. All mines in the Shandong region have prepared implementation plans for green mine construction and conducted reviews, while mines in other regions are also carrying out corresponding work.



At the same time, in order to maximize the utilization of mine resources, the Group strictly follows the development and utilization plan for comprehensive utilization of resources; implements sub-segment mining; actively promotes online analysis and intelligent ore matching system for areas with uneven limestone quality; sets up monitoring systems throughout the mine areas to monitor the comprehensive utilization of resources and monitor limestone in a reasonable mix, so to ensure the quality of clinker and to initially achieve intelligent and digital mining.

## Case: Zaozhuang Chuangxin

The Hutishan Mine of Zaozhuang Chuangxin is undergoing digital construction, which rationally matches existing resources to realize the full utilization of existing mine resources, and rationally matches the resources of Zaozhuang Shanshui Mine, to maximize the utilization of mine resources.

### Mining equipment

According to the requirements of green mine construction, the mine transportation special vehicles, integrated drilling rigs, new type of excavation equipment were replaced, and sprinkler vehicles were equipped to meet the requirements of local environmental protection and mine standardized mining.

### Intelligent and digital mining

On-line detectors, intelligent ore matching systems, and camera monitoring of the entire mining area and other related intelligent monitoring equipment were equipped, initially achieving intelligent and digital mining.

### Reasonable resource mix

Making full use of the characteristics of low-calcium and low-magnesium resources in the main mine, and the high-calcium and high-magnesium resources of the Zaozhuang Shanshui mine, resources are rationally matched to realize the maximization of comprehensive utilization of mine resources.

## Green Mines



## Intelligent and Digital Mining



## 4.4 Environmental Performance<sup>2</sup>

The Group's environmental performance in emissions and use of resources during the Reporting Period is listed in the table below.

Indicators	Unit	2019	2018	2017
Basic information				
Clinker production	Tonnes	40,078,458	35,291,000	35,225,700
Air pollutants <sup>3</sup>				
Nitrogen oxides	Tonnes	14,900.26	15,061.57	16,979.71
Sulfur dioxide	Tonnes	1,097.73 <sup>4</sup>	804.73	1,140.28
Soot	Tonnes	481.60	547.39	752.32
GHG <sup>5</sup>				
Carbon dioxide	Tonnes	34,535,335 <sup>6</sup>	30,748,100	30,145,500
Carbon dioxide emissions per tonne of clinker production	Tonnes	0.86	0.87	0.86
Use of resources <sup>7</sup>				
Electricity consumption	kWh	3,703,702,191.37	3,150,000,000.00	3,198,347,817.42
Electricity consumption per tonne of clinker production	kWh	55.73	55.15	/
Comprehensive electricity consumption per tonne of cement production	kWh	74.95	76.50	/
Raw coal consumption	Tonnes	4,987,315.78	4,464,000.00	4,602,993.17
Raw coal consumption per tonne of clinker production	Tonnes	0.124	0.126	0.130
Total water consumption	Tonnes	10,762,433	13,686,773	12,175,033
Water consumption per tonne of clinker production <sup>8</sup>	Tonnes	0.24	0.36	0.32
Water consumption per tonne of cement production <sup>9</sup>	Tonnes	0.26	0.38	0.34
Packaging bags of cement	Pieces	201,545,797	194,378,793	251,142,600
Resource recycling				
Electricity generated from waste heat recovery	kWh	1,324,006,348.69	1,164,000,000.00	1,137,062,055.22

<sup>2</sup>As the Group's environmental impacts mainly came from production activities, the environmental performance only included relevant data from the Group's production facilities.

<sup>3</sup>As the Group's air pollutant emissions mainly came from the clinker production, the pollutant-related data only included all 34 clinker production enterprises and were based on the real-time monitoring data of projects. The data scope of 2019 included Xinghao Cement and Hequ Zhongtianlong, because: Xinghao Cement was reacquired by the Group in 2019; and the online monitoring systems of Hequ Zhongtianlong passed the acceptance test, so the emission data of nitrogen oxides, sulfate dioxide and soot in 2019 were used.

<sup>4</sup>The increase in sulfur dioxide emissions was mainly due to: (1) Xinghao Cement's own mines were not mined, and the purchased local limestone contained high sulfur content, which resulted in high sulfur dioxide emissions; (2) in response to the requirements of local governments, Liaoning Gongyuan and Bohai Cement recycled the local waste residue, coal gangue, by using it as a raw material ingredient. Due to the high sulfur content in coal gangue, the overall sulfur dioxide emissions have increased; and (3) the limestone of Chifeng Yuanhang had high sulfur content and thus high sulfur dioxide emissions.

<sup>5</sup>As the Group's GHG emissions mainly came from the clinker production, the data scope only included all 34 clinker production companies. The calculation of carbon dioxide was based on the *Accounting Method and Reporting Guideline for Greenhouse Gas Emissions of Cement Production Enterprises in China*.

<sup>6</sup>According to the requirement to the *Notice of Implementing 2019 Carbon Audit Reporting and Verification and Formulating Carbon Emission Monitoring Plans*, the regional administrative department in China will entrust third-party audit institutions to verify the provided GHG data of the Group. The review of the audit report will be finished before 31 May 2020. The verified GHG emission data of the Group according to the review shall prevail. The 2019 GHG emission data may be properly adjusted with reference to the audit result.

<sup>7</sup>Among the resource consumption data, except for the raw coal consumption data, which only included the kiln enterprises, the scope of other data included the Group's integrated kiln-milling enterprises (including the kiln enterprises) and grinding enterprises, a total of 81 companies.

