碳究五十·黑躍未來

CSRC

2022

SUSTAINABILITY REPORT

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About This Report

Report Principles

International CSRC Investment Holdings Co., Ltd. (hereinafter referred to as "CSRC") has compiled the 2022 ESG Report in accordance with the GRI Standards 2021 published by the Global Reporting Initiative (GRI), the Sustainability Accounting Standards - Chemical Industry published by the Sustainability Accounting Standards Board (SASB), the Final Report: Recommendations of the Task Force on Climate-related Financial Disclosures published by the Financial Stability Board (FSB), the Taiwan Stock Exchange Corporation Rules Governing the Preparation and Filing of Sustainability Reports by TWSE Listed Companies published by the Taiwan Stock Exchange Corporation. We adhere to the principles of openness, transparency, and ethics to allow stakeholders to understand CSRC's strategy, investments, and performance insofar as they pertain to sustainable development.

The financial performance and other relevant information disclosed in this report are prepared based on International Financial Reporting Standards (IFRS) and the unit of calculation is the New Taiwan Dollar.

Report Boundary

In terms of boundary selection, the main body of the report includes entities from CSRC in Taiwan, Linyuan Advanced Materials Technology Co., Ltd. (a 100%-owned subsidiary; "Linyuan Advanced Plant"), and entities in mainland China, namely CSRC (Maanshan) Chemical Industry Co., Ltd. ("Maanshan Plant") and CSRC China (Anshan) Corporation ("Anshan Plant"). The data and information disclosed in this report are collected and provided by each department bearing relevant rights and responsibilities, organizing the Company's performance in respect to economic, environmental, and social topics in accordance with the requirements of the GRI guidelines. Collection, measurement, and calculation methods for each item of disclosed data and information are based mainly on compliance with local regulations or international regulations.

Report Cycle and Coverage Period

The information disclosure period of this report is the year 2022 (January 1, 2022 to December 31, 2022). To fully present the achievements of ESG in all aspects and their changing trends over the years, the content and information of some topics will be traced back to previous years.

Authentication of Report Information

To ensure the accuracy and transparency of the information disclosed by CSRC, data and information in this report all are managed internally with reference to rules and standards by each department bearing relevant rights and responsibilities. Some specific information has further obtained external authentication (see table below). They are then provided to the ESG report compilation team for confirmation, sent to the head to each department, and finally reviewed and approved by the Chairman. In addition, PwC Taiwan conducted assurance work on the selected subject matter information disclosed in the ESG Report (compiled based on the GRI Standards) in accordance with the Statement of Assurance Engagements Standards No. 3000 "Assurance Engagements other than Audits or Reviews of Historical Financial Information" published by the Accounting Research and Development Foundation in Taiwan. The assurance at this time covered the information throughout 2022, without covering the information on and before December 31, 2021. Please refer to the statement in the Appendix for the scope and conclusion of the assurance.

External authentication

Authentication orientation	Compliance standards	Authentication agency
Specific assurance indicators	Republic of China Statement of Assurance Engagements Standards No. 3000 "Assurance Engagements other than Audits or Reviews of Historical Financial Information" (formulated with reference to international assurance standard ISAE3000)	PwC Taiwan
Environment	ISO 14001 Environmental Management System (Linyuan Advanced Plant)	SGS Taiwan Ltd. (SGS Taiwan)
	ISO 14001 Environmental Management System (Maanshan Plant)	China Quality Certification Center (CQC Center)
	ISO 14001 Environmental Management System (Anshan Plant)	China Quality Mark Certification Group (CQM)
	ISO 14064-1: 2006 Greenhouse Gas Inventory (Linyuan Advanced Plant)	SGS Taiwan Ltd. (SGS Taiwan)
	Greenhouse gas emissions accounting methods and reporting guidelines (Trial) (Maanshan Plant)	China Classification Society Certification Co., Ltd. (CCSC)
	Greenhouse gas emissions accounting methods and reporting guidelines (Trial) (Anshan Plant)	China Classification Society Certification Co., Ltd. (CCSC)
	ISO 14067:2018 Product Carbon Footprint (Linyuan Advanced Plant)	British Standards Institution (BSI)
	ISO 50001: 2018 Energy Management System (Linyuan Advanced Plant)	British Standards Institution (BSI)
Occupational safety	ISO 45001 Occupational Safety and Health Management System (Linyuan Advanced Plant)	SGS Taiwan Ltd. (SGS Taiwan)
	CNS 45001 Occupational Safety and Health Management System (Linyuan Advanced Plant)	
	ISO 45001 Occupational Safety and Health Management System (Maanshan Plant)	China Quality Certification Center (CQC Center)
	ISO 45001 Occupational Safety and Health Management System (Anshan Plant)	China Quality Mark Certification Group (CQM)
	ISO 14001 Environmental Management System (Maanshan Plant)	China Quality Certification Center (CQC Center)
Product quality	IATF 16949 Automotive Quality Management System (Linyuan Advanced Plant)	American Systems Registrar
	ISO 9001 Quality Management System (Linyuan Advanced Plant)	Universal Certification Service Co., Ltd.
	IATF 16949 Automotive Quality Management System (Maanshan Plant)	SGS-CSTC Standards Technical Services Co., Ltd. (SGS China)
	ISO 9001 Quality management system (Maanshan Plant)	
	IATF 16949 Automotive Quality Management System (Anshan Plant)	
	ISO 9001 Quality management system (Anshan Plant)	
	ISO/IEC 17025:2017; CNS 17025:2018 (Linyuan Advanced Plant)	SGS United Kingdom Ltd.
		Taiwan Accreditation Foundation

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Contact Us

If you have any questions about this report or have any suggestions for CSRC, you are welcome to contact us through the following channels.

Vanessa Chiang, Investor Relations,
President's Office, CSRC

Address: 8F No. 113, Sec. 2, Zhongshan N. Rd., Taipei City

Tel.: (02)2531-6556 ext. 20810

Fax: (02)2531-6558

Email: csrcir@csrcgroup.com

Company Website: http://www.csrcgroup.com/

Company Website

Youtube

LinkedIn

Message from the Chairman

Carbon black is black as the night that fosters continued evolution of the universe;
intense color shapes our world as it turns to a new chapter.

The implementation of circular economy offers bright hope to the future;
the future will be like the Spring in its green and abundant vitality.

The Copernicus Climate Change Service, the climate monitoring agency of the European Union, released the 2022 annual climate report, stating that most parts of Europe were affected by unusual heat waves. Summer in 2022 was 1.4°C higher than the average temperature, and the surface solar radiation hit the record high in 40 years, while the Arctic witnessed more significant impact of warming as the annual average temperature of the entire Arctic region in 2022 was 0.9°C higher than the average. The UN Climate Change Conference (COP27) reiterated the importance of limiting global temperature to rise within 1.5° C as the goal, accelerating the progress of reaching the international consensus on the Net Zero goal.

In the face of rapid global climate change, no one can stay aloof. Only when all human beings work together can they survive forever. CSRC cannot shirk responsibility. We follow the international trend of carbon emissions reduction and take environmental protection as our responsibility. We are striving to build a green supply chain from the source and have developed "eco-circular carbon black" to reduce our dependence on petrochemical raw materials, thereby meeting the demand for sustainable materials in the industrial chain. We are using our core competencies to achieve sustainable development with clients, striving to create a green and safe lifestyles for human beings, responding to the UN SDGs, and contributing to environmental protection and social progress with society.

CSRC has voluntarily prepared the ESG Report (formerly known as the CSR Report) for nine years since 2014. We listen to stakeholders' voices and review the implementation results of the ESG targets in each stage. We expanded the scope of disclosure of the 2022 ESG Report by including Anshan Plant in China as well as the data on the electricity and water consumption of the Taipei Headquarters in the boundaries of the report, to improve the quality of disclosure of the ESG information. With that, we comprehensively review the current status of corporate sustainable development and take specific actions to mitigate climate change, to strive to address the challenges facing all human beings.

Deep involvement and efforts to reduce carbon emissions

In the face of severe climate change and natural disasters worldwide, adopting low-carbon production and cherishing the earth's resources is a top priority. CSRC strives to voluntarily reduce carbon emissions. To effectively achieve the goal of reducing greenhouse gas emissions, the Company has established a carbon emission management team and an inter-plant online e-carbon emission monitoring system to always keep track of the carbon emission situation. The monthly and quarterly greenhouse gas emission intensity has been included in each plant's KPIs and linked with performance bonuses to motivate all employees to work together to save energy and reduce emissions. In 2022, the intensity of greenhouse gas emissions decreased compared with the base year; Linyuan Advanced Plant and Maanshan Plant both witnessed a 21% decrease, while Anshan Plant accomplished a 16% decrease.

Considering the urgency of carbon emissions reduction, we continue to endeavor to reduce greenhouse gas emissions and have respectively formulated reduction strategies for Scope 1 and Scope 2 greenhouse gases. Regarding Scope 1 emissions, we regularly evaluate the performance of process facilities, set the goal of replacement of old equipment with new one, and manage to reduce the consumption of crude oil by improving production efficiency. All of our plants have prepared to adopt natural gas to replace fuel oil. Among them, Linyuan Advanced and Maanshan Plants have begun implementing relevant projects to further reduce their dependence on high carbon emission fuels. As for Scope 2 emissions, we keep adopting energy-saving equipment and improving tail gas boilers process, also, Linyuan Advanced Plant has repurchased the solar panels from Chailease Finance and plans to gradually increase the use of renewable energy in the future.

The international net-zero trend also creates opportunities for CSRC. In response to international clients' emphasis on environmental protection and carbon emissions reduction, we have begun to establish a green supply chain. Linyuan Advanced Plant adopted pyrolysis oils from used tires as its fuel oil in 2022, accounting for 25.75% of the total fuel oil used. In response to the industry chain's needs for sustainable materials, CSRC has also developed eco-circular carbon black that can reduce the dependence on petrochemical raw materials and can be applied to bicycle tires, mountain bike tires, road bike tires, and other rubber products to reduce the carbon footprint for carbon black and tire industry. In 2022, Linyuan Advanced Plant obtained carbon black carbon footprint certification. Meanwhile, to maintain the quality, its carbon black lab has passed the evaluation of the Taiwan Accreditation Foundation (TAF) and proclaimed as a TAF-certified lab. In the future, Linyuan Advanced Plant is capable of examing internal or external samples, indicating that CSRC already has the international-class abilities to analyze and test polycyclic benzene and heavy metals.

We reduce the amount of raw materials from the source of the product, and reduced energy and resource consumption in the manufacturing process to truly practice green production. For carbon black packaging materials, we have also abandoned paper bags and used PE bags instead. Customers can put PE bags into the mixing process to improve production efficiency and reduce waste disposal costs. In 2022, Linyuan Advanced, Maanshan, and Anshan Plants adopted 524,549 PE bags in total, equivalent to a reduction of 189 tonnes of paper waste, in a way to contribute to the vision of a zero-waste city.

Promotion of community sustainability and expansion of influence

CSRC is committed to promoting a circular economy and strives to incorporate environmental protection and circular economy into education as our way to care for society. We sponsored an activity, entitled “Carbon Black Experiment", at the 3rd Taiwan Science Festival in 2022 with the carbon black materials to promote the concept of circular economy. In 2022, the popular science camp was held at nine schools, and 373 children and parents were guided to experience science together. CSRC also held a circular economy drawing competition, entitled “Green Gold Practitioner”, through creative drawing approaches, we taught elementary school students about the basic concepts of carbon black and circular economy, to enhance their concept of environmental protection and sustainable development. Moreover, our employees formed a team of chemical instructors to teach the students as volunteers at the Shanwei Elementary School near Linyuan Advanced Plant as a means to inspire them about the black carbon cycle and facilitate communication with the local community.

In addition, the Company actively held the "Green to Gold Little Science+" Circular Economy Drawing Competition. Through this creatvie way, the concept of green environmental protection and sustainable development was engrained in the next generation.

Furthermore, we implement the environmental protection concepts and actions in local neighborhoods. In 2022, CSRC's R&D colleagues formed a chemical volunteer lecturer team to communicate with the students from Shanwei Elementary School closed to Linyuan Advanced Plant. It not only inspired children's understanding on circular economy of carbon black, but also enhanced our communication and connection with the community.

Ethical management and sustainable supply chain

Corporate Governance is the foundation of the Company's sustainable development. Honest and responsible management is the consistent management belief of CSRC. It is also the cornerstone of our enterprise as it stands as the highest principle for the implementation of all our business. In 2022, directors and employees participated in up to 635 hours of corporate governance and ethical management courses. In addition, the number of independent directors accounted for 43% of all directors in 2022; CSRC made progress and ranked in the top 6-20% of TWSE-listed companies in the ninth Corporate Governance Evaluation by the Taiwan Stock Exchange.

We aim to continue to expand our sustainable influence. The company attaches great importance to the ethical management and integrity of our suppliers. All suppliers of Linyuan Advanced, Maanshan, and Anshan Plants accepted the Company's communication on our anti-corruption policies and procedures, and 100% of them signed the contracts containing the Integrity Agreement and were required to protect employees' human rights, provide legal working conditions, and adhere to business ethics in 2022.

Through the operation of the ESG Committee, CSRC annually reviews the UN Sustainable Development Goals (SDGs) and their applicability to CSRC's operational development. We furthermore encourage employees to take ESG actions in their daily business and promote them outward to enhance the communication with our stakeholders.

All countries, all companies, and all individuals represent a community of life. I would especially like to thank every employee who has worked hard and done a good job in every respect. Thank you for practicing corporate sustainability in your own business and building a better society for us and the next generation. We also expect that all people at CSRC will fully leverage their individual strengths, go forward courageously, and do the right thing, and take the initiative to care for the surrounding environment and stakeholders. On the road to a sustainable future, we are walking side by side and becoming a force that drives society upward!