<sup>8</sup>The water consumption per ton of clinker production was calculated based on the water consumption of clinker production.

<sup>9</sup>The water consumption per ton of clinker production was calculated based on the water consumption of cement production.



## 05

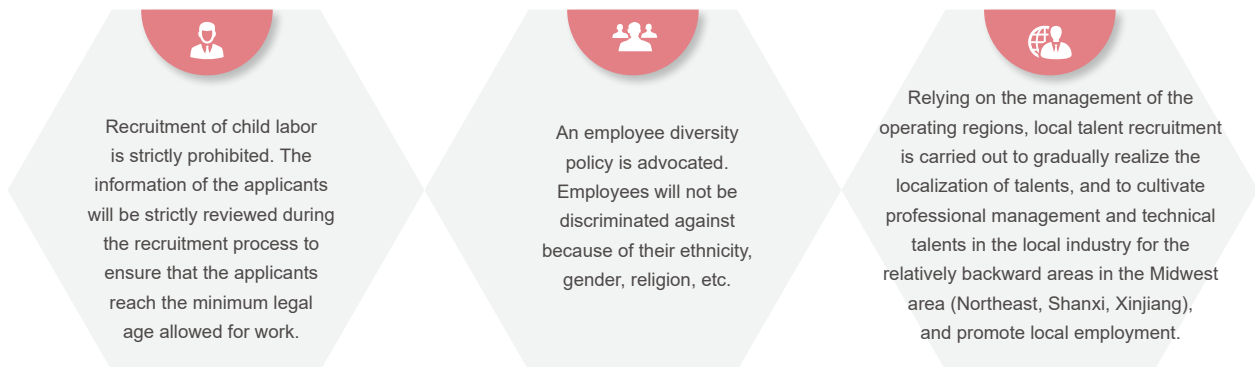
## Promoting Talent Development

### 5.1 Protecting the Rights and Interests of Employees

The Group upholds the people-oriented philosophy to establish an open, fair and just selection and employment system, and strives to build a respectful and diversified work environment that promotes talent development.

The Group strictly complies with relevant laws and regulations that have significant impacts on the Group relating to compensation and dismissal, recruitment and promotion, working hours, rest periods, equal opportunity, diversity, anti-discrimination, other benefits and welfare and prevention of child labor and forced labor, including but not limited to the *Labor Law of the PRC*, the *Labor Contract Law of the PRC*, the *Social Insurance Law of the PRC*, the *Law of the PRC on the Protection of Minors*, the *Provisions on the Prohibition of Using Child Labor* and Hong Kong's *Employment Ordinance*. Moreover, the Group has established and implemented the *Regulations on Recruitment Management of Shanshui Group* and other human resource management systems.

The Group formulated the Regulations on *Recruitment Management of Shanshui Group*, and recruitment is carried out based on the principles of openness, fairness, justice, equal competition and merit-based selection.



After commencement of employment, the Group enters into labor contracts with employees and pays various social insurances (including basic pension insurance, medical insurance, unemployment insurance, maternity insurance, work-related injury insurance) and housing provident fund in accordance with laws. For personnel in production and related positions, the Group also provides personal accident insurance to them for increased protection.

The Group is committed to providing a broad platform for all types of talents' development. The Group has formulated and implemented the *Selection, Training and Adoption Plan for Reserve Talent of Shanshui Group*, and arranged promotions based on employees' work capabilities and performance.

The Group respects employees' rights of taking rest and leaves. The *Management Measures for Employee Attendance of Shanshui Group* and the *Implementation Measures for Paid Annual Leaves of Shanshui Group* have been formulated and implemented, stipulating that employees should not work more than 8 hours per day or more than 40 hours per week. Employees enjoy various statutory holidays, such as weekly rest days, statutory holidays, marriage and compassionate leaves, paternity leaves, paid annual leaves according to national regulations. The Group strictly controls overtime work and the absence of rest on statutory holidays to prevent forced labor. In addition, appropriate subsidies are also provided for work outside of normal working hours in accordance with relevant regulations.

The Group has established a reasonable remuneration system, regularly reviewed its remuneration packages based on market conditions, corporate's economic profits, and employee's salary levels to affirm employees' efforts, and rewarded or penalized employees based on the Group's operating conditions at half-year and year-end.





The Group actively takes the lead in complying with the regulation of staggered production halt. During the production halt, relevant compensation is paid in accordance with national regulations to protect the legal rights and interests of employees. At the same time, the Group has formulated a reasonable salary distribution system and reward and punishment measures during normal production months. The overall compensation does not decrease due to the reduction of working hours, but increases every year.

For employees leaving the company, the Group communicates with employees in accordance with the *Regulations on Resignation Management of Shanshui Group*, to understand their reasons for leaving. The Group assists employees in completing the resignation procedures according to situations and implements compensation for resignation. In addition, necessary rectifications are carried out by the Group for improvement.

During the Reporting Period, the Group strictly complied with the aforementioned laws and regulations relating to compensation and dismissal, recruitment and promotion, working hours, rest periods, equal opportunity, diversity, anti-discrimination, other benefits and welfare and prevention of child labor and forced labor. Additionally, there were no cases involving hiring of child labor or minors, or discrimination against women in employment.

	2019	2018
Total number of Employees <sup>10</sup>	17,968	18,280
Total Employees by Gender		
Male	13,555	13,598
Female	4,413	4,682
Total Employees by Operating Regions		
Headquarter	233	265
Eastern Shandong Operating Region	4,500	4,253
Western Shandong Operating Region	4,652	4,810
Southern Shandong Operating Region	1,476	1,535
Northeast China Operating Region	4,397	4,915
Shanxi Operating Region	2,178	2,007
Xinjiang Operating Region	532	495
Total Employees by Job Responsibility		
Production	10,767	9,967
Sales	1,176	1,177
Technician	1,620	2,191
Finance	690	671
Administration and Management	1,221	1,471
Others	2,494	2,803
Total Employees by Education Level		
College or above	5,037	4,987
Technical secondary school, technical school and senior high school	7,449	9,525
Secondary school and below	5,482	3,768
Total Employees by Age		
Below 20 years old	51	41
20-30 years old	2,972	3,372
30-40 years old	6,456	6,305
40-50 years old	5,428	5,564
Above 50 years old	3,061	2,998

<sup>10</sup>During the Reporting Period, all employees of the Group were full-time. There were no part-time employees.



## 5.2 Strengthening Safety Management

The Group firmly establishes the principle of “safety comes first, and life is of paramount importance”, and implements the work safety concept of “precaution is crucial”. The Group strictly complies with laws and regulations at national, provincial, prefectural and local level that have significant impacts on the Group relating to the provision of a safe working environment and the protection of employees from occupational hazards, including but not limited to the *Work Safety Law of the PRC*, the *Law of the PRC on Safety in Mines*, the *Law of the PRC on the Prevention and Treatment of Occupational Diseases*. In addition, the Group has formulated and implemented the *Regulations on the Work Safety Management of Shanshui Group*, the *General Rules for the Use of Safety Labels of Shanshui Group* and other internal policies.

The Group has carried out a safety management accountability system. All subsidiaries have established their leading groups on health and safety management led by general managers, actively fulfilling the obligations as the chief responsible persons and implementing enterprise responsibility. In 2019, the Group took the “establishment of standardization of safety management” as leverage and proactively promoted enterprise’s establishment of standardization of first level safety management, in order to comprehensively improve enterprise safety management and improve the on-site health and safety protection facilities.

The Group standardizes employees’ safe operation by improving the safe production management system. In 2019, the Group formulated the *Safety Management Provisions on Use of Temporary Electricity*, the *Management Provisions on Stockyard Operation Safety* and other safety management regulations to strengthen the standards and guidance on related safe operation behaviors. In addition, the Group revised and improved standards of safety audits. Self-inspection of operating regions and mutual inspection between operating regions were conducted to comprehensively enhance the level of enterprise safety management.

The Group continues to increase safety investment and standardize the health and safety protection facilities at production sites, including the intellectualization and upgrade of on-site production equipment and facilities, so as to control occupational health hazards such as dust and noise; to improve on-site operating conditions; and to equip employees with labor protective equipment such as safety helmets and dust masks.

The Group actively implements on-site investigation for potential safety hazard, control and rectification measures with classification. In addition, the Group carries out inspection of on-site occupational hazards, so as to achieve closed-loop management.

To raise employees' awareness on health and safety and safety management skills, the Group organizes various safety training for employees. The Group organizes trainings for employees to study companies' experiences and practices on "standardization of first level safety management" to promote every subsidiary's level of standardization of safety management. In addition, the Group invites national emergency rescue experts to provide training on emergency response and emergency rescue practices to improve employees' emergency response and rescue ability. During the Reporting Period, the Group's attendance in health and safety trainings reached 55,445 person-times, and attendance in various emergency drills was 19,896 person-times.

At the same time, the Group continues to strengthen occupational health supervision to ensure employees' health. The Group actively carries out annual body checkups of occupational health for frontline employees and strengthens occupational health supervision over employee. More than 90% subsidiaries carried out annual medical checkups for employees in general positions and paid close attention to the health of employees.

The Group has also actively implemented newly revised regulations and standards, such as the new requirements for the employment of "registered safety engineers" in the *Work Safety Law of the PRC*. Each subsidiary strongly supports and encourages personnel in safety management and technical positions to obtain the certificate of registered safety engineer. During the Reporting Period, the Group had 49 registered safety engineers, which improved the capability of the Group's health and safety management personnel and strengthened health and safety management.

During the Reporting Period, the Group did not violate the abovementioned national laws and regulations on providing a safe working environment and protecting employees from occupational hazards.



the Group's attendance in health and safety trainings reached

**55,445** person-times



Number of work-related fatalities

**0**



Lost days due to work injury

**125**

In addition, the Group organized emergency drills, providing drills on various emergencies such as production safety and fire safety, and provided relevant knowledge training.

## Safety Training





## Emergency Drills



## 5.3 Boosting Career Development

The Group believes that strengthening technical training is an effective way to enhance corporate performance and enhance corporate competitiveness. The Group holds high-standard and high-quality technical training activities every year. According to the current development requirements of the Group, employee training is divided into two categories: orientation training for new employee and on-the-job training.

### Orientation training for new employees

The Group provides pre-job training for new recruits, aiming to enable new employees to gain a better understanding of the company through onboarding training for a comprehensive understanding of the company's development, corporate culture, business processes, management systems, etc., in order to quickly integrate and adapt to the needs of the job.

### On-the-job training

In line with the actual situation, the Group provides training for in-service employees in a planned manner to improve the skills required for their work, improve work performance, and meet the development requirements of the Group. On-the-job training is implemented at two levels, the Group, and sub-branches and departments (offices), and the training work is carried out on the principle of "mainly internal training, supplemented by external training" and equal emphasis on theories and practical skills.