ESG Sustainable Highlights

Economics/Governance Aspect

Multifaceted Value Creation

- In 2022, **no** major corruption nor violation of ethical management or any ethical incidents occurred in CSRC
- In 2022, directors and employees participated in **635 hours** of corporate governance and ethical management courses
- In 2022, the Integrity Agreement and the Corporate Social Responsibility Pledge were included in the supplier contracts and up to **100%** of our suppliers signed the contracts
- In 2022, the company ranked in the top **6-20%** of TWSE-listed companies in the ninth Corporate Governance Evaluation
- In 2022, nearly **100%** of raw materials were purchased from local suppliers
- In 2022, the total amount of green procurement was approximately NTD **4,626,321**
- In 2022, NTD **190 million** was invested in research; an accumulation of **63** patent applications were submitted and an accumulation of **50** patents has been obtained

Environment/Products Aspect

Safeguard the Earth

- In 2022, Greenhouse gas emission intensity was reduced compared with the base year. Linyuan Advanced and Maanshan Plants both was reduced by **21%**, while Anshan Plant was reduced by **16%**
- In 2022, the sulfur oxide (SOx) emission intensity was decreased compared with 2021; Linyuan Advanced Plant was reduced by **11%**, Maanshan Plant was reduced by **24%**, and Anshan Plant was reduced by **87%**
- In 2022, Linyuan Advanced, Maanshan, and Anshan Plants recycled **100%** of carbon black materials from their suppliers
- CSRC continued to recycle waste in 2022. Linyuan Advanced Plant recycled **88.1%** of waste, Maanshan Plant **81.5%**, and Anshan Plant **70.4%**
- In 2022, all plants adopted PE bags to replace paper bags, reducing more than **189 tonnes** of paper waste
- In 2022, the overall customer satisfaction score of all plant sites received a high score of more than **9.1**
- In 2022, Maanshan Plant and Anshan Plants were rated as **water-saving enterprises**
- In 2022, Maanshan Plant won the honor of a **B-level enterprise** ranking in the Performance Evaluation of Heavy Air Pollution for a second consecutive year
- In 2022, Linyuan Advanced Plant obtained carbon **black carbon footprint certification**
- Linyuan Advanced Plant carbon black laboratory has passed the evaluation of the Taiwan Accreditation Foundation (TAF) and proclaimed as a **TAF-certified laboratory**

Employees/Social Aspect

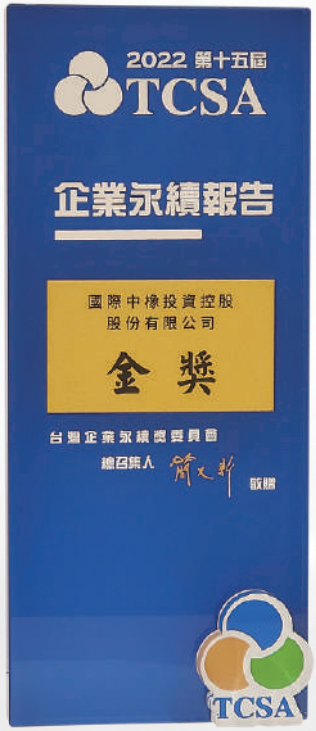
Promote Societal Well-Being

- In 2022, **705 employees** took the occupational safety and health education and training offered by Linyuan Advanced, Maanshan, and Anshan Plants for **13,664 hours**
- In 2022, the number of participants from contractors for work safety seminars and training at Linyuan Advanced Plant, Maanshan Plant, and Anshan Plant was **3,385** and a total of **27,425 hours**
- In 2022, the total training hours for the employees of Linyuan Advanced, Maanshan, and Anshan Plants reached **14,260 hours**, and average annual training hours of employees were more than **24 hours**
- In 2022, the number of people with disabilities employed was higher than that required by law
- In 2022, Employees training expense was NTD **4.1833 million**, and the overall feedback reached **9.2 points**
- In 2022, **37** dramas were promoted in our online drama channel, including live broadcasts of Peking opera and classic dramas
- At the Dr. Cecilia Koo Botanic Conservation Center, more than **34,138 plant species** have been preserved to date in a contribution to the maintenance of global biodiversity.
- To improve neighborhood communication, **14 students** from Shanwei Elementary School were invited to visit CSRC R&D Center in 2022

2022 Recognitions and Honors

15th Taiwan Corporate Sustainability Awards (TCSA)

Taiwan's Top 100 Sustainability Exemplary Awards



Corporate Sustainability Report Award - Gold Award

19th National Brand Yushan Awards

Outstanding Enterprise

Best Product Category - Eco-friendly Carbon Black for Printing and Coating Applications– EREBOS Series

Response to United Nations Sustainable Development Goals (SDGs)

CSRC follows international sustainable trends and actively responds to the UN Sustainable Development Goals (SDGs) to take up its corporate social responsibility, working together for environmental protection and social progress.

ESG aspect: Governance

Corresponding to the UN Sustainable Development Goals (SDGs)	CSRC's response actions
Target 8.7 Immediately adopt effective measures to eliminate forced labor and end modern slavery and human trafficking, to prohibit and eliminate the worst forms of child labor, including the recruitment and use of child soldiers and end all forms of child labor by 2025.	▪ In 2022, 100% of our suppliers signed the Supplier Corporate Social Responsibility Pledge, which included the requirement for no child labor.
Target 12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil to minimize their adverse impacts on human health and the environment. **Target 12.7** Facilitate sustainable government procurement processes in alignment with national policies and priorities.	▪ We continue to compile sustainable operations results and prepare and publish ESG reports in accordance with the GRI Standards and the SASB metrics. ▪ We continue to conduct circular economy models involving carbon black, water recycling, waste heat recovery, waste recycling and so on to achieve sustainable development of the enterprise. ▪ The green procurement in 2022 amounted to NTD 4,626,321.
Target 13.3 Improve awareness raising and capacity on climate change risk mitigation, adaptation, impact reduction, and early warning.	▪ Identified climate risks and opportunities of CSRC and put forward countermeasures to reduce risks.
Target 16.5 Substantially reduce corruption and bribery in all their forms.	▪ In 2022, directors and employees participated in 635 hours of corporate governance and ethical management courses. ▪ In 2022, 100% of employees and board members participated in the anti-corruption awareness-raising events and training offered by our plants. ▪ In 2022, 100% of the suppliers of Linyuan Advanced, Maanshan, and Anshan Plants accepted the company's communication on anti-corruption policies and procedures. ▪ In 2022, the Integrity Agreement and the Corporate Social Responsibility Pledge were included in the supplier contracts and up to 100% of our suppliers signed the contracts. ▪ Established a supplier evaluation system, implemented supply chain management, and improved supply capacity and quality.

ESG aspect: Environmental / Products

Corresponding to the UN Sustainable Development Goals (SDGs)	CSRC's response actions
Target 6.3 Improve water quality by reducing pollution, eliminating dumping, minimizing the release of hazardous chemicals and materials, and increasing water recycling and safe reuse.	▪ Each plant has been equipped with sewage treatment facilities, and the wastewater from the processes all met the local management standards after treatment in 2022. ▪ We have improved the recycling of the process water for reuse. In 2022, we used 215,513 m^3 of recycled process water.
Target 7.2 Substantially improve the sharing of renewable energy worldwide. Target 7.3 Double the global rate of improvement in energy efficiency.	▪ By recovering the waste heat of the process exhaust gas through "online heat recovery boilers" on the production line, we could heat steam, generate heat, and conserve usage of outsourced electricity. In 2022, the reduced power consumption was 1,743 MWh. ▪ We recycled process tail gas and converted it into steam to generate 71,080,040 kWh of electricity in 2022 for self-use. ▪ Linyuan Advanced Plant has repurchased the solar panels from Chailease Finance and plans to gradually increase the use of renewable energy in the future.
Target 8.3 Promote a development-oriented strategy that supports productive activities, decent job creation, entrepreneurship, creativity, and innovation.	▪ A patent proposal and reward system has been established to encourage employees to actively innovate, adopting research and development (R&D) results, while improving product quality and functions. In 2022, one patent was granted, and two employees were rewarded with bonuses.
Target 9.5 Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries.	▪ We invest a large amount of research funds per year to develop new products and cultivate professional talents. In 2022, the total research and development funds exceeded NTD 190 million.
Target 11.6 Reduce the adverse environmental impact of cities, including by paying special attention to air quality and municipal and other waste management.	▪ Linyuan Advanced, Maanshan and Anshan Plants have set up desulfurization and denitrification equipment and bag filters. ▪ We continued to replace paper bags with PE bags and soluble bags, reducing 189 tonnes of paper waste. ▪ We regularly report the amount of waste, which is handled by qualified waste disposal companies, enhance our waste recycling capabilities, abide by waste disposal laws and regulations, and adopt clean production, resource recycling, and business waste reduction measures. In 2022, Linyuan Advanced Plant recycled 88.1% of its waste, Maanshan Plant 81.5%, and Anshan Plant 70.4%.
Target 12.2 Achieve the sustainable management and efficient use of natural resources. Target 12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil to minimize their adverse impacts on human health and the environment. Target 12.5 Substantially reduce waste generation through prevention, reduction, recycling and reuse.	▪ In 2022, we improved usage efficiency of raw materials , reduced fuel consumption and waste of resources. ▪ We continue using waste tires to recover pyrolysis oil as a substitute for fossil fuels. ▪ We recycle the waste space-bags used by clients for reuse instead of incineration. ▪ The waste solvent recovery process produced in the laboratory is used for recycling and reuse. ▪ We continue replacing wooden pallets with reusable plastic pallets to reduce the output of waste wooden pallets. ▪ We continue to improve the process water recovery ratio and expand the scope of water circulation. CSRC cooperates with neighboring factories to recover condensate and achieve reuse of water resources. ▪ We take the carbon black cycle and a new circular economy model as the core of business operations. In 2022, 310,008 tonnes of waste oil were reused as raw materials, and recycled waste were reused for building materials. ▪ 100% of the raw materials used to manufacture carbon black in Linyuan Advanced, Maanshan and Anshan Plants are the terminal residues from steel and petrochemical industries. ▪ In 2022, up to 100% of our suppliers signed the Corporate Social Responsibility Pledge, covering the compliance with relevant waste, waste gas and wastewater management standards and statutory or international convention requirements regarding disposal and treatment of any waste, pollutants, and other environmental hazards.
Target 13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries. Target 13.3 Improve education, raise awareness, and develop personnel and the organization's skills in climate change risk reduction, adaptation, impact reduction, and early warning.	▪ We gradually included the chemicals disclosure metrics of the SASB standards and adopted 12 metrics in 2022 to enhance information transparency and awareness of sustainability. ▪ In 2022, Maanshan Plant was included in TCFD for identification of climate-related risks and opportunities, and we continue to identify climate-related risks and opportunities and put forth corresponding countermeasures.

ESG aspect: Social

Corresponding to the UN Sustainable Development Goals (SDGs)	CSRC's response actions
Target 3.9 Substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination. Target 12.4 Achieve the environmentally sound management of chemicals and all wastes to minimize their adverse impacts on human health and the environment.	▪ Linyuan Advanced Plant began to adopt the Process Safety Management (PSM) system in 2022 and established the system step by step through planning, execution, auditing, and improvement to enhance the process safety management. ▪ We formulated optimal management procedures for chemicals in the factory in accordance with government regulations and strengthened applicable knowledge of the relevant units. ▪ In 2022 chemical use items of products were in accordance with government regulations.
Target 4.1 Ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes. Target 4.7 Ensure that all learners acquire the knowledge and skills needed to promote sustainable development.	▪ In 2022, CSRC invested NTD 1.67 million in social charity activities. ▪ CSRC Invited students from Shanwei Elementary School in Linyuan District, Kaohsiung City, to visit Linyuan R&D Center. ▪ Maanshan Plant sponsored the community river beach protection and organized colleagues to clean up foreign seeds. ▪ In 2022, we provided monthly funds for 88 nutritional meals and computer/English tutoring classes for children in Fengqiao Elementary School in Maanshan City. ▪ In 2022, we provided 330 students for the Cement Academy supplementary classes. ▪ CSRC awarded scholarships to outstanding 15 students in 2022.
Target 4.5 Eliminate inequality in education and ensure equal access to all levels of education and vocational training for disadvantaged groups.	▪ We formulate human resources policies and improve the organizational structure of the Human Resources Department. In 2022, the total employee training hours reached 14,260 hours, and the average annual training hours of employees was more than 24 hours.
Target 8.8 Promote safe working environments and reduce workplace hazards.	▪ 705 participants took the employee safety and health training offered by Linyuan Advanced, Maanshan, and Anshan Plants with 13,664 total training hours. ▪ In 2022, Linyuan Advanced Plant held a Linyuan Industrial Park Joint emergency response exercise; Maanshan Plant held confined space emergency exercises; Anshan Plant held the firefighting equipment and facility use training, firefighting system training, firefighting laws and safety knowledge training for a total of 3 training courses, as well as 7 exercises related to fires and explosions at the Plant to enhance self-rescue and emergency rescue skills in accidents and ensure the implementation of correct firefighting concepts.
Target 10.4 Adopt appropriate policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality.	▪ With regular external salary surveys every year, CSRC offers a competitive salary based on industry salary standards and performance evaluation of personal expertise, ensuring that the wages of colleagues have an advantage over those in the external market.
Target 11.4 Make continuous efforts to protect and safeguard the world's cultural and natural heritage.	▪ In 2022, the C.F. Foundation promoted the concepts of cultural conservation and promotion in the three aspects of program production, theater management, and lecture promotions.
Target 15.4 Implement conservation of ecosystems, including biodiversity, to improve their ability to provide sustainable development. Target 15.6 Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources.	▪ Through the Dr. Cecilia Koo Botanic Conservation Center, we are committed to conserving tropical and subtropical plants across the world to maintain biodiversity on the earth. By the end of 2022, the center had cultivated 34,138 species of plants from all over the world.

Promotion of Sustainable Management

Corporate Social Responsibility Policy

In addition to maximizing business success, CSRC also strives to maintain productive interaction with stakeholders and takes actions toward fulfilling its duties as a corporate citizen for the sustainability of the society.

Vision:
Coexistence of civilization and nature

Mission:
Regenerate energy and live in harmony with nature

Our Implementation Policies

E Green Manufacturing

CSRC upholds the principle that "environmental protection is a responsibility, not a cost." For all raw materials, processes, and products, we highly care for the environment and cherish resources, implement a concept of circular economy that combines the economy and the environment.

S Inclusive Society

We value employees' welfare, maintain community relations, and care for children's education. Through expanding "Green Gold Action," we promote the concept of the circular economy while committing ourselves to cultural and ecological conservation.

G Honesty and Integrity

We pay great attention to ensuring compliance. The Company operates based on integrity, fairness, and transparency. Furthermore, we promote a sustainable supply chain from the inside out to achieve a prosperous future.

Four core values of CSRC

C COMMITMENT

- Ethics - Stick to our promises to customers and stakeholders
- Respect - Maintain good relationships with customers and stakeholders
- Quality - Ensure good product quality
- Responsibility - Manage to improve even trivial flaws
- Flexibility - Actively serve customers and stakeholders and pay attention to their needs

S SYNERGY

- Satisfy customers' needs and grow with customers
- Provide value - adding technologies and services on top of the products offered
- Develop cross - functional cooperation with enhanced specialty and efficiency
- Integrate global resources toward optimizing local services

R REBIRTH

- Resolve humanity's pollution
- Improve circular economy efficiency
- Undertake continuous improvement of waste solutions
- Care for the community and the environment

C CREATIVITY

- Technological innovation
- Process efficiency improvement
- Diversified product applications
- Keep discipline and improve workflow

CSRC's Carbon Black Circular Economy Creates Sustainable Values

	Raw materials	Manufacturing	Sales	End of product life
Resources	Terminal residues from steel and petrochemical industries	Reactor, Boiler	Carbon Black, Steam	Carbon Black Packaging, Condensate
Potential Risks	▪ If left untreated, terminal residues from steel and petrochemical industries will lead to environmental impact	▪ Air pollutants (SOx, NOx, PM, TSP, VOC), greenhouse gases, precipitator ash, fuel consumption	▪ Insufficient diversity of carbon black products and a waste of resources caused by surplus steam	▪ Disposal cost of paper bags and the waste of water resources from unrecovered condensate water
Value Creation	▪ Reuses terminal residues from steel and petrochemical industries as a raw material to produce carbon black for multiple applications ▶ Creates a new industry chain	▪ Implements air pollution control equipment to reduce the emission of air pollutants ▶ Improves quality of environment and health ▪ Collects dusts and red bricks as raw materials to process together and convert them into building materials ▶ Creates a new industrial chain ▪ Optimizes process technology, reduces fuel consumption per unit of product ▶ Improves efficiency of resource utilization ▪ Uses reaction furnace to combust in high-temperature to remove dioxin from raw oil ▶ Improves quality of environment and health	▪ R&D of green carbon black products ▶ Improves quality of environment and health ▪ R&D of high-end, multi-application carbon black ▶ Improves market competitiveness ▪ Reuses surplus steam to generate electricity ▶ Improves efficiency of resource utilization	▪ Switches to use environment-friendly PE packaging bags ▶ Improves customer productivity and reduces waste ▪ Partnering to recycle condensate ▶ Creates a new industry chain

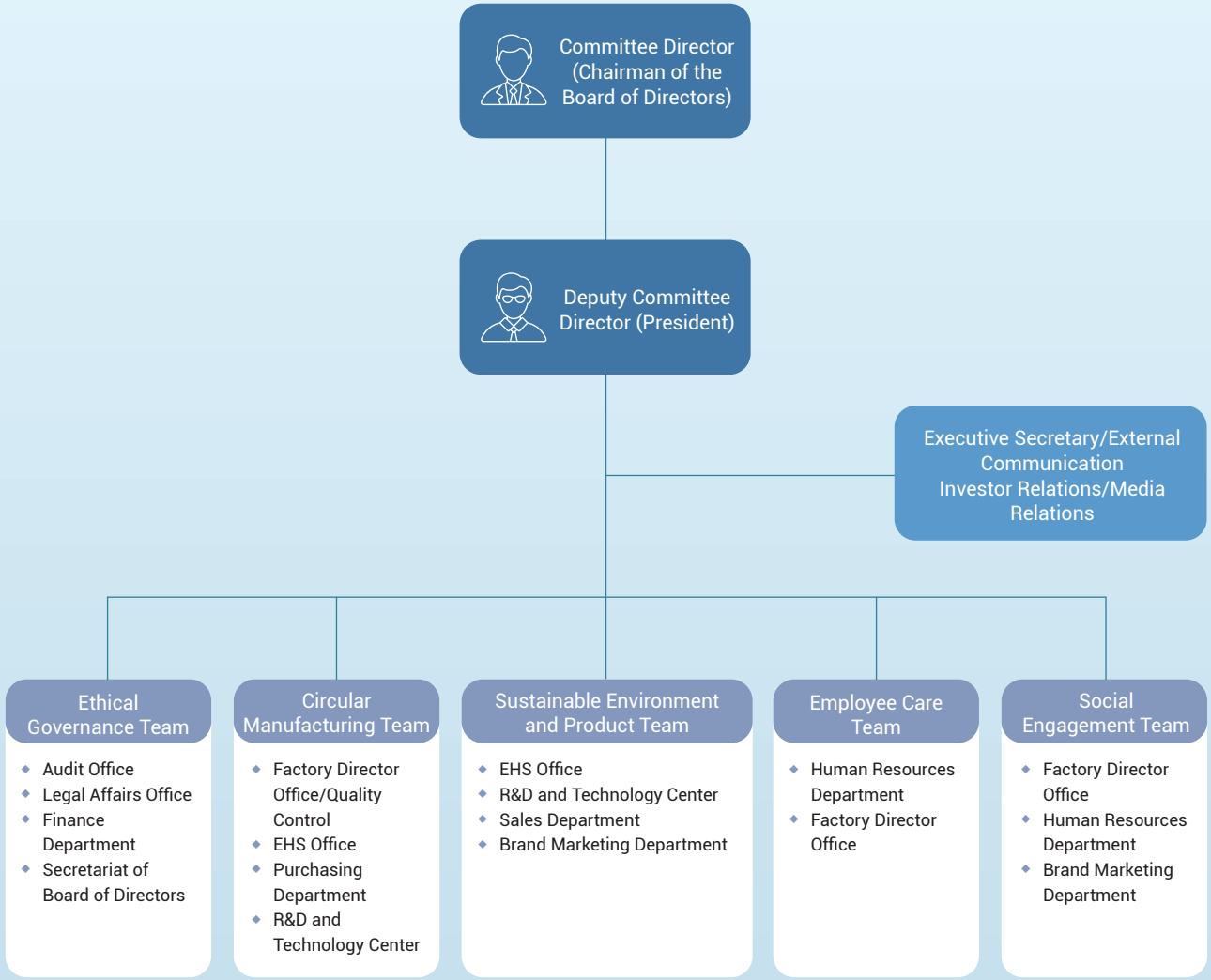
Corporate Sustainability Development Committee

To ensure the implementation of corporate social responsibility, CSRC has set up a Corporate Sustainable Development Committee under the Board of Directors. It is responsible for reviewing ESG reports, approving ESG annual goals, tracking and reviewing the effectiveness of ESG in each aspect, and ensuring the implementation of the Company's corporate social responsibility. The Committee meets at least once a year. Furthermore, CSRC strengthens the connection between ESG and the Company's business philosophy by appointing its Chairman as the Committee's Director and the General Manager as Deputy Director. The highest-level supervisor of each unit of authority will serve as a team member. In addition to the regular attendance of committee members and group leaders, each time the meeting is held, the chair may invite group members to participate in accordance with the contents of proposals. Each team should have a second officer appointed by the team leader who is responsible for the team's communication and coordination of relevant matters and collecting information and other matters relevant to the team's responsibilities.

Matters for consideration or for reference by the Committee

- Screening of annual goals for each category of sustainability
- Screening or reference of the implementation plan in each area of sustainability
- Tracking the implementation of corporate social responsibility and reviewing the implementation effectiveness
- Examination and Screening of sustainability report
- Screening and approval of other matters related to sustainability

Organizational Chart of Corporate Sustainability Development Committee



Important Milestones in Sustainable Development

The Sustainable Development Milestones of CSRC over the years are as follows:

2014
- Released first Chinese-language CSR report

2018
- Published first English-language CSR report
- Established Corporate Sustainability Development Committee

2019
- Formulated a Human Rights Policy
- Established "Cement School Scholarships"
- Launched circular economy charity activities under "Green Gold Action"

2020
- Identified and disclosed climate-related risks and opportunities based on the TCFD framework
- Developed ESG-oriented goals

2021
- Incorporated climate risk scenario analysis of TCFD into risk management
- Introduced the SASB standard and carried out disclosure of information

2022
- Maanshan Plant was included in TCFD for identification of climate-related risks and opportunities
- Introduced all accounting metrics of SASB in the category of Chemicals Industry

TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

SASB STANDARDS Now part of IFRS Foundation

Stakeholder Engagement and Analysis of Material topics

CSRC respects stakeholders' expectations and requirements for the Company and takes their valuable opinions into consideration when making business decisions. These opinions also provide useful reference for adjustments to CSRC's sustainable practices. We believe that establishing smooth and effective communication channels with stakeholders will help the Company grasp the pulse of the market, and of the economy, society, and the environment. This in turn will maintain the Company's upward momentum and create greater value.

CSRC identifies its stakeholders and makes disclosures to certain topics by following the AA1000 SES (Stakeholder Engagement Standard). After taking into consideration the external parties that Company engages on a routine basis and are of high significance, the Company has identified six main communication counterparties for this report, namely customers, employees, shareholders/investors, suppliers/contractors, government agencies, and the neighboring communities.

Six main communication counterparties

- Customers
- Employees
- Shareholders/Investors
- Suppliers/Contractors
- Government agencies
- Neighboring communities

CSRC discloses information in open, transparent, and diverse communication channels. Through communication and mutual interaction with stakeholders, the Company receives information and gives feedback, ensuring both parties communicate effectively and enjoy a favorable dialogue. In order to accumulate and continue to make progress in communication and interaction, CSRC designed a communication and evaluation mechanism for stakeholders and focused on issue management procedures. By evaluating the goals and results of communication with stakeholders, the opinions from different stakeholders are all properly recorded and managed to achieve the expected communication results.

Identification and analysis of material topics

In 2022, CSRC conducted identification and analysis of material topics according to the materiality identification requirements of the GRI 2021 universal standard. A total of 22 sustainability issues were collected, and 14 material topics were selected through procedures of identification, analysis, and confirmation. Based on the result, we formulated sustainable targets, regularly reviewed relevant implementation and effectiveness through internal performance indicator verification and inter-industry performance comparisons to strengthen management and supervision.

Materiality Assessment

Step 1
Identification of stakeholders and collection of sustainability issues

- Considering the degree of mutual influences between the stakeholders and CSRC, the Company first determined the significance of its relationship with the respective stakeholders. The six main important stakeholders identified include: **customers, employees, shareholders/investors, suppliers/contractors, government agencies, and neighboring communities**.
- **22 sustainability issues** of concern to CSRC were identified in line with the industry's characteristics, society's current situation, sustainable development trends, domestic and foreign peers.

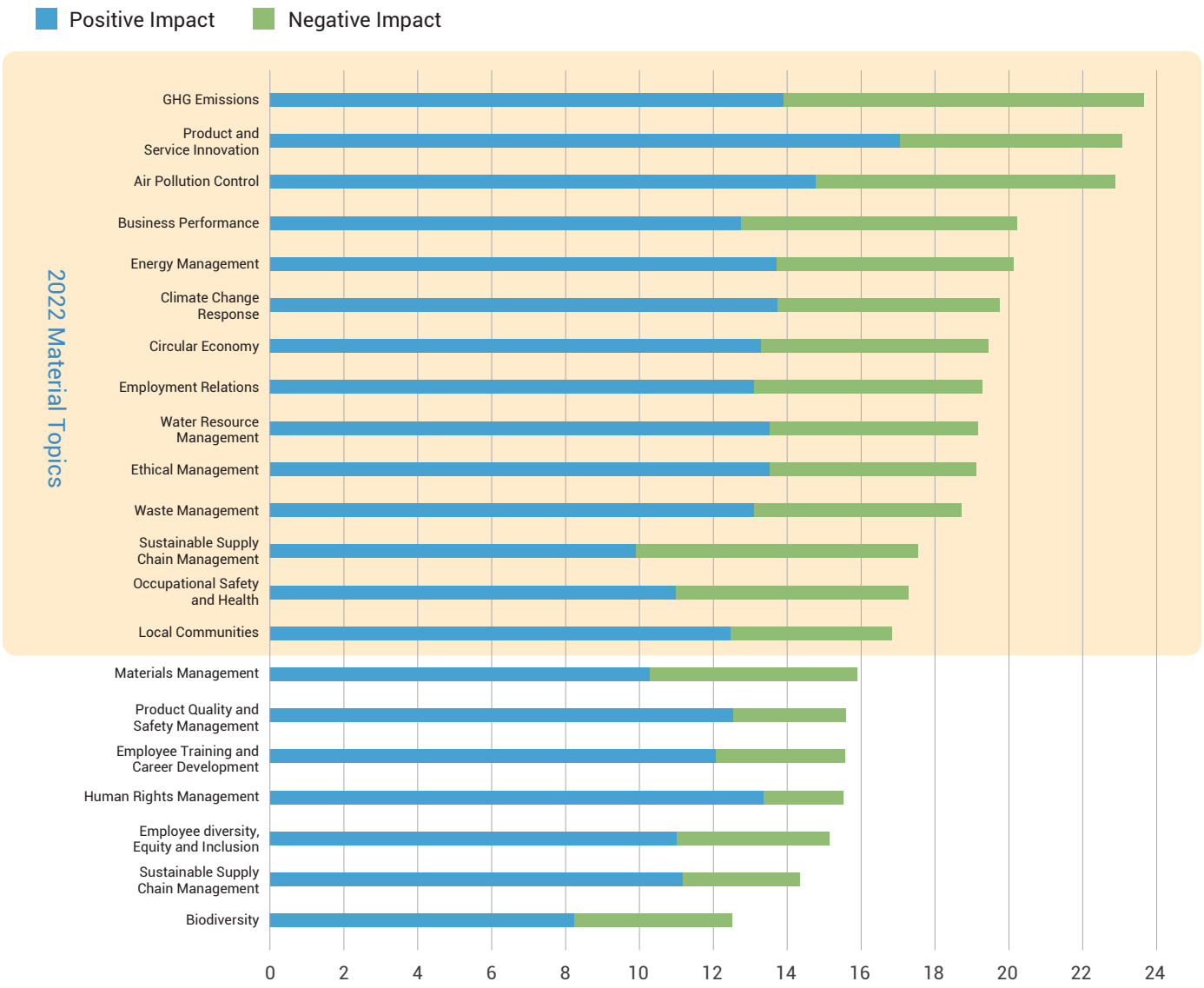
Step 2
Analysis and determination of material topics

- By handing out questionnaires, we gathered responses from the main stakeholders about their level of concern for the **22 sustainability issues**. **422 questionnaires** on level of stakeholders' concern were collected.
- Sustainability issue impact assessment questionnaires were conducted to the supervisors and senior management of CSRC and members of the ESG team. The survey was asked to provide scores on the level of positive and negative impacts on "the economy, environment, and people (including human rights)" for each sustainability issue. The impact level assessment took into consideration the "likelihood of occurrence" as well as " scope of impact." **18 internal impact assessment questionnaires** were collected.
- Based on the outcomes gathered from the previous step, we analyzed and ranked each sustainability issue by the level of impact on "the economy, environment, and people (including human rights)". After taking into consideration the discussions and conclusions between outside experts and members of the Corporate Sustainability Committee, the material topics previously identified for 2021, and the additional disclosure requirements on "local communities" that TWSE has demanded from chemical industry, **14 maternal topics** were identified. Comparing with the result of 2021, "Air pollution control" and "Sustainable supply chain management" were new topics to the list, and the additions stemmed from CSRC's respect for the air quality and control measures in communities near the Company's operations, as well as its attention on maintaining relationship with suppliers.
- The **14 material topics** were: GHG Emissions, Product and Service Innovation, Air Pollution Control, Business Performance, Energy Management, Climate Change Response, Circular Economy, Employment Relations, Water Resource Management, Ethical Management, Waste Management, Sustainable Supply Chain Management, Occupational Safety and Health, Local Communities. These material topics have been prioritized for disclosure in this report to meet stakeholders' expectations.

Step 3
Confirmation and disclosure

- From the 14 material topics identified and ranked from the preceding steps, we proceeded to collect information on sustainability and disclose management policy in accordance with the requirements of the GRI Standards. The report also disclosed actions of CSRC in respect to other topics not identified as major but that the Corporate Sustainability Development Committee deemed worthy of attention. In addition, the progress of the Company's sustainable development is reported to the board of Directors through the sustainability report. It is reviewed and the relevant conlusion is included in the Company's future management goals, and strategies are formulated.

2022 Material topics impact assessment results



G Corporate governance
- Ethical Management
- Business Performance
- Sustainable Supply Chain Management

E Environmental
- GHG Emissions
- Climate Change Response
- Circular Economy
- Waste Management
- Water Resource Management
- Air Pollution Control
- Energy Management

S Social
- Occupational Safety and Health
- Local Communities
- Employment Relations

P Products
- Product and Service Innovation

Note: The assessment score was determined by multiplying the probability of occurrence with the degree of positive/negative impact. The top 14 issues were 2022 material topics.