During the Reporting Period, training activities held by the Group are outlined as follows:

#### Technical Exchange Meeting on Effective Operation of Rotary Kiln

In order to enhance the level of equipment's technical management and effective operation rate of the rotary kiln system within the Group, and to ensure trouble-free and continuous operation of the rotary kilns in 2019, the Group held a technical exchange meeting on effective operation of rotary kiln. The persons-in-charge of the clinker enterprises of the Group, deputy managers of equipment and relevant technical personnel attended the meeting. At the same time, relevant technical experts were invited to communicate and provide guidance on site.



#### Technical Exchange Meeting on Maintaining Operation and Increasing Efficiency

In order to improve the fine, standardized, scientific and innovative management of rotary kiln equipment, to strengthen the establishment of technical personnel, and to improve the technical level of equipment management, the Group held a technical exchange meeting on maintaining operation and increasing efficiency.



#### Special Training on Knowledge of Quality Management

In order to actively respond to the spirit of the 2019 National "Quality Month" activity with the theme of "creating China's product quality and building China's strength in product quality", the Group implemented the work plan for its 2019 "Quality Month" activity. The Group based the activities off of the theme of "focusing on quality improvement and becoming the best in the region", strengthened all employees awareness of quality, and strengthened studying laws such as the *Product Quality Law*. The Group invited the director of Shandong Provincial Cement Quality Inspection Station to held a special training on knowledge of quality management. A total of more than 2,000 people participated in the training through attending on-site or video conferences.



#### Quality Inspector Skills Competition

In order to vigorously promote the spirit of labor and craftsmanship in the new era, to implement the Group's talent strategy, and to train and select "Shanshui craftsmen" that meet the needs of the era and industry development, the Group held the 2019 quality inspector skills competition.



### Various Skill Competitions

In order to create a learning atmosphere of "learning technology, practicing skills and competing skills", the Western Shandong Operating Region held the first electrical skills competition. Contestants from 17 kiln and milling companies in the operating region participated in the competition.

In order to inspire and mobilize the vast number of employees to learn skills, the Southern Shandong Operating Region organized the 2019 quality inspection, central control skills competition.



### Advanced Management Seminars

In order to improve the overall capability of the leading cadres and enhance the decision-making ability of the managers of each subsidiary, the Southern Shandong Operating Region held seminars of senior management with Jinan University in accordance with the requirements of the Group's talent development strategy.



### Special Training for Managers' Professional Capabilities Improvement

In order to further enhance comprehensive capabilities of the managers of various companies in the Shanxi Operating Region and the professional capabilities of administrative staff, the Shanxi Operating Region held a special training on the improvement of professional capabilities.





## 06

## Guaranteeing Operation Management

### 6.1 Establishing Win-win Procurement

Realizing continuous win-win development with partners is a goal of the Group's supply chain management. With regard to this, the Group always upholds the basic principles of “openness, fairness and justice”, and standardizes supply chain management with reference to the Group's six basic regulations, namely the *Management Measures for Monitoring and Control of Procurement and Supply of Shandong Shanshui*, the *Management System for Monitoring and Control of Resources Procurement and Supply of Shandong Shanshui*, the *Bidding Management System of Shandong Shanshui*, the *Management System for Large Facility Central Warehouse of Shandong Shanshui*, the *Management Measures for Control of Centralized Procurement and Supply of Shandong Shanshui*, and the *Implementation Plan of Coal Operation Conglomeration of Shandong Shanshui*.

The Group strives to implement centralized procurement and supply. Centralized procurement and supply is adopted for general, shared, large quantity and resource-based materials. The Group has established a centralized procurement platform. The Group has entered into long-term strategic cooperation agreements with international, domestic and industry first-class manufacturers. The Group has established a stable direct supply cooperation relationship and achieved win-win cooperation between upstream and downstream enterprises in the industry chain.



When selecting suppliers, the Group will take full consideration of the following factors: supplier qualifications, operating performance, production scale, supply capacity, product quality, price, and social reputation. In order to further reduce the potential environmental and social risks in the supply chain, the Group requires suppliers' production and operations to comply with environmental protection policies and meet environmental protection requirements, with quality, environmental management system certification and occupational health and safety management systems. At the same time, according to the needs of procurement, the Group will conduct in-depth field visits to suppliers to understand the actual situation of suppliers, and communicate with suppliers on major safety and environmental protection related issues on a regular basis, urging them to improve the problems found and ensure a stable supply of products.

When purchasing raw materials, the Group pays attention to the quality of raw materials provided by suppliers and strictly controls the risks posed by the supply of raw materials. The procurement management department of the Group will conduct market research in advance at the initial stage of procurement, and then go to the site for sampling and testing together with the quality control room, and carry out bidding and procurement according to the raw material quality standards of each subsidiary; if products are found not to meet the contractual requirements during product delivery, the Group will rectify the problems according to the measures formulated by the Group, such as the *Control Procedures for Nonconformity*, the *Control Procedures for Monitoring and Measurement of Products* and the *Technical Requirements for Procurement of Materials*. In case of any objection relating to quality, a product quality arbitration inspection will be carried out by the nationally recognized and provincial or above level's cement quality supervision and inspection agency.

The Group also responds to national environmental protection requirements by comprehensively utilizing resources of waste residue. Through active negotiations with the power plants surrounding the subsidiary companies, the Group obtained direct supply resources such as fly ash and desulfurized gypsum. By doing so, it is able to alleviate the situation of tight supply of raw materials, to meet production needs, to save procurement funds, which also creates good social benefits.

## Case

The Group entered into a strategic cooperation agreement with Huaneng Jinan Huangtai Power Plant Co., Ltd. in 2019. The by-product, fly ash and desulfurized gypsum, produced by the power plant will be directly supplied to the subsidiaries of the Group, which creates good economic benefits. At the same time, the two parties have established an effective communication mechanism, communicated and cooperated actively and extensively, and fulfilled enterprises' environmental protection responsibilities, thereby achieving a win-win cooperation in the supply chain.



Communication and cooperation with Huaneng Jinan Huangtai Power Generation Co., Ltd.



The Group communicated with the management of Huaneng Jinan Huangtai Power Generation Co., Ltd. to deepen strategic cooperation.





## 6.2 Guaranteeing Product Quality

Each subsidiary of the Group has obtained the three system certifications of environment, quality and occupational health and safety management and carried out production and related management activities in strict accordance with the system standards. The Group strictly complies with relevant laws and regulations that have significant impacts on the Group relating to health and safety, advertising, labelling and privacy matters relating to the products and services provided and methods of redress, including but not limited to the *Product Quality Law of the PRC*, the *Standardization of the PRC*, the *Metrology Law of the PRC*, the *Regulation of the PRC on the Administration of Production License for Industrial Products*, the *Work Safety Law of the PRC*, the *Contract Law of the PRC*, the *Advertising Law of the PRC*, the *Trademark Law of the PRC*, the *Patent Law of the PRC*, the *Law of the PRC on the Protection of Consumer Rights and Interests*, the *Rules for Implementation of Manufacturing License for Cement Products* and the *Quality Control Regulations for Cement Manufactures*. During the Reporting Period, the Group did not have any cases that violated the aforementioned laws and regulations relating to health and safety, advertising, labeling and privacy matters relating to the products and services provided and methods of redress. No product sold or shipped was subject to recalls for safety and health reasons.

✓ *Product Quality Law of the PRC*

✓ *Standardization of the PRC*

✓ *Metrology Law of the PRC*

✓ *Regulation of the PRC on the Administration of Production License for Industrial Products*

✓ *Work Safety Law of the PRC*

✓ *Contract Law of the PRC*

✓ *Advertising Law of the PRC*

✓ *Trademark Law of the PRC*

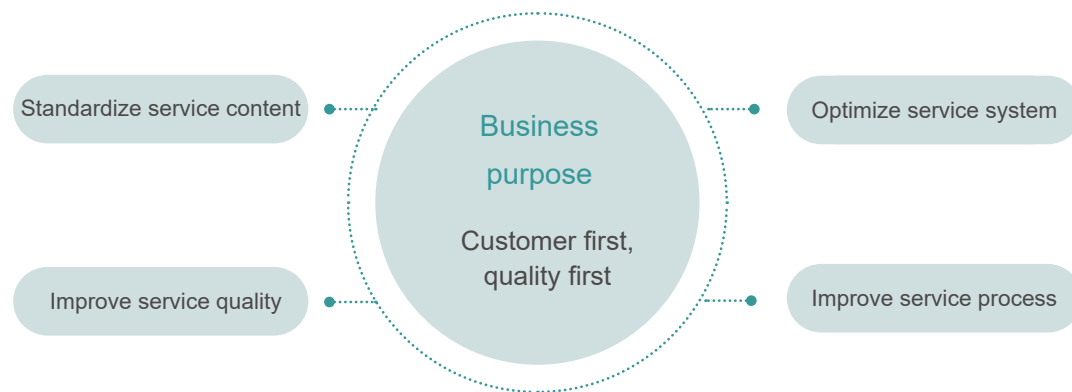
✓ *Patent Law of the PRC*

✓ *Law of the PRC on the Protection of Consumer Rights and Interests*

✓ *Rules for Implementation of Manufacturing License for Cement Products*

✓ *Quality Control Regulations for Cement Manufactures*

The Group adheres to the business tenet of "customer first, quality first" and focuses on the overall requirements of "optimizing service systems, improving service process, standardizing service, and improving service quality". The Group is dedicated to providing customers with the best quality product services and continuously improves services systems. In order to ensure product quality, the Group has established a strict quality control system in accordance with relevant national laws and regulations, which is implemented by the Company, various operating regions and subsidiaries; has formulated and implemented the *Quality Management System of Shanshui Group*, standardizing the quality standards and inspection procedures from procurement, production to final products, with quality control at each process control point; regularly compared inspection with functional departments to ensure that the production process is fully under control. The Group has also formulated the *Inspection Project Operation Guide of Shanshui Group* according to the national inspection method standards, including inspection methods of coal quality analysis, operation guide of control and inspection, chemical analysis operation guide, physical inspection operation guide, operation instruction guide of cement concrete admixture test and inspection, so as to strictly comply with relevant national standards and regulations for product inspection. In accordance with the requirements of national standards, the Group clearly labels product information on product packaging, including but not limited to the implementation standards, types of cement, strength grades, name of manufacturers and labels of production license. The name and strength grade of cement are printed with different colors on both sides of the package of cement according to the types of cement.



In order to standardize the recall of unqualified products, to prevent and eliminate the damages caused by unqualified products as many as possible, the Group has formulated a product recall system. If the product is found to be unqualified by sampling inspection, or customers complain about the product quality and the analysis confirms that the complaint is reasonable and the products have quality problems, the recall procedure will be initiated. The Group will track the regional markets, terminal building material points and customers based on records where products should be recalled; arrange corresponding warehousing and transportation to ensure timely and efficient emergency recall immediately and actively take relevant response or remedial measures. The recalled products will be appraised on the spot, and sorted and stacked after isolation. Through the quality assessment of the recalled products, the Group will make specific disposal decisions and analyze the reasons, so as to take targeted corrective measures to prevent similar problems from happening again. The Group will also follow up related work on the adverse effects in the market due to unqualified products. During the Reporting Period, there was no product recall by the Group.