Stakeholders	Importance of stakeholder to CSRC	Focused issues	Method and frequency of communication	2022 communication performance	Introspection and responses
Customers	The most influential stakeholders in product development and manufacturing. At the same time, they also pay attention to CSRC's promotion of economic, environmental, and social issues.	▪ Product and service innovation ▪ Business performance ▪ Corporate governance ▪ Supply chain management	▪ Customer service email (anytime) ▪ Phone contact (weekly) ▪ Visits by business personnel (monthly) ▪ Customer satisfaction surveys (annually)	▪ The overall customer satisfaction score of all plant sites received a high score of more than 9.1	▪ The Company continues to deliver high quality service, engage in active communication, and provide products of consistent quality in a manner that complies with the business and environmental regulations of the respective business locations, and strives to create opportunities to cooperate with customers over the long term.
Employees	Our employees stand as the Company's most important asset, and we provide them with comprehensive welfare and care as well as settings and opportunities for living up to their self-worth. This is an important key to continued growth for CSRC.	▪ Occupational Safety and Health ▪ Employment Relations ▪ Product and service innovation ▪ Business performance	▪ Convene Pension Supervision Committee (quarterly) ▪ Convene Employee Welfare Committee (quarterly) ▪ Convene Labor-Management Conference (quarterly) ▪ Conduct education and training (monthly) ▪ Employee feedback mailbox (anytime) ▪ Sexual harassment complaint hotline and mailbox (anytime)	▪ Total education and training reached 14,260 hours ▪ The number of the sexual harassment complaint hotline and mailbox was 0 ▪ 644 individuals completed performance appraisals ▪ Regularly convene Pension Supervision Committee meetings, Employee Welfare Committee meetings, and Labor-Management Conferences	▪ Review the effectiveness of education and training in the hope that employees and the Company will grow together. At the same time, regularly review the salary and benefits system to substantially incentivize employee competitiveness.
Investors/ Shareholders	Opinions and suggestions of investors/shareholders constitute important reference indicators for the management team to make operational decisions.	▪ Ethical business ▪ Business performance ▪ Product and service innovation ▪ Corporate governance	▪ Hold shareholders meeting (annually) ▪ Issue an annual report (annually) ▪ Hold investor conferences (annually) ▪ Hold meetings with institutional investors (not regularly scheduled) ▪ Issue financial statements (quarterly) ▪ Market Observation Post System (not regularly scheduled) ▪ Investor mailbox (not regularly scheduled) ▪ Company's official website (not regularly scheduled)	▪ One shareholders meeting, seven meetings of Board of Directors, and one investor conference were held. During these meetings, investors were informed about market conditions, future trends, growth strategies, and profitability. ▪ CSRC has an Investor Relations Department responsible for investor communication; all investor calls and e-mails in 2022 were replied	▪ The Company takes the initiative to provide investors with an operational overview via regular large-scale investor conferences and small-scale briefings. Meanwhile, a dedicated department has been assigned to handle investors' problems and opinions, which enhances the exchange of views and interactions between the two sides. In the future, CSRC will increase the frequency of communication with investors, improving information transparency and disclosing important Company information.

Stakeholders	Importance of stakeholder to CSRC	Focused issues	Method and frequency of communication	2022 communication performance	Introspection and responses
Suppliers/ Contractors	Suitable suppliers/ contractors provide reliable supplies and services. This in turn allows CSRC to have stable production operations, creating the most optimal business performance.	▪ Ethical business ▪ Occupational Safety and Health ▪ Waste management ▪ Product and Service Innovation	▪ Supplier management system (not regularly scheduled) ▪ Supplier bid invitation meetings (not regularly scheduled) ▪ Supplier field evaluations (not regularly scheduled) ▪ Pre-construction work safety meetings (not regularly scheduled) ▪ Supplier strategic alliances (not regularly scheduled)	▪ Completed 562 supplier evaluations ▪ Held regular safety seminars and related education and training courses for manufacturers and contractors	▪ In-depth cooperation with capable suppliers/contractors that are experts in their fields, jointly developing materials and establishing strategic partnerships.
Neighboring communities	The living environments of neighboring communities may be affected by the operational activities of the plants. Therefore, we pay considerable attention to the results of implementing environmental protection measures in the area around the plant.	▪ Waste management ▪ GHG emissions ▪ Occupational Safety and Health ▪ Energy management	▪ Sponsor charitable community activities (monthly) ▪ Resident complaint channel (not regularly scheduled) ▪ Undertake visits or phone calls (not regularly scheduled)	▪ A total of NTD 1.67 million was invested in public welfare ▪ A total of 88 children benefited from Cement School Program ▪ NTD 36,000 of scholarships were disbursed to 15 children	▪ Through diverse bilateral communication and exchanges, we can foster closer relationships between CSRC and neighboring communities. These efforts also let communities understand our operational efforts as well as our dedication to environmental protection.
Government agencies	Promotion of various policies or formulation/modification of regulations may affect the operations of CSRC.	▪ Waste management ▪ Water resource management ▪ GHG emissions ▪ Occupational Safety and Health	▪ Hold shareholders meeting (annually) ▪ Hold corporate investor conferences (annually) ▪ Cooperate with relevant review and audit work (quarterly) ▪ Market Observation Post System (not regularly scheduled) ▪ Participate in publicity meetings and seminars (quarterly) ▪ Declare various types of tax information (monthly) ▪ Pollution prevention conference (every two months)	▪ Convened one shareholders meeting and one investor conference ▪ Participated in 21 labor-related seminars or briefings convened by the government in 2022 ▪ Participated in 2 finance and accounting-related seminars or briefings convened by the government in 2022 ▪ Participated in 24 environmental protection-related seminars or briefings convened by the government in 2022	Keep up to date with the latest information on relevant laws and regulations, actively cooperate with the policy promotions of the competent authorities and follow the requirements of various specifications and operations in accordance with current regulations and the requirements of the competent authorities. Actively participate in various meetings, understand the causes of external problems, learn from experience, and put preventative measures in place.

Report Boundary

For all material topics, CSRC has assessed its impact and disclosure boundaries:

● Direct ○ Indirect

Material topics	Description of impact	Within the organization				Outside the organization				
		CSRC Group	Linyuan Advanced	Maanshan	Anshan	Government agencies	Customers	Suppliers Contractors	Investors Shareholders	Neighboring communities
Ethical Management	The Company has implemented its own "Ethical Corporate Management Best Practice Principles" with board of directors' approval to provide governance over its ethical business policy. To ensure that employees, managers, and directors know and follow the Best Practice Principles, the Company promotes awareness each year and incorporates them into the internal control system while at the same time discloses relevant details over the website. The first point of the Company's brand value is to commit to its promises, and practical rules are as follows: (1) **Ethics** - Stick to our promises to customers and stakeholders (2) **Respect** - Maintain good relationships with customers and stakeholders (3) **Quality** - Ensure good product quality (4) **Responsibility** - No matter how small the error, we will try our best to improve upon it (5) **Flexibility** - Actively serve customers and stakeholders and listen to their needs	●	●	●	●	●	●	●	●	●
Business Performance	CSRC values the importance of ESG. We take circular economy as the core concept, sustainable operations as the goal, and operations with stable production and financial stability as the main axis. We will carry out flexible production and sales allocation in accordance with market conditions and the global production base, and we will continue to invest in research and development. This will all be done to continue to create economic value.	●	●	●	●	○	●	●	●	○
Sustainable Supply Chain Management	CSRC attaches great importance to supplier partnerships, and we look forward to coexisting with suppliers to create long-term stable, mutually beneficial, and cooperative relationships.	●	●	●	●	○	●	●	●	○
Air Pollution Control	Clean production and environment-friendly practices are part of CSRC's business philosophy and represent two issues of concern that we persistently improve upon. We are especially mindful of the quality of the neighboring environment and employees' health, which is why CSRC has installed pollution prevention equipment early on and examine the efficiency of prevention measures on a regular basis, so that emissions are kept lower than what the laws required.	●	●	●	●	●	○	●	○	●
Circular Economy	Circular economy helps businesses reduce consumption of energy and resources and is currently one of the key strategies toward achieving carbon neutrality. Given the market's growing attention for circular economy, it is inevitable that renewable resources become scarce in the future. All major customers of CSRC are looking for solutions on circular economy, and the Company's carbon black business meets the needs of the market and customers as it is by nature the ideal solution to circular economy.	●	●	●	●	○	●	●	●	●
Climate Change Response/GHG emission	CSRC has a Sustainable Environment and Product Team under its Corporate Sustainability Development Committee that is responsible for the execution of energy conservation and carbon reduction plans. The team is also responsible for the calculation of emission volume and the management and mitigation of greenhouse gas emission and climate change impacts.	●	●	●	●	●	●	●	●	●

● Direct ○ Indirect

Material topics	Description of impact	Within the organization				Outside the organization				
		CSRC Group	Linyuan Advanced	Maanshan	Anshan	Government agencies	Customers	Suppliers Contractors	Investors Shareholders	Neighboring communities
Waste Management	CSRC implements the circular economy spirit of waste reuse. We properly deal with the business waste disposal, comply with the requirements of various waste laws and regulations, and look for opportunities for resource reuse.	●	●	●	●	●	○	○	○	●
Water Resource Management	Increasing frequency of droughts and water shortages caused by extreme weathers highlights the importance of water resource management. CSRC strictly controls the use of water resources and continues to improve the efficiency of water recycling while at the same time avoiding excessive water intake that may cause damage to the surrounding environment. In addition, we will continue to promote the Water Balance Plan.	●	●	●	●	●	○	○	●	●
Energy Management	Excessive use of fossil fuel leads to greenhouse gas emission and is a major cause of rising temperatures around the world. As a result, energy management becomes the priority of the energy and carbon reduction movement. CSRC has always devoted attention to improving production procedures, optimizing production parameters and hardware, and adopting the use of green energy as direct ways to reduce energy consumption. Indirect approaches such as recycling and reuse of heat and residual gas are also being taken to conserve energy.	●	●	●	●	○	○	●	○	●
Product and Service Innovation	The sustainable development of an enterprise requires constant innovation and surpassing oneself. To maintain market competitiveness, we must continue to invest in research and development. Through product innovation and circular economy, CSRC looks forward to growing and developing competitiveness with its customers.	●	●	●	●	○	●	●	●	○
Occupational Safety and Health	Employees' workplace safety provides an important foundation for the growth of CSRC. By maintaining a safe work environment, improving employees' safety practices, awareness, and skills, and actively preventing safety and health risks in business activities, we maintain a healthy workforce that ensures future growth.	●	●	●	●	●	○	●	○	○
Employment Relations	Employees make up the irreplaceable foundation for business continuity. At CSRC, we treat employees with integrity and respect, and strive to create a diverse yet accommodating work environment.	●	●	●	●	●	○	○	○	○
Local Communities	CSRC's production base is close to the local community and very close to residents' living environments. Any situation in the plant will directly impact the community where it is located, and any response from residents will also directly affect the operations of the plant. Therefore, building mutual trust and understanding with local communities is a very important issue.	●	●	●	●	●	●	●	●	●

About CSRC

CSRC was established on June 15, 1973 by eighteen individuals including Mr. Lin Bo-Shou and Mr. Koo Chen-Fu and signed a "Patent and Technology Use Right Contract" with Continental Carbon Company of the US to prepare for construction of carbon black production facilities. It was listed on the Taiwan Stock Exchange on July 15, 1986. The headquarters of CSRC are located at 8F, No. 113, Sec. 2, Zhongshan N. Rd., Taipei City. There are two major businesses. Carbon black business is a global industry leader with the brand name of "Continental Carbon." It is the only carbon black manufacturer in Taiwan and the sixth largest in the world. It has four operation centers, four R&D technology centers, and eight production facilities, as well as one technology licensing production facility globally to serve international customers up close. The biological technology business continues to invest in professional pharmaceutical research and development and provide diversified products and cross-industry services with joint efforts to promote the improvement of quality for human civilization. CSRC constantly invests in technology research and development. Through technical excellence, we have joined our customers to demonstrate an outstanding performance internationally. We are actively deploying to better serve our global customers and with an awareness of our role as an important partner in the industry value chain, thereby becoming a world-class manufacturer and leader in integrated services.

Headquarters location

8F, No. 113, Sec. 2, Zhongshan N. Rd., Zhongshan District, Taipei City

Total capital stock

NTD 9.85 billion

Industry

Rubber industry

Date of establishment

June 15, 1973

Stock code

2104

Listing date

July 15, 1986

Number of employees

1,353 group-wide;
664 covered within the report boundary

Carbon Black Business Unit

We continue to pursue innovation and breakthroughs in the carbon black field with the attitude of an international leading brand.

Main business

(1) Manufacturing of synthetic rubber
(2) Manufacturing of other rubber products
(3) Manufacturing of industrial rubber products
(4) Non-public electric power generation
(5) Thermal energy supply

Locations

- Linyuan Advanced Materials Technology Co., Ltd.
- CSRC's three carbon black factories in mainland China
- CSRC's U.S. carbon black factory: CCC USA Corp.
- CSRC's India carbon black factories: Deli (CCIL), Gujarat (CCET)

Biotechnology Business Unit

We maintain steady growth and further cooperate with hospitals and other research units to develop new drugs.

Main business

Biotechnology services

Locations

- Circular Commitment Co., Ltd.
- Synpac (North Carolina), Inc.

CSRC's Carbon Black Business Unit takes "globalization" as its operating strategy. It continuously improves production technology through various forms of resource integration, ensuring that output scale and product quality are at a leading level globally. Furthermore, a focus on the needs of "customers" and "users" serves as its driving force for continuous quality breakthroughs and product innovation. In addition to carbon black's most widely used tire and rubber applications, our diversified product series encompasses special applications such as plastics, chemical fiber products, conductive materials, and so on. This scope of use covers all aspects of food, clothing, and transportation in our daily lives. Among these applications, material for rubber products is more special and not easily replaced; and in recent years, the demand for electric vehicle tires has gradually increased. This in turn has boosted demand for new types of carbon black for tires and rubber products, thus maintaining stable development in this category. Faced with the development of international trends, CSRC is also committed to developing diversified product lines and professional customization capabilities, continually striving to improve human civilization.

Public association credentials

CSRC actively participates in public association conferences and abides by conference norms in the hope to contribute its own strengths to jointly address social responsibilities alongside its peers. The following table shows CSRC's participation in public associations in 2022:

Public association name	Organization membership
Petrochemical Industry Association of Taiwan	✓
Taiwan Rubber & Elastomer Industries Association	✓
Chinese National Association of Industry and Commerce, Taiwan (Note)	✓
Taiwan Carbon Capture Storage and Utilization Association	✓
Kaohsiung Personnel Representative Association	✓
Taiwan Responsible Care Association	✓
The Third Wednesday Club (San San Fe)	✓
Kaohsiung County Industrial	✓
Chinese Society for Quality	✓

Note: The Chairman serves as a director of the Chinese National Association of Industry and Commerce, Taiwan

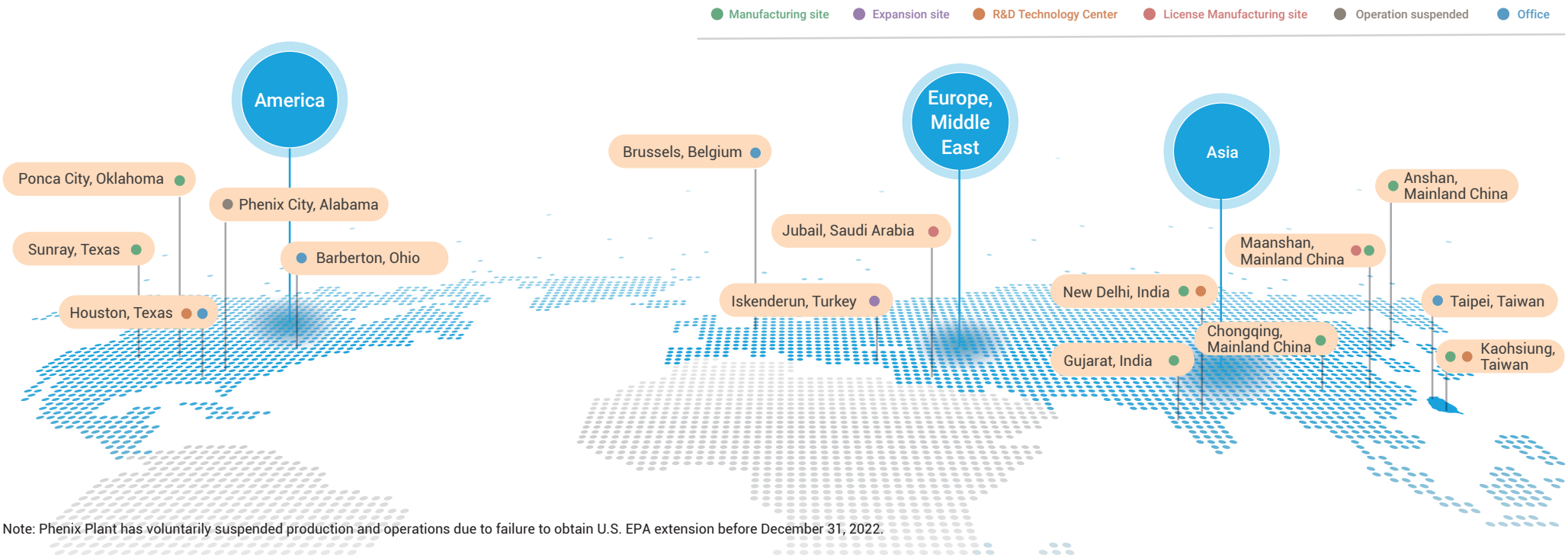
Brand Value

Being the pioneer of industry transformation in Taiwan, CSRC views business continuity as its goal and accomplishes it through circular and renewable practices. We see customers as important partners for corporate sustainability and aim to create common values with them by providing integrated services and innovative products. Internally, we encourage the improvement and innovation of operating processes while at the same time breaking through existing product design in the development of multiple product applications. Meanwhile, we take environmental friendliness and high-quality green transformation as our design goals. All the above initiatives constitute the focus of the Company's continuous investment in research and development.

CSRC takes multiple approaches to ensure that we are in line with the market and with trends. These approaches involve: systematic gathering, validation, analysis of data; evaluation from different perspectives such as environmental protection trends, customers' needs, the competitive landscape, the value supply chain etc.; maintaining strong financial position, consistent production quality, and market-leading advantage in product R&D and after-sales service; and advance planning and development of green products. These practices have been critical to our goal toward sustainable business operations.

As of the end of 2022, the Carbon Black Business Unit had overseas operations primarily in North America, the mainland (Anshan, Maanhan, Chongqing), and India (Delhi and Gujarat). As a global brand, CSRC is confident to face the challenges of the new century and open the way for outstanding new milestones ahead. This is based on CSRC's advantages including the international layout of production capacity operation system, specialized technology, diversified human talents, and the trust of its customers. CSRC continues to invest overseas and expands its production capacity in markets that offer significant growth potentials. The Turkey Plant, for example, has commenced construction and will become Turkey's first carbon black factory once completed.

Driven by the corporate vision of promoting "Coexistence of civilization and nature," CSRC expands global presence and production capacity not just out of geographic convenience, but also takes into consideration how the new plant fits within the operating plans of existing plants as well as environmental protection, energy, and emission trends around the world. In all cases, we enforce environmental protection and sustainability at the highest level and regard them as the ultimate guiding principles.



Note: Phenix Plant has voluntarily suspended production and operations due to failure to obtain U.S. EPA extension before December 31, 2022.

CH 1 Corporate Governance

Performance highlights

- In 2022, **43%** of the CSRC Board of Directors were Independent Directors.
- In 2022, there were no recorded cases of major corruption, integrity, or ethics breaches.
- In 2022, directors and colleagues participated in **635 hours** of corporate governance and ethical management courses.
- In 2022, **100%** of employees and board members participated in the anti-corruption awareness-raising events and training offered by our plants.
- In 2022, Linyuan Advanced, Maanshan and Anshan plants were **100%** receptive to the Company's anti-corruption policies and procedures.

Material topics: Ethical management

GRI indicator: GRI 3-3、GRI 205-1、GRI 205-2、GRI 205-3

Description of impact

The Company has implemented "Ethical Corporate Management Best Practice Principles" with board of directors' approval to provide governance over its ethical business policy. To ensure that employees, managers, and directors know and follow the Best Practice Principles, the Company promotes awareness each year and incorporates them into the internal control system while at the same time discloses relevant details over the website. The first point of the Company's brand value is to commit to its promises, and practical rules are as follows:

(1) Ethics - Stick to our promises to customers and stakeholders
(2) Respect - Maintain good relationships with customers and stakeholders
(3) Quality - Ensure good product quality
(4) Responsibility - No matter how small the error is, we will try our best to improve
(5) Flexibility- Actively serve customers and stakeholders and listen to their needs

Policies and commitments

The first point of CSRC's brand value is to stick to its promises. To establish a corporate culture of ethical management and an optimal business operation model, there are regulations such as the Ethical Corporate Management Best Practice Principles and the Code of Ethics. (For detailed practical rules, refer to 1.2.1 Ethical Management Policy)

Goals

Goals	2022 Performance	Short-term (2023–2025)	Medium and long-term (2025–2030)
Ethical management policy - Coverage rate for employee advocacy and training	1. When employees encounter unlawful situations, they are required to use any of the reporting systems to protect their rights and interests, and to operate in good faith to fulfill their corporate responsibilities. 2. 100% of the newly hired employees must sign a declaration of commitment to integrity and ethical standards.	1. Maintain 100% of the newly hired employees must sign a commitment to integrity and ethical standards. 2. Conduct at least one training session per year related to ethical and integrity management.	1. Maintain 100% of the newly hired employees must sign a commitment to integrity and ethical standards. 2. Each employee attends a minimum of one hour of integrity management related classes each year.

Responsible unit

Corporate governance unit

Resources

Regular education, training and advocacy activities are held for directors, managers, employees, and people with substantial control. (For more information, refer to 1.2.2 Policy Communication and Training)

Grievance mechanisms

To maintain the Company's reputation, protect the safety of its property, and prevent corruption, theft, embezzlement, private practice, fraud, information security breaches, or other unethical and dishonest behaviors that harm the rights and interests of shareholders, employees and partners, we have whistleblowing channels and processing procedures for CSRC to optimize corporate governance and ensure the legitimate rights and interests of whistleblowers and related parties.

- Reporting email: mp.buster@csrcgroup.com
- Written reports: Auditing Office, CSRC Investment Holdings Co., Ltd., 8F., No. 113, Section 2, Zhongshan North Road, Zhongshan District, Taipei City.
- On-site reporting department: The Company's audit department.
- The whistleblower can make a named report or an anonymous report and can provide relevant specific information and documents. If a report is made by name, the name and contact information of the person making the report must be provided.

For more information, refer to 1.2.4 Reporting System and Channels)

Action plans

Negative Impact Management

- The types and frequency of corruption incidents are evaluated annually based on the scale of each factory, emergency cases, and project progress, and we develop an audit plan thereby.
- We analyze whether warning signs of corruption incidents are present.

(For more information, refer to 1.2.3 Anti-Corruption Risk Assessment and Results)

Positive Impact Management

- In addition to posting the relevant regulations on the corporate website, we continue to invite specialized lecturers to conduct training and awareness drives for directors, managers, employees and people with substantial control.

Evaluation of effectiveness

The Auditing Office regularly (at least once a year) reports to the Audit Committee and the Board of Directors regarding the ethical management policy, the plan for prevention of dishonest behavior, and their supervision and implementation status; and it lists the following items as constituting its annual performance appraisal:

- Confirm whether the website of Group's parent company maintains the reporting information.
- Carry out education, training and advocacy of the Code of Ethics, Ethical Corporate Management Best Practice Principles, and whistleblowing systems.
- After the Auditing Office receives an email, a call on its dedicated line, or an on-site report, it will complete the open case evaluation confirmation before the end of the following month and report to the Chairperson in writing or by email.
- As stated above, regarding the reported cases that have been evaluated, the Auditing Office must complete a case review before the end of the following quarter. Furthermore, it must submit a written report to the Chairperson and undertake follow-up processing in accordance with inspection regulations.

In 2022, there have not been any violations of ethical management or any ethical incidents.
(For more information, refer to 1.2.3 Anti-Corruption Risk Assessment and Results)

Material topics: Business performance

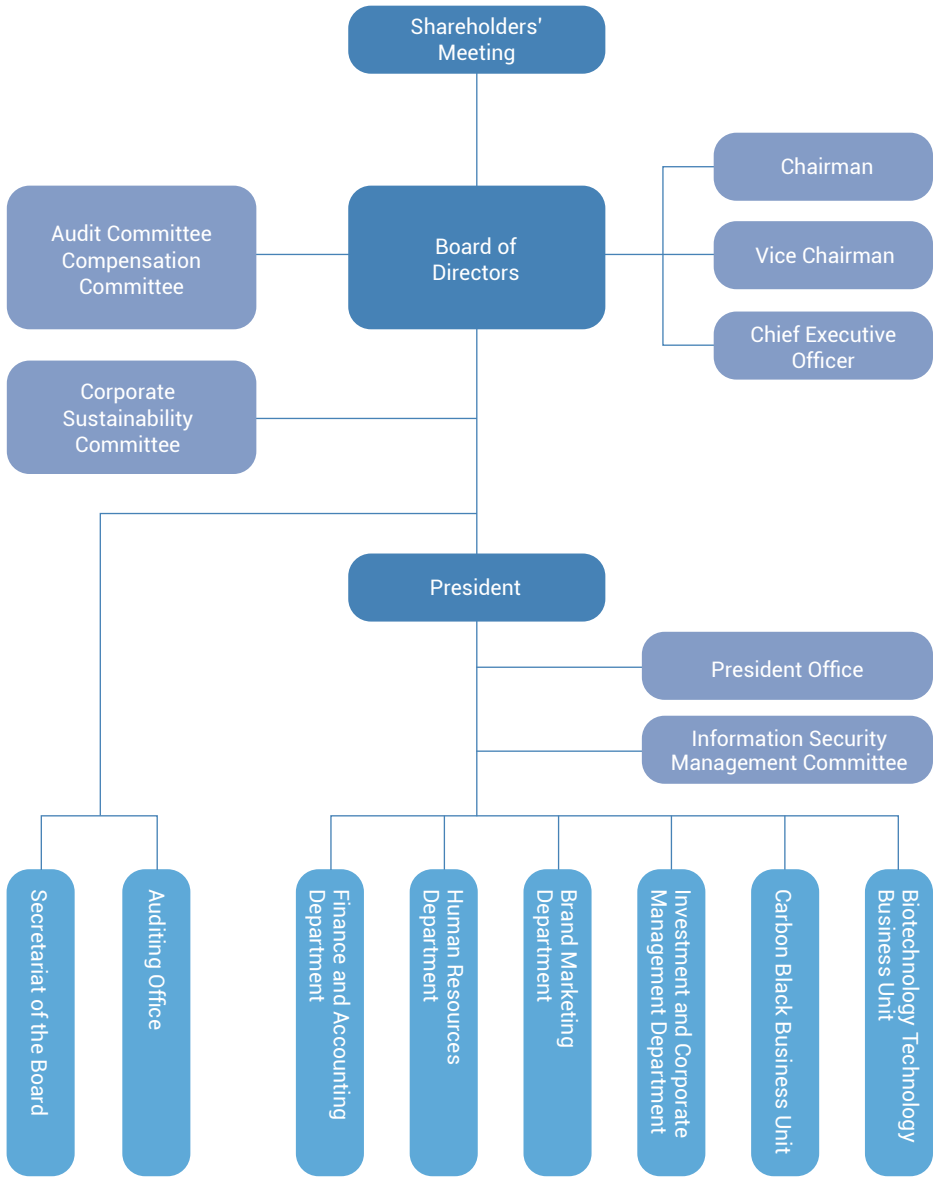
GRI indicator: GRI 3-3、GRI 201-1

Description of impact	CSRC values the importance of ESG. We take circular economy as the core concept, sustainable operations as the goal, and operations with stable production and financial stability as the main axis. We will carry out flexible production and sales allocation in accordance with market conditions and the global production base, and we will continue to invest in research and development. This will all be done to continue to create economic value.			
Policies and commitments	Please refer to 1.5.1 Operational Results, 1.5.2 Tax Policy.			
Goals	Goals	2022 Performance	Short-term (2023–2025)	Medium and long-term (2025–2030)
	Increase market share	1. R&D expenses invested in 2022 by CSRC amounted to NTD 190 million. 2. CSRC's production capacity of carbon black is ranked 6th in the world overall. 3. The first production line has been launched of the new Plant in India (Gujarat).	1. Mixing natural gas with lower carbon emissions as the heat source of the reactor reduces the cost and improves the cleanliness of carbon black. 2. Invest in R&D resources to develop electronic ink grade carbon black and conductive carbon black. 3. The new Plant in India continues the production; build new Plant in Turkey to increase market share of the international carbon black market.	1. Invest in R&D resources to develop antistatic carbon black, static dissipative carbon black, conductive carbon black for electronic rubber and plastic products, and to increase the market share of specialty carbon black. 2. The new Plant in Turkey starts the production, providing nearby services to customers in both European and Asian markets.
Responsible unit	Every departments of the Company			
Resources	Please refer to the descriptions of "Five. Operations Overview > I. Business Content > (3) Technology and R&D Overview" given in the CSRC 2022 Annual Report.			
Grievance mechanisms	The CSRC company website has an interest holder communication mailbox for filing complaints. The email is: csrcir@csrcgroup.com			
Action plans	Please refer to the descriptions given in the CSRC 2022 Annual Report under “Five. Operations Overview > II. Overview of Market and Production and Sales > (1) Market Analysis > 4. Competitive Niche” and under “Five. Operations Overview > I. Business Content > (4) Long and Short-term Business Development Plans.”			
Evaluation of effectiveness	▪ The business units summerize customer needs quarterly, and discuss the needs in departmental meetings. The results of the meetings are reflected in the communications with customers. ▪ At the end of the year, senior management will review the operating performance of the year and propose a plan for the next three years to approve the following year's operational goals and metrics (key performance indicators, KPI).			

1.1 Governance Structure

CSRC follows the Corporate Governance Best Practice Principles for TWSE/GTSM Listed Companies and the Code of Ethics for TWSE/GTSM Listed Companies to establish a corporate governance structure and related ethical standards and matters, thereby improving corporate governance. The management team of CSRC serves as a paragon of the Corporate Governance Best Practice Principles for TWSE/GTSM Listed Companies, submitting regular business and financial reports to the Board of Directors. All directors also pay attention to relevant regulatory information at all times. In addition, we comply with the information disclosure standards to disclose regarding financial, commercial, and corporate governance information through the Company's website and the Market Observation Post System.