During the Reporting Period, there was no product recall by the Group.

Regarding advertising, the Group's operating regions have issued relevant systems in a unified manner, including the establishment standards and coordination management of special funds for advertisement and promotion, the approval and implementation of advertising plans, etc., to standardize advertising management. The Group has maintained and used trademarks in strict accordance with relevant laws and regulations, and conducted advertising campaigns.

In order to better serve customers, concerning the market performance of sold products, the Group established the customer service agency to advocate product performance, to introduce usage methods and to collect customer suggestions through telephone return interviews, site visits, user seminars, etc.

The Group has also formulated a management procedure for product quality complaint. Product quality complaints were communicated and handled in strict accordance with the Group's system and procedures immediately:

01 »

To determine customer complaint content. If it is a problem of service, determine when and where specific service personnel have violated their work responsibilities should be determined; if it is a problem of product quality, the type of cement, handling personnel, transport vehicle number and delivery time, specific quality issues and other issues should be determined. In addition, the *Complaint Registration Form* should be filled in according to the customer's complaint.

02 »

To communicate with the handling personnel on questions raised by customers. If it is a problem of product quality, the customer service personnel coordinate with the quality control room to check the actual situation on the spot, and determine the possible reasons based on the investigation results; conduct on-site sampling and inspection, and notify the customer in a timely manner if it is a problem of proportioning, and provide the inspection results to the customer.

03 »

If the customer still has objections to product quality, the acceptance method listed in the sales contract should be adopted. That is, if the buyer disputes the cement quality within 90 days, the two parties will send the stored samples to the cement quality supervision and inspection agency at or above the provincial level for inspection.

In order to protect intellectual property rights, as well as the Group's brand image and the rights and interests of consumers, the Group has formulated and implemented the *Work System for Trademark Maintenance in Cement Market* and the *Implementation Procedure for Anti-counterfeiting Work in Cement Market*. The Northeast China Operating Region issued the *Notice on Strengthening the Anti-counterfeiting Work of the Cement Market in the Northeast China Operating Region* in 2018, and established an anti-counterfeiting office. A market anti-counterfeiting work system has been set up and the operation process of anti-counterfeiting work is clarified. Liaocheng Shanshui of Western Shandong Operating Region assisted relevant law enforcement departments in 2019 to conduct a centralized investigation and clean-up of some small manufacturers and counterfeit manufacturers in the region, safeguarding the rights and interests of the Shanshui brand according to law, and improving the recognition and sales of the Shanshui brand in the region .

The Group also attaches great importance to protecting customer information. The Group has established customer files for customer information and set up lockers for safekeeping in a timely manner, with the record of checking the ledger being kept by a designated person. The information shall not be circulated without permission. Confidentiality permissions and real-name authentication accounts have been set up in the sales system. Contract review permissions are granted according to positions. Customer information retrieval records are kept in the backstage. In addition, sales managers are required to sign a confidentiality responsibility agreement to strictly protect customer privacy.



During the Reporting Period, the Group received no complaints due to product quality and services.



## 6.3 Adhering to the Fight Against Corruption

China Shanshui Group strictly abides by relevant laws and regulations that have significant impacts on the Group relating to prevention of bribery, extortion, fraud and money laundering, including but not limited to the *Anti-Money Laundering Law of the PRC*, the *Criminal Law of the PRC*, and the *Listing Rules*.

In order to strengthen the awareness and discipline of the party members of the Group's leading cadres, the Group has formulated and implemented the *Regulation on Integrity and Self-discipline of Party Members of Leading Cadres of Shandong Shanshui*, the *Regulations on the Work of Disciplinary Inspection and Petition of Shandong Shanshui*, the *Regulations on Petitioning and Reception of Shandong Shanshui*, and other regulations, on the basis of the *Party Constitution*, the *Party Disciplinary Measures*, the *Party Integrity and Self-discipline Guideline*. The Group has deeply implemented the responsibility system for the construction of a clean governance, established codes of conduct for self-discipline and regulations for disciplinary actions, and insisted self-discipline as well as external-discipline. As for reported cases, the Group's discipline investigation office, each operating region and departments and offices are responsible for reported cases' reception, investigation and handling. The investigation and handling report shall be handed over to supervisors for review and further handling of violations in time in accordance with regulations. Subsequently, the department in charge shall respond to the real-name whistleblower and keep records.



During the Reporting Period, the Group did not have any cases that violated the aforementioned relevant laws and regulations relating to prevention of bribery, extortion, fraud and money laundering.







## 07

## Giving Community Care

### 7.1 Practicing Social Responsibility

The Group earnestly follows the spirit of the important instructions of the CPC Central Committee about targeted poverty alleviation and actively fulfills the Group's social responsibilities and civic obligations. According to the *Welfare Donations Law of the PRC*, the *Company Law of the PRC* and other relevant laws and regulations, the Group has formulated the *Management Measures for External Donation and Sponsorship of Shanshui Group (Provisional)* to further standardize the Group's external donation process, donation scale, donation scope, etc. The scope of external donations and sponsorships of the Group includes donations and sponsorships to disaster-stricken areas, designated poverty alleviation areas, designated assistance areas, disadvantaged social groups, and social welfare undertakings such as science, education, culture, health, environmental protection, energy conservation and emission reduction.