CSRC's corporate governance organization structure is represented by the Board of Directors as the Company's business executive authority. We also establish an Audit Committee to perform supervision and establish a Compensation Committee that is responsible for formulating, reviewing, and evaluating directors, managers and other salary and remuneration related policies. At the same time, the Audit Committee and the Compensation Committee have also formulated the organizational rules for compliance for these two respective Committees. Beyond this, in 2018 CSRC additionally established Measures for the Establishment of the Corporate Sustainable Development Committee to fully implement corporate social responsibility. It thus set up a Corporate Sustainable Development Committee to enhance corporate value and at the same time build a better society.



1.1.1 Board of Directors

Composition of the Board of Directors

In accordance with the CSRC Articles of Incorporation, there are seven to eleven directors with a three-year term of office, and the Chairman, Kung-Yi Koo, is concurrently the CEO of the Group. The CSRC Group, consisting of 25 companies, operates as a holding company, which is different from a regular publicly listed company. Each subsidiary within the Group engages in different types of business. Each subsidiary's Chairman reports to the Board of Directors and is responsible for the overall management, major decision-making, and promoting sustainable development of the company. The Group CEO is responsible for overseeing all affairs of the subsidiary companies, implementing decisions made by the Board of Directors, and supervising the senior managers of the company and its subsidiaries. This role is distinct from the position of the general manager of the Company, and therefore, there are no conflicts of interest. To enhance the corporate governance, the Company has held the shareholders' meeting on May 30, 2023 and elected one additional Independent Director during the preparation of the 2022 Sustainability Report.

In accordance with Article 192-1 of the Company Act, the election of directors is based on a candidate nomination system and the shareholders' meeting shall elect the candidates from the list of directors and the re-election of directors. There were 7 directors of CSRC in 2022. All were male, with 3 being Independent Directors, making up 43% of all director seats. Five individuals were over 51 years old (71%), while 2 individuals were aged 31-50 years old (29%). Directors who are also concurrently employees of the Company make up 14% of all directors.

The CSRC Board of Directors has a diversity policy, and considers the knowledge, skills, and industry expertise required for the position, as well as a wealth of knowledge, personal insight, business judgment, leadership, and decision-making ability in the composition of the Board of Directors. In addition, the Company will place more emphasis on gender equality in the composition of the Board of Directors in the future and will prioritize the solicitation of female directors to join the Board of Directors, with the proposed goal that the number of female directors will account for at least one (1) seat of all directors in the future. Please refer to the website for more information on the Board's diversified specialized and experiential experience: Board Diversity.

Position	Name	Gender	Age	Seniority of Independent Directors
Chairman	Representative of Taiwan Cement Corporation: Kung-Yi Koo	Male	41- 50 years old	-
Director	Representative of Taiwan Cement Corporation: Guo-Hong Yeh	Male	41 - 50 years old	-
Director	Chi-Wen Chang	Male	61 - 70 years old	-
Director	Pei Yang Co., Ltd. : Nan-Chou Lin	Male	51 - 60 years old	-
Independent Director	Tzu-Nan Chia	Male	Over 71 years old	Under 3 years
Independent Director	Yen-Wei Ding	Male	51 - 60 years old	3 - 9 years
Independent Director	Liang Chang	Male	Over 71 years old	Under 3 years

Board Operation

CSRC held 7 board meetings [Note] in 2022. The average attendance rate of directors reached 96%, which is in line with the requirement that board meetings be held at least once a quarter. Important proposals are disclosed in the annual report, and the information is transparently and accurately disclosed. The directors receive reports from the management team during Board meetings and give guidance and advice to maintain good communication with the management team to work together for the best interests of the shareholders. Directors' remuneration is based on the directors' participation in and contribution to the Company's operations and the evaluation of the salary level of domestic and international peers. The operation of the Board of Directors is based on the evaluation indicators of the Corporate Governance Evaluation System established by the Corporate Governance Center of the Taiwan Stock Exchange. At the same time, it complies with corporate governance standards.

Note: The statistical period is from Saturday, January 1, 2022, to Saturday, December 31, 2022.

To establish a good corporate governance and Independent Director system, so that Independent Directors can perform their functions on the Board of Directors and in Company operations, three seats for Independent Directors have been established and the Regulations on the Scope of Duties of Independent Directors have been formulated for the Board to follow. The election of Independent Directors is conducted by the shareholders' meeting from the list of candidates for Independent Directors. Regarding Independent Directors' specialized qualifications, shareholdings, restrictions on concurrent positions, determination of independence, methods of nomination and selection, and other matters to be complied with, they shall be handled in accordance with the Securities and Exchange Act, the Regulations Governing Appointment of Independent Directors and Compliance Matters for Public Companies, the Corporate Governance Best Practice Principles for TWSE/GTSM Listed Companies and relevant regulations of government agencies. As of the end of 2022, Independent Directors of the Company are following the regulations issued by the Securities and Futures Bureau of the Financial Supervisory Commission regarding Independent Directors, and no instances as set forth in paragraphs 3 and 4 of Article 26-3 of the Securities and Exchange Act have occurred between each director and Independent Director. The Board of Directors of the Company are therefore independent.

Avoidance of Conflicts of Interest

The powers of the Board of Directors include business planning, profit distribution, capital increase and decrease, important rules and contract approval, appointment and removal of the President, branch establishment and abolition, budget and final accounts review, real estate trading, investments and other business review, and other important matters. The Board of Directors operates in compliance with the Board of Directors' meeting regulations and relevant laws and regulations, oversees the understanding of the Company's operations and various existing or potential risks of the Company, maintains good interaction with the senior management team, and fully performs the functions of the Board of Directors.

If a director or a legal entity that the director represents is an interested party in relation to an agenda item, the director shall state the important aspects of the interested party relationship at the respective meeting. When the relationship is likely to prejudice the interest of CSRC, that director may not participate in discussion or voting on that agenda item and shall excuse himself or herself from the discussion or the voting on the item, and may not exercise voting rights as proxy for another director. For more information on directors' avoidance of motions in conflict of interest, please refer to page 32 of the 2022 Annual Report.

For more corporate governance practices of CSRC, refer to the:

Website

CSRC Implementation of Board Diversity Policy

CSRC Procedures for Elections of Directors

Continuing Education of the Board of Directors

CSRC continues to arrange diverse training courses for its Board members. In 2022, two courses were offered: "Analysis of Insider Trading Cases" and "Corporate Net-Zero Sustainability Planning and Prospects." These courses aim to continuously enhance the quality of decision-making among the directors and improve their supervisory capabilities. Through these initiatives, the company seeks to strengthen the functions of the Board of Directors and foster collective knowledge in sustainable development.

Course Name	Analysis of Insider Trading Cases
Number of attending directors	7
Continuing education hours of each directors	3 hours

Course Name	Corporate Net-Zero Sustainability Planning and Prospects (water resources, carbon credit, energy)
Number of attending directors	5
Continuing education hours of each directors	6 hours

Strengthen sustainable development courses to provide diversified training for directors

CSRC values ESG sustainable development. To enhance directors' understanding of various issues, on September 28, 2022, professional lecturers were invited to the company to provide a course "Net Zero Sustainability Planning and Prospect for Corporate (Water Resources, Carbon Credit, Energy" to directors, managers, and relevant executives. At the same time, external ESG courses were provided to directors from time to time to attend (For example: "How the Board of Directors Supervises ESG Risks and Creates Sustainable Enterprise Competitiveness" course was held on September 7, 2022.)

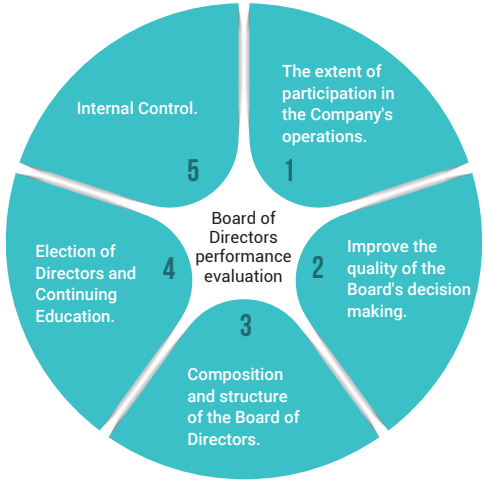
Performance Evaluation of the Board of Directors

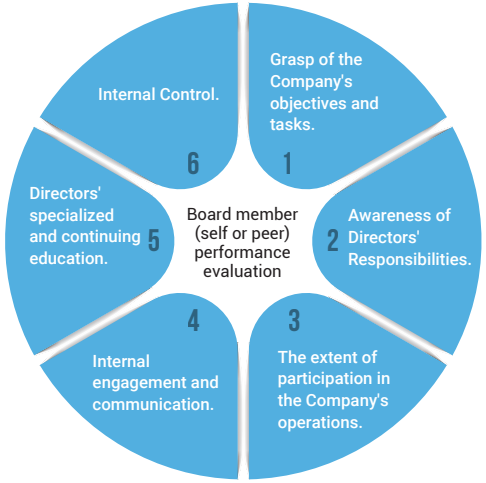
To implement corporate governance and enhance the functions of the Board of Directors, the Company revised the "Board Performance Evaluation Guidelines" in 2020 and conducts annual evaluation of the Board of Directors' performance, with the scope covering the entire Board of Directors and individual Board members. The structure of the Company's board of directors is determined by the Company's scale of operation and development and the shareholdings of major shareholders, and the appropriate number of directors is determined in accordance with practical operational needs, applicable laws and regulations, and the Company's Articles of Incorporation. To promote the sustainable management and ethical management of the Group and establish performance targets to strengthen the operation of the Board of Directors, the Company conducts annual performance evaluations for individual directors, which are submitted to the Board of Directors' report and disclosed on the Company's website.

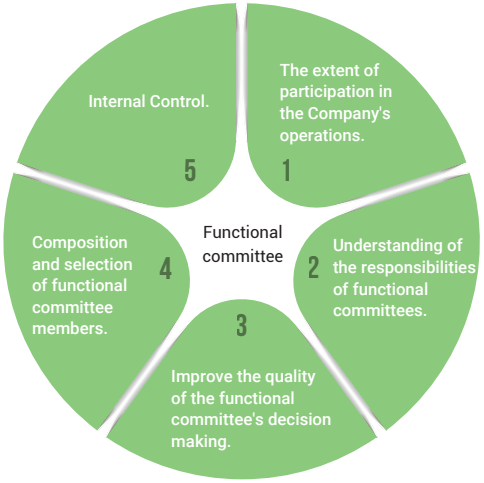
In addition to the legal requirements and the Company's "Board of Directors' Performance Evaluation Methods", the Company conducts internal self-assessments of the Board on an annual basis. This is done to enhance corporate governance and strengthen the functioning of the Board. Previously, external evaluations were conducted once every three years. However, starting from 2023, we have decided to shift to an annual external performance evaluation by external experts. The results of the Board's internal and external performance evaluation should be completed by the end of the first quarter of the following year. The results of the internal and external[Note] performance evaluation of the Board of Directors for 2022 can be found in: Board of Directors Performance Evaluation Report.

In addition, the Company ensures that directors, supervisors and key employees of the Company and its subsidiaries are covered under "Directors' and Key Employees' Liability Insurance" to cover their liabilities in accordance with the law during their terms of office. The Company reviews the contents of the insurance policies on a regular basis every year to reduce the risks borne by the directors, supervisors, key employees and the Company and to establish a sound corporate governance mechanism.

Note: An external specialized and independent certification agency evaluated the operation and performance of the Board of Directors of the Company for 2022 (2022/1/1~2022/12/31) and issued a report on February 10, 2023, which was presented to the Board of Directors on February 23, 2023.







1.1.2 Compensation Committee

Composition and selection	To improve corporate governance and the reasonableness of salaries, CSRC has established a Compensation Committee, consisting of 3 members. The 18th term of directors (including Independent Directors) were re-elected during the shareholders' meeting on July 7, 2021, and the 5th term members of the Compensation Committee were appointed by the Board of Directors on August 12, 2021. The 5th term members of Independent Directors are Tzu-Nan Chia, Yen-Wei Ding and Liang Chang, and are chaired by Tzu-Nan Chia. This was elected in the Compensation Committee meeting on August 12, 2021.
Main duties	CSRC established the Compensation Committee through a resolution at the 17th meeting of the 14th Board of Directors on December 27, 2011. The " Compensation Committee Organization Regulations" were established to create the Compensation Committee. The committee operates from a specialized and objective standpoint and is responsible for evaluating and reviewing policies, systems, standards, and structures related to performance evaluation and Compensation for directors and executives. The committee's recommendations and decisions are then presented to the Board of Directors for review and approval.
Meeting frequency	Meetings are held at least 2 times a year; ad hoc meetings may be held at any time as needed.
Operating status	Three meetings were held from January 1, 2022 to December 31, 2022, with 100% of members attending in person.

1.1.3 Audit Committee

Composition and selection	To strengthen the internal supervisory mechanism of corporate governance and to improve the operational efficiency of the Company, the Company established an "Audit Committee" to replace supervisors on June 27, 2012 in accordance with the Securities and Exchange Act. The Audit Committee members consist of all Independent Directors. The 18th term of directors (including Independent Directors) were re-elected during the shareholders' meeting on July 7,2021, and the meeting was conducted in accordance with Article 4 of the Regulations Governing the Exercise of Powers by Audit Committees of Public Companies: "The audit committee shall be composed of the entire number of independent directors...."
Main duties	▪ According to Article 14-1 of the Securities and Exchange Act, the Audit Committee is required to establish or amend internal control systems and conduct assessments of their effectiveness. ▪ In accordance with Article 36-1 of the Securities and Exchange Act, the Company establishes or amends procedures for handling material financial operations involving the acquisition or disposal of assets, derivative transactions, lending of funds to others, and endorsement or guarantee of others. ▪ Matters involving a directors' own interests. ▪ Material assets or derivative transactions, loans, endorsements or guarantees. ▪ The raising, issuance, or private placement of marketable securities of an equity nature. ▪ The appointment, dismissal, or compensation of an attesting CPA. ▪ Appointment and removal of the head of finance, accounting or internal auditing. ▪ First to third quarter and annual financial reports. ▪ Mergers, acquisitions and demergers regulated by the Business Mergers and Acquisitions Act. ▪ Approve the annual audit and non-audit engagements of the Company's CPAs, and to communicate and exchange with the Company's CPAs. ▪ Discuss disagreements between management and the Company's CPAs regarding the content of the financial reports, to discuss with management and the Company's CPAs on other financial information of the Company, and to report as required by the U.S. Securities Exchange Act. ▪ Other material matters as stipulated by the Company or the competent authorities.
Meeting frequency	According to Article 7 of the Regulations Governing the Exercise of Powers by Audit Committees of Public Companies and Article 7 of the Audit Committee Charter: " The Committee shall convene at least once quarterly, and may call a meeting at its discretion whenever necessary."
Operating status	In 2022, the Audit Committee met 7 times. The attendance rate of committee members in person reached 100%.

1.1.4 Corporate Sustainable Development Committee

Composition and selection	To strengthen the connection between corporate social responsibility and the Company's business philosophy, CSRC's Chairperson serves as the presiding chair and the President serves as the vice chair. For each authority and responsible unit, the top executive of the unit shall serve as a team member.
Main duties	The Committee consists of an ethical governance group, a recycling manufacturing group, a sustainable environment and product group, an employee care group, and a social care group. In addition, regulations such as the Corporate Social Responsibility Best Practice Principles, the Corporate Governance Best Practice Principles, and the Ethical Corporate Management Best Practice Principles have been formulated to ensure that the Company's daily operations incorporate the concept of corporate social responsibility.
Meeting frequency	The Committee should meet at least once a year. In addition to the regular attendance of committee members and group leaders, each time the meeting is held, the chair may invite group members to participate in accordance with the contents of proposals.
Operating status	In 2022, 3 reports were submitted to the Board of Directors focusing on the implementation results of sustainability development and future work plans, and the motions included: (1) Greenhouse gas inventories and verification planning (2) Greenhouse gas related work progress report and control (3) Water recycling and energy management project progress report After understanding the impact of government regulations on the company's operations, the Board of Directors also reviews the progress and strategies related to these regulations. When necessary, the board urges the management team to adjust accordingly.

1.1.5 Internal Auditing Unit

Composition of the Internal Auditing Unit

CSRC's internal audit is an independent unit directly under the Board of Directors. In addition to reporting to the Board of Directors, internal auditing unit reports to the Chairman and to the Audit Committee quarterly or when necessary. The auditors are all full-time personnel, including 1 audit supervisor and 1 auditor. All of them is qualified as a Certified Internal Auditor. Appointment and removal of internal auditors is done according to relevant laws and regulations and approved by the Audit Committee and submitted for resolution of the Board of Directors.

The evaluation and compensation of internal audit personnel are conducted in accordance with the "Internal Audit Personnel Appointment, Evaluation, and Compensation Regulations," "Performance Management Regulations," and "Remuneration Regulations" approved by the Board of Directors on May 11, 2021. The evaluation results were then submitted by the audit supervisor for approval by the chairman. This systematic approach ensures that the performance and compensation of internal audit personnel are assessed and determined in a fair and transparent manner, aligning with the Company's policies and regulations.

Main Duties of the Auditing Unit

The auditor assessing risk evaluation thru priority of the audit targets and audit items is determined according to the level of risk, and the annual audit plan is formulated. After approval by the Board of Directors and the Audit Committee, then according to the provisions of the Securities and Futures Bureau of the Financial Supervisory Commission, it shall be submitted for inspection by the Securities and Futures Bureau through the Internet information system before the end of December each year. The Auditing Office will perform internal audit operations in accordance with the annual audit plan, write internal audit recommendations, and submit audit reports. After the audit report is verified by the Chairman, the inspected unit will be notified to make improvements within a time limit, and the improvement of abnormal matters found in the internal audit will be tracked. According to the improvement measures proposed by the inspected unit, an internal audit follow-up report is to be compiled, and an "Annual Internal Audit Abnormality Improvement Report" shall be compiled before the end of May each year. This shall be submitted to the Market Observation Post System for inspection by the Securities and Futures Bureau after approval by the Chairperson. For a summary of the relevant audit and tracking reports of 2022, refer to the explanation under 1.4.2 Risk Identification and Early Warning Process.

The Auditing Office is responsible for handling matters concerning the self-assessment of the Company's internal control system, reviewing the self-assessment report of the internal control system of each unit and subsidiary of the Company, and assisting and supervising the implementation of the internal control system of each subsidiary.

The audit supervisor attends the entire Board of Directors and audit committee every quarter. They carry out the business report of the Auditing Office, explaining the audit findings of each inspected unit and the follow-up improvement status. During meetings of the Audit Committee and the Board of Directors, Independent Directors may provide comments on the content of the audit report, and the audit supervisor shall explain in response. While the Auditing Office drafts the annual audit plan, the audit supervisor will also check the audit key points after the risk assessment, list the items to be audited each month in detail and make detailed explanation to the Audit Committee and the Board of Directors, and it shall be approved by the Audit Committee and the Board of Directors. It is expected that the internal audit operations will meet the needs of corporate governance. In addition to meetings for communication, audit supervisors, accountants and Independent Directors also directly contact and communicate with each other as needed at any time, maintaining a good interactive relationship.

1.1.6 Investor Communication

In the Corporate Social Responsibility Best Practice Principles, CSRC clearly stipulates that when performing corporate social responsibilities, the company should respect social ethics and pay attention to the rights and interests of other stakeholders. While pursuing sustainable operation and profitability, CSRC also attaches importance to environmental, social, and corporate governance factors and incorporates them into the Company's management and operation policies. In terms of shareholders' equity, we appoint a dedicated person in charge of investor relations. The spokesperson and investor relations officer accept shareholder suggestions and concerns and handle disputes. Relevant departments will accept suggestions and handle disputes according to the type of problem.

Creating the highest interests for shareholders is the goal of CSRC and all colleagues. To maintain good communication channels with investors and disclose information to shareholders, the Company's operations and financial conditions are reported to investors in addition to the annual shareholder meetings, corporate investor meetings, and interim institutional investor meetings. We have established an "Investor Area" on the Company's website, and use financial information, corporate governance, and shareholder columns to publish relevant financial statements, corporate investor meeting data and information, internal audits, Company regulations, dividend distributions over the years, important information announcements, and so on. We publish the information in the fastest way to provide it to investors for reference.

Shareholders' Meeting

Investor Conferences

1.2 Ethical Management

1.2.1 Ethical Management Policy

CSRC adheres to the Company's business philosophy of "Modesty leads to harmony; honesty builds credibility" and clearly indicates its ethical management attitude on the Company's website. To establish a corporate culture of ethical management and an optimal business operation model, there are regulations such as the Ethical Corporate Management Best Practice Principles and the Code of Ethics. The first point of CSRC's brand value is to stick to its promises, and practical rules are as follows:

To improve the supervision of ethical management, CSRC is responsible for the formulation and supervision of the implementation of the ethical management policy and prevention plan by the corporate governance unit. Furthermore, this is regularly (at least once a year) reported to the Board of Directors. Reported items include:

1. Assist in integrating ethics and moral values into the Company's business strategy and cooperate with the legal system to formulate relevant anti-fraud measures to ensure ethical management.
2. Regularly analyze and evaluate the risk of unethical conduct within the business scope, and formulate plans to prevent unethical conduct, defining the Procedures and Guidelines for Conduct as applied to work operations within each plan.
3. Plan internal organization, staffing structure and responsibility. Place mutual supervision and checks and balances system on business activities with high risks of unethical conduct in the business scope.
4. Promotion and coordination of ethical policy advocacy training.
5. Plan the reporting system to ensure the effectiveness of the implementation.
6. Assist the Board of Directors and management to check and evaluate whether the preventive measures established by the implementation of integrity management are operating effectively, and regularly evaluate and follow the relevant business processes and make reports.

To ensure that employees, managers, and directors know and follow the Ethical Corporate Management Best Practice Principles, CSRC regularly conducts advocacy and incorporates it into the internal control system every year. CSRC always pays attention to the development of domestic and foreign standards for ethical management, revising the content from time to time according to the internal and external situation and developments. At the same time,CSRC also encourages directors, managers, and employees to make suggestions while reviewing and improving the Company's Ethical Corporate Management Best Practice Principles to enhance the effectiveness of the Company's ethical management. CSRC's Ethical Corporate Management Best Practice Principles and Code of Ethics are as follows:

Ethical Corporate Management Best Practice Principles

Directors, managers, employees, or persons with substantial control capabilities are subject to prohibitions of engaging in the following acts:

- Prohibition of dishonest behavior
- Prohibition of bribery and acceptance of bribes
- Prohibition of providing illegal political contributions
- Prohibition of improper charitable donations or sponsorships
- Prohibition of unreasonable gifts, entertainment, or other improper benefits
- Prohibition of infringement of intellectual property rights
- Prohibition of unfair competition
- Prohibition of discrimination
- Prohibition of insider trading

Code of Ethics

- Prevention of conflicts of interest
- Actions in one's own self-interest are not allowed
- Duty of confidentiality
- Implementation of fair trade
- Proper protection and use of Company assets
- Regulatory compliance

CSRC takes the highest specialized ethical standards as a self-requirement, abiding by discipline and zero tolerance for corruption, and does not allow any bribery, fraud, misuse of Company assets or sacrifice of Company interests in exchange for personal gain. In the future, we will continue to evaluate the revisions of regulations such as governance, product liability, and environmental protection, to adjust in advance to meet regulatory requirements. To strengthen compliance with the Company's "Ethical Corporate Management Best Practice Principles" and to enable employees to fully understand the Company's regulations on the acceptance of hospitality, social and gift benefits, we have established the "Procedures for Acceptance of Hospitality, Social Engagements and Gifting" and the "Regulations for the Acceptance of Gifts".

1.2.2 Policy Communication and Training

CSRC regularly organizes education, training and advocacy for directors, managers, employees and “people with substantial control” (those who are not shareholders but have actual control over the company's actions through investment relationships, agreements, or other arrangements) to make sure they fully understand the Company's determination, policies, prevention plans, and the consequences of dishonest behavior violations. Directors and colleagues of CSRC participated in corporate governance and ethical management related courses in 2022. The courses included "Insider Transaction Case Study", "Procurement Contract Risk Clause Preparation and Contract Management Practice", "Procurement Contract Risk", and "Procurement Contracting and Acceptance Regulations", etc. Through external and internal training courses, we strengthen the understanding and awareness of corporate governance, integrity management and ethical behavior related laws and regulations. The percentage of employees and board members receiving anti-corruption awareness and training at each operating plant in 2022 reached 100%. This ensures that all employees in our operations are aware of and adhere to the core values of CSRC's business integrity. In terms of business partners, CSRC places great importance on the integrity and ethical conduct of its suppliers. All suppliers of Linyuan Advanced Plant, Maanshan Plant, and Anshan Plant have fully accepted the company's anti-corruption policy and procedures. Contracts with these suppliers require the signing of a declaration of integrity pledge[Note], emphasizing the protection of employee rights and the provision of lawful working conditions. Furthermore, the company expects suppliers to adhere to ethical business practices. In 2022, the signing rate for these pledges and commitments reached 100%.

Note: With respect to contracts signed by CSRC with agents, suppliers, customers or other business partners, which include compliance with ethical management policies, if the counterparty of the transaction is involved in dishonest conduct then the terms of the contract may be terminated or rescinded at any time and reported. The results of an inspection uncovering dishonest behavior shall be reported to senior management and the unit responsible for ethical operations, and an audit report shall be prepared and submitted to the Board of Directors. The report frequency shall be at least once a year.

Region	Number of people who know and understand the Company's anti-corruption policies and procedures, and receive training in anti-corruption	Number of personnel	Percentage
Board of Directors			
--	7	7	100%
Employees			
CSRC (Taipei)	46	46	100%
Senior supervisor	4	4	100%
Mid-level supervisor	12	12	100%
Basic level supervisor	10	10	100%
Specialized staff	20	20	100%
Linyuan Advanced Plant	196	196	100%
Senior supervisor	2	2	100%
Mid-level supervisor	12	12	100%
Basic level supervisor	13	13	100%
Specialized staff	74	74	100%
Direct staff	95	95	100%
Maanshan Plant	195	195	100%
Mid-level supervisor	7	7	100%
Basic level supervisor	17	17	100%
Specialized staff	36	36	100%
Direct staff	135	135	100%
Anshan Plant	227	227	100%
Mid-level supervisor	6	6	100%
Basic level supervisor	15	15	100%
Specialized staff	48	48	100%
Direct staff	158	158	100%
Total	664	664	100%
Suppliers			
Linyuan Advanced Plant	337	337	100%
Maanshan Plant	255	255	100%
Anshan Plant	174	174	100%

1.2.3 Anti-Corruption Risk Assessment and Results

CSRC has established a risk assessment mechanism for dishonest conduct in accordance with the Ethical Corporate Management Best Practice Principles. The company regularly analyzes and evaluates business activities with a high risk of dishonesty in the business scope and establishes an effective accounting system and internal control system. No foreign accounts or secret accounts shall be kept, and reviews should be undertaken at any time to ensure that the design and implementation of the system continues to be effective.

The internal auditing unit shall draw up relevant audit plans based on the assessment results of the risk of dishonest conduct. The content is to include audit targets, scope, items, frequency, and so on, and it shall check the compliance of the prevention plan accordingly. For example, based on the scale of each factory, emergency cases, and project progress (e.g., plant construction, expansion, overhaul, or other special projects, etc.), the Auditing Office shall evaluate the type and frequency of corruption incidents every year and formulate an annual audit plan. The audit plan appoints an accountant to perform the audit and, if necessary, entrusts specialized assistance. The results of the inspection in the preceding paragraph shall be reported to the senior management and the unit responsible for ethical management. Furthermore, it shall prepare an audit report and submit it to the Board of Directors. The frequency of the report is at least once a year. In addition to routine annual audit operations, the Auditing Office analyzes red flags for corruption (e.g., incomplete approval processes, lack of authority and authorization from responsible supervisors, or unreasonable vendor designations for procurement and contracting cases). CSRC conducts an annual assessment of corruption-related risks. Each factory receives a risk assessment self-evaluation form (voluntary self-audit) that includes integrity-related risks. Based on the scoring results, the Auditing Office performs annual audits. Upon examination in 2022, it was determined through the risk assessment that there were no significant corruption risks within the Group, no major corruption incidents or violations of integrity or ethical conduct occurred, and there were no lawsuits related to anti-competitive behavior or violations of antitrust and monopoly laws involving the Company. (The relevant corruption risk assessment covered in the scope of this report — the Taipei headquarters, Linyuan Advanced Plant, Maanshan Plant and Anshan Plant, with a percentage of 100%.)

Total number and percentage of operating sites with corruption-related risk assessments

Operational sites of CSRC 2022 have been assessed for corruption-related risks and included in the annual audits based on the scores, and no significant abnormalities were found.