During the reporting period, the Group participated in various charitable and other donation activities, and the total amount of charity and other donations amounted to RMB17.15 million.

## Poverty Alleviation Donation



On May 14, 2019, Chaoyang Dongxin donated 20 tonnes of cement as poverty alleviation materials to Liupaoshougou Village in Chaoyang County for construction of road infrastructure in the village.



On June 4, 2019, Shule Shanshui donated 20 tonnes of cement as poverty alleviation materials to the second village of Akeya, Yangdaman Township, Shule County, with a total value of RMB9,600.



In September 2019, Pingyin Shanshui donated 150 tonnes of bagged cement to Dongfeng Village, worth about RMB30,000.



In the first half of 2019, Pingyin Shanshui donated RMB2.9 million to Ancheng government for the implementation of the Shanshui Road East Extension Project.

### Disaster Relief Activities



Affected by the crossing of Typhoon Lekima, dangers emerged around Zibo Shanshui. The company organized 50 employees and 8 forklifts to participate in flood relief activities.

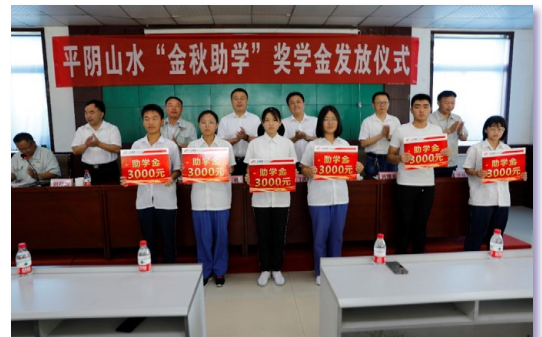


In August 2019, after the passing of typhoon, in order to help the people of Zichuan District to overcome the difficulties, various enterprises in the district jointly made charitable donation to Zichuan District. Zibo Shanshui donated RMB3 million to the disaster-affected area.

### Science, Education, Culture and Health Donation



On August 9, 2019, Yishui Shanshui donated RMB0.3 million to Yishui County Charity Federation for helping people with serious illnesses in Yishui County.



In August 2019, Pingyin Shanshui launched an education activity in Autumn for the four villages in the residential area, with a total donation of RMB106,880.



On August 24, 2019, China Shanshui Group held the Ceremony of the Hope Project of Fulfilling Dreams and Aiding Students. Zibo Shanshui donated RMB1 million to Zichuan District Charity Federation.



## SEHK's ESG Reporting Guide Index

General Disclosure and KPIs	Description	Relevant Chapter(s) in the Report or Other Explanation
Environmental		
Aspect A1: Emissions		
General Disclosure	Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to air and greenhouse gas emissions, discharges into water and land, and generation of hazardous and non-hazardous waste	4.1
KPI A1.1	The types of emissions and respective emissions data.	4.4
KPI A1.2	Greenhouse gas emissions in total (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	4.4
KPI A1.3	Total hazardous waste produced (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	Not Applicable <sup>11</sup>
KPI A1.4	Total non-hazardous waste produced (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	Not Applicable <sup>12</sup>
KPI A1.5	Description of measures to mitigate emissions and results achieved.	4.1
KPI A1.6	Description of how hazardous and non-hazardous wastes are handled, reduction initiatives and results achieved.	4.1
Aspect A2: Use of Resources		
General Disclosure	Policies on the efficient use of resources, including energy, water and other raw materials.	4.2-4.3
KPI A2.1	Direct and/or indirect energy consumption by type (e.g. electricity, gas or oil) in total (kWh in '000s) and intensity (e.g. per unit of production volume, per facility).	4.4
KPI A2.2	Water consumption in total and intensity (e.g. per unit of production volume, per facility).	4.4
KPI A2.3	Description of energy use efficiency initiatives and results achieved.	4.2
KPI A2.4	Description of whether there is any issue in sourcing water that is fit for purpose, water efficiency initiatives and results achieved.	4.2
KPI A2.5	Total packaging material used for finished products (in tonnes) and, if applicable, with reference to per unit produced.	4.4
Aspect A3: The Environment and Natural Resources		
General Disclosure	Policies on minimising the issuer's significant impact on the environment and natural resources.	4.3
KPI A3.1	Description of the significant impacts of activities on the environment and natural resources and the actions taken to manage them.	4.3
Social		
Aspect B1: Employment		
General Disclosure	Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to compensation and dismissal, recruitment and promotion, working hours, rest periods, equal opportunity, diversity, anti-discrimination, and other benefits and welfare.	5.1
KPI B1.1	Total workforce by gender, employment type, age group and geographical region.	5.1

<sup>11</sup> Of the hazardous wastes generated in the process of production by the Group, waste engine oil is all recycled, thus this indicator is not applicable. The number of waste oil barrels is not disclosed according to the principle of materiality.

<sup>12</sup> The non-hazardous solid waste generated in the process of production is all recycled, thus this indicator is not applicable.



General Disclosure and KPIs	Description	Relevant Chapter(s) in the Report or Other Explanation
Aspect B2: Health and Safety		
General Disclosure	Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to providing a safe working environment and protecting employees from occupational hazards.	5.2
KPI B2.1	Number and rate of work-related fatalities.	5.2
KPI B2.2	Lost days due to work injury.	5.2
KPI B2.3	Description of occupational health and safety measures adopted, how they are implemented and monitored.	5.2
Aspect B3: Development and Training		
General Disclosure	Policies on improving employees' knowledge and skills for discharging duties at work. Description of training activities.	5.3
Aspect B4: Labour Standards		
General Disclosure	Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to preventing child and forced labour.	5.1
Aspect B5: Supply Chain Management		
General Disclosure	Policies on managing environmental and social risks of the supply chain.	6.1
Aspect B6: Product Responsibility		
General Disclosure	Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to health and safety, advertising, labelling and privacy matters relating to products and services provided and methods of redress.	6.2
KPI B6.1	Percentage of total products sold or shipped subject to recalls for safety and health reasons.	6.2
KPI B6.2	Number of products and service related complaints received and how they are dealt with.	6.2
KPI B6.3	Description of practices relating to observing and protecting intellectual property rights.	6.2
KPI B6.4	Description of quality assurance process and recall procedures.	6.2
KPI B6.5	Description of consumer data protection and privacy policies, how they are implemented and monitored.	6.2
Aspect B7: Anti-corruption		
General Disclosure	Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to bribery, extortion, fraud and money laundering.	6.3
KPI B7.2	Description of preventive measures and whistle-blowing procedures, how they are implemented and monitored.	6.3
Aspect B8: Community Investment		
General Disclosure	Policies on community engagement to understand the needs of the communities where the issuer operates and to ensure its activities take into consideration the communities' interests.	7.1
KPI B8.1	Focus areas of contribution (e.g. education, environmental concerns, labour needs, health, culture, sport).	7.1
KPI B8.2	Resources contributed (e.g. money or time) to the focus area.	7.1

## Definitions

In the Report, unless otherwise stated, the following words and expressions have the following meanings:

Eastern Shandong Operating Region	Business located at the Eastern Shandong Province, including Weifang, Qingdao, Yantai and Weihai, etc.
Western Shandong Operating Region	Business located at the Central and Western Shandong Province, including Zibo, Jinan and Hebei Province and Tianjin, etc.
Southern Shandong Operating Region	Business located at the Southern Shandong Province, including Zaozhuang, Jining, Heze and Henan Province, etc.
Northeast China Operating Region	Business located at Liaoning Province, the Eastern Inner Mongolia and Jilin Province, etc.
Shanxi Operating Region	Business located at Shanxi Province and Shaanxi Province, etc.
Xinjiang Operating Region	Business located at Kashi, Xinjiang
Yishui Shanshui	Yishui Shanshui Cement Co., Ltd., belonging to Eastern Shandong Operating Region
Xinghao Cement	Xinghao Cement Co., Ltd., belonging to Eastern Shandong Operating Region
Linqu Shanshui	Linqu Shanshui Cement Co., Ltd., belonging to Eastern Shandong Operating Region
Zibo Shanshui	Zibo Shanshui Cement Co., Ltd., belonging to Western Shandong Operating Region
Liaocheng Shanshui	Liaocheng Shanshui Cement Co., Ltd., belonging to Western Shandong Operating Region
Pinyin Shanshui	Pinyin Shanshui Cement Co., Ltd., belonging to Western Shandong Operating Region
Huixian Shanshui	Huixian City Shanshui Cement Co., Ltd., belonging to Southern Shandong Operating Region
Juye Shanshui	Juye Shanshui Cement Co., Ltd., belonging to Southern Shandong Operating Region
Jining Shanshui	Jining Shanshui Cement Co., Ltd., belonging to Southern Shandong Operating Region
Zaozhuang Chuangxin	Zaozhuang Chuangxin Shanshui Cement Co., Ltd., belonging to Southern Shandong Operating Region
Zaozhuang Shanshui	Zaozhuang Shanshui Cement Co., Ltd., belonging to Southern Shandong Operating Region
Yingkou Shanshui	Yingkou Shanshui Cement Co., Ltd., belonging to Northeast China Operating Region
Bohai Cement	Bohai Cement (Huludao) Co., Ltd., belonging to Northeast China Operating Region
Panjin Shanshui	Panjin Shanshui Cement Co., Ltd., belonging to Northeast China Operating Region
Aqi Shanshui	Alu Kerqin Qi Shanshui Cement Co., Ltd., belonging to Northeast China Operating Region
Dalian Shanshui	Dalian Shanshui Cement Co., Ltd., belonging to Northeast China Operating Region
Liaoning Gongyuan	Liaoning Shanshui Gongyuan Cement Co., Ltd., belonging to Northeast China Operating Region
Chifeng Yuanhang	Chifeng Shanshui Yuanhang Cement Company Limited, belonging to Northeast China Operating Region
Chaoyang Dongxin	Chaoyang Shanshui Dongxin Cement Co., Ltd., belonging to Northeast China Operating Region
Hequ Zhongtianlong	Hequ Zhongtianlong Cement Co., Ltd., belonging to Shanxi Operating Region
Linfen Shanshui	Linfen Shanshui Cement Co., Ltd., belonging to Shanxi Operating Region
Jincheng Shanshui	Jincheng Shanshui Cement Co., Ltd., belonging to Shanxi Operating Region
Shule Shanshui	Shule Shanshui Cement Co., Ltd., belonging to Xinjiang Operating Region
Articles of Association	the amended and restated memorandum and articles of association of the Company adopted on 30 May 2019
YOY	Year on year comparison
Raw material	Raw material that needs further processing before being used for productions
Clinker	A semi-finished product in the cement production process
Commercial concrete	Commercial concrete, also named as ready mixed concrete
PRC or China	The People's Republic of China
Hong Kong	Hong Kong Special Administrative Region of the PRC
CPC or Party	The Communist Party of China
"13th Five-Year Plan"	"13th Five-Year Plan" with the full name of the Outline of the 13th Five-Year Plan for National Economic and Social Development of the People's Republic of China



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