Ratio

100%

Mainland area

- CSRC (Taipei)
- Maanshan Plant
- Linyuan Advanced Plant
- Anshan Plant

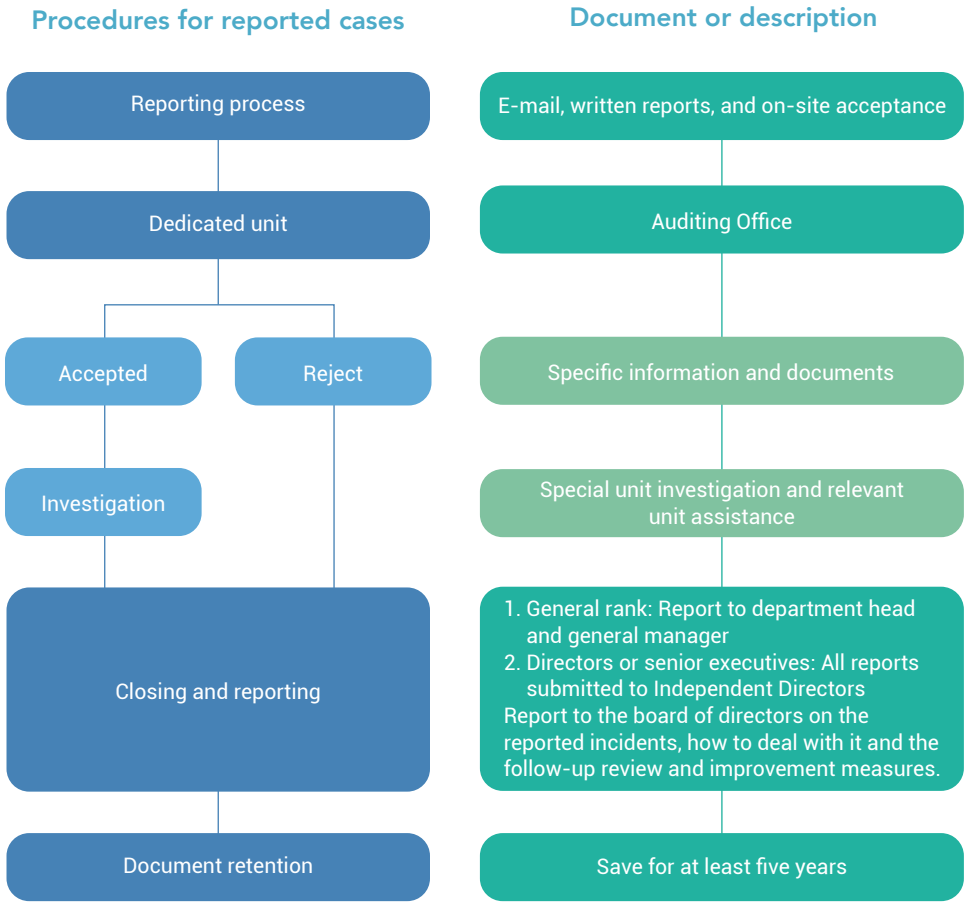
1.2.4 Reporting System and Channels

To establish an honest and transparent corporate culture and promote sound management, CSRC has a Reporting System for Violations of Professional Ethics. This includes instructions on reporting channels and processing procedures, ensuring the legal rights and interests of informants and related persons. For any internal or external stakeholders of CSRC, if anything that may endanger the reputation and the safety of the property of CSRC, or any corruption, theft, embezzlement, private practice, fraud, or other unethical and dishonest behavior, please file reports and complaints through the following reporting channels of CSRC:

1. Reporting email: mp.buster@csrcgroup.com
2. Written reports: Auditing Office, CSRC Investment Holdings Co., Ltd., 8F., No. 113, Section 2, Zhongshan North Road, Zhongshan District, Taipei City
3. On-site reporting department: The receiving department is the Auditing Office of CSRC

The whistleblower can make a named report or an anonymous report, and can provide relevant specific information and documents. If the report is named, the reporter should provide their name and contact information. If the relevant information and documents are not complete, it will not be accepted.

CSRC has integrated the value of ethical management and ethical behavior into the Company's business strategy and cooperates with laws and regulations to establish relevant anti-fraud measures to ensure honest operation and ethical behavior. Through the "Reporting System for Violations of Professional Ethics" (the scope of application of this regulation applies to CSRC's subsidiaries, foundations or institutions that have received direct or indirect donations amounting to more than fifty percent, and other group companies and organizations where CSRC has substantial control), we ensure that the opinions of internal and external stakeholders can be communicated through unobstructed channels. The dedicated unit is the Auditing Office and will cooperate with Regulatory Compliance or other relevant departments to ascertain relevant facts if necessary. For reported cases that are accepted, the identity of the informant, the content of the investigation, the investigation process and the investigation results are all properly kept, and access rights are restricted. At the same time, CSRC promises to protect the informant from being improperly dealt with due to the report. If the reporting is verified to be true, relevant departments of CSRC will be instructed to review the internal control system and operating procedures, propose improvement measures and report to the Board of Directors to prevent the same incident from happening again. In addition, we also encourage internal and external personnel to report dishonest behavior or misconduct, and bonuses will be awarded according to the circumstances of the report.



In 2022, no incidents of ethical management violations were reported through the aforementioned reporting system at CSRC (including the Taipei headquarters, Linyuan Advanced Plant, Maanshan Plant and Anshan Plant). There were also no incidents of employees being dismissed or disciplinary actions being taken due to corruption, nor of business partners being terminated or not renewed due to corrupt violations; and there were no litigation cases related to corruption among the company or its employees.

1.3 Regulatory Compliance

1.3.1 Identification and Collection of Laws and Regulations

"Honesty and Integrity" constitutes the core value of CSRC. We value regulatory compliance and strictly abide by local government laws and regulations to achieve sustainable operations while also taking responsibility for employees, shareholders, and the overall supply chain. The Company's operations are based on the concepts of honesty, fairness, and transparency and with zero violations as the management goal. Each unit within CSRC regularly confirms the trends of relevant laws and regulations according to their responsibilities. This is done through regular monitoring of laws and regulations, collection of internal and external issues, and reporting and implementation of improvement measures against operational risks to ensure that CSRC complies with various laws and regulations to avoid the risk of violations.

Legal Compliance Departments and Responsibilities

President's Office

Execution of legal affairs, litigation, legal consultation, review of contract documents, management of intellectual property rights, and risk control.

Human Resources Department

Conduct internal education and training to strengthen employees' awareness of legal compliance.

Auditing Office

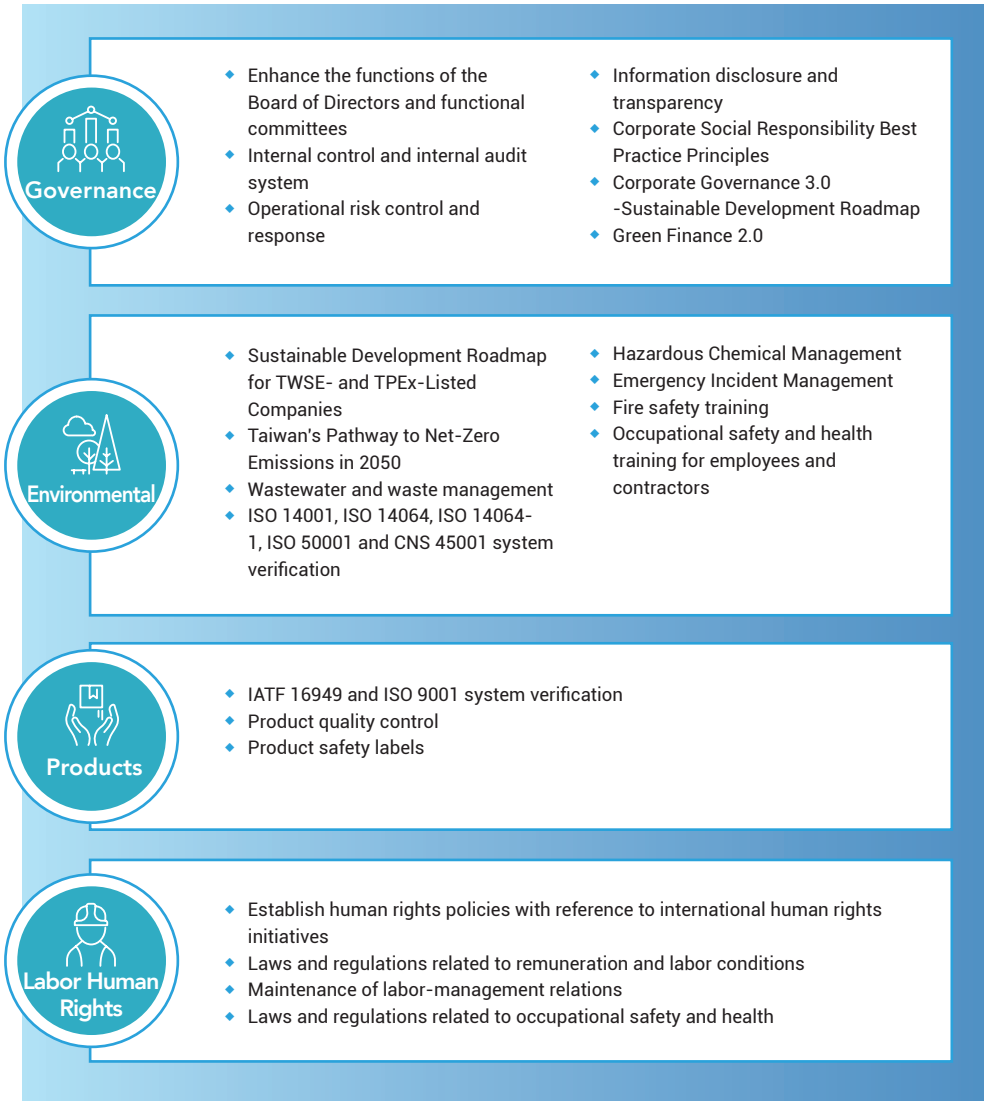
Implement internal audits, develop and execute internal audit plans, and submit audit reports to reduce business risks.

All departments

Comply with the relevant laws and regulations.

Results of Regulation Identification

In the future, CSRC will continue to evaluate the revisions of laws and regulations on governance, environment, product liability and labor human rights, to make adjustments in advance to meet regulatory requirements.



1.3.2 Compliance Training and Advocacy of Laws and Regulations

CSRC conducts regular education and training programs and awareness campaigns for directors, executives, employees, and substantial controllers. In 2022, different ethics and compliance courses were provided based on the specific roles and responsibilities of individuals. Procurement-related personnel received appropriate education and training focused on procurement outsourcing, ensuring a thorough understanding of the consequences of unethical procurement practices. Managers, the Corporate Sustainability Committee, and the management team received training primarily focused on sustainable business practices and auditing procedures, aiming to create an operational environment conducive to corporate sustainability. The cumulative number of training recipients was 153, with 635 hours, and the related training records are listed below:

Course Topic	Participants
Net-Zero Carbon Emissions Management Strategy	Senior Managers, Finance Department, Sustainable Development Committee, Plants, R&D related staff
Procurement Contract Risk Clauses and Contract Management	Procurement process related employees
Procurement Contracting and Acceptance Standards	Procurement process related employees
Sustainability Management Topics	Senior Managers, Finance Department, Sustainable Development Committee, Plant staff
Introduction of Manufacturing Material System and Verification Techniques in Practice	Auditing Office
How Internal Auditors Interpret Operating Performance and Risks from IFRS Financial Statements	Auditing Office
Latest Domestic Corporate Governance Trends and the Analysis of Implementation of the Control Environment.	Auditing Office

Note: For information of continuing education of the Board of Directors, please refer to Director Area-Director Continuing Education Information on official website.

1.3.3 Regulatory Compliance and Improvements

In 2022, there were 3 major environmental and occupational health and safety violations (fines exceeding NTD 100,000) with cumulative fines amounting to NTD 411,084, and no major non-monetary penalties or sanctions.

Fines imposed by	Violation of regulations	Description of violation	Fine amount	Follow-up improvement
Department of Environmental Protection, Kaohsiung City Government	Article 32, Air Pollution Control Act	During the carbon black manufacturing process, the junction between the pelletizer and the drying furnace was blocked, resulting in granular pollutants escaping from the pelletizer's product sampling port, which was immediately suppressed by sprinkling water but still not effectively collected, causing air pollution.	NTD 150,000	The abnormal equipment that caused the particle contaminants to escape is repaired and restored to normal operation.
Department of Environmental Protection, Kaohsiung City Government	Article 23, Air Pollution Control Act	Repair of the bag-type dust collector necessitated the cutting open of a hole due equipment malfunction, resulting in the collected carbon black (particulate pollutants) escaping directly into the atmosphere from the repair hole.	NTD 150,000	The bag-type dust collector that causes particulate pollutants to escape was quickly repaired, and the maintenance personnel were instructed to avoid pollutants from escaping due to maintenance.
People's Government of Maanshan City, China	Article 28, Fire Protection Law of the People's Republic of China	Damage to warehouse fire fighting facilities and equipment.	RMB 25,730	Completed the renewal of the damaged fire safety facilities of the warehouse and pass the acceptance of local fire fighting agencies.

1.4 Risk Management

1.4.1 Risk Management Policy

The carbon black industry is changing rapidly. Under the current conditions of globalization, various operating factors may generate risks, and this may affect the sustainable operations of CSRC. Upholding the principles of integrity, transparency and responsibility constitutes the operating philosophy of CSRC. Each department of CSRC evaluates its operational risk factors and plans related management and control work to implement corporate governance operations and improve risk management mechanisms, while also creating a sustainable business environment. Internal auditors list high-risk operations as an annual audit plan and they create audit reports from the audit results. They regularly submit reports to the Audit Committee for review and attend the Board of Directors in a nonvoting capacity. In addition, each department conducts self-assessment of the internal control system every year to ensure the effectiveness of system design and implementation. In the future, we will set up a dedicated unit for risk management; conduct more in-depth discussions on the Company's risk management priorities, risk assessment, and response measures; and report to the Board of Directors on operational risks and management strategies.

Business Continuity Plan

To enable the backup data center to be activated within the shortest possible time in the event of a major disaster that causes the information system to fail to operate normally, CSRC has established a Business Continuity Plan that regularly implements the following four processes and steps each year to ensure the smooth transition of the Company's back-office information system to the backup data center.

Recovery drill

Complete 1 disaster recovery drill per year and backup data regularly.

Information security integrity check

Complete an annual information security audit to identify potential information security threats and develop improvement plans to continuously improve the company's information security protection capabilities.

Vulnerability Assessment

Complete 2 vulnerability assessments every year, with no abnormalities found in 2022.

Education and training of Information security

Regularly promote the Company's information security policy and hold information security courses every year. After the physical courses, upload the courses to the TCC Lyceum system for our colleagues to take online courses (E-learning) continuously.

1.4.2 Risk Identification and Early Warning Process

Risk management is an important key to business operations. Through the identification, management, measurement, and analysis of the Company's internal and external risk factors in the short, medium, and long term, CSRC improves the effectiveness of decision-making and enhances corporate value. To continuously improve the risk management mechanism, we control finance, business, materials, and engineering for related internal control issues. Recently, we have focused on the risk management of climate change risks and work safety, and formulated corresponding response strategies and plans. Through this risk early warning system, risk items are regularly tracked, and countermeasures are proposed in advance. The system automatically generates warnings about abnormalities, reducing associated labor and avoiding omissions. The validity of the risk identification and early warning process is confirmed through regular audits by the Auditing Office. The audit supervisor of the Auditing Office regularly explains to the Board of Directors the key points of risk management, evaluates, and plans corresponding measures, and reports operations-related risks and management strategies.

Financial Risk

Material cost management, promissory note management

Business Risk

Customer attribute management, customer repetition building

Material Risk

Receiving weighing management, supplier master file management, purchase order splitting management, procurement transaction management, bundled bidding and bid evaluation vendor analysis, performance bond and quality guarantee management, and oil price contract alert.

Engineering Risk

PDA inspection, PM contracting management, PM acceptance management, inspection quality management

Scope of Internal Audit

In 2022, the internal auditing unit of CSRC conducted and completed 24 audit reports and 6 follow-up reports according to the annual audit plan. 17 internal control recommendations were made, covering areas such as procurement, contract management, acceptance, production management, real estate and equipment management, quality management, employee attendance, occupational health and safety, financial income and expenditure, seal management, and compliance with laws and regulations. These recommendations were tracked and addressed in accordance with the established procedures for improvement.

1.4.3 CSRC Risks and Responses

The challenges and responses to various risks of CSRC at this stage are explained as follows:

Risk Management and Opportunities for Climate Change

Following the Paris Agreement, climate change response has become an issue that governments and companies must face proactively. Domestic and international greenhouse gas emission regulations are becoming stricter, and natural disasters brought about by extreme climates have a direct impact on the operating premises and will all affect the Company's finances. In response, in 2020, CSRC actively implemented the identification of risks and opportunities through project meetings based on the TCFD framework (Task Force on Climate-related Financial Disclosures) and set relevant targets (including Linyuan Advanced, Maanshan Plant and Anshan Plant) to gradually slow down climate change. CSRC also publicly supported the TCFD in June 2021 and completed the signing of the TCFD.

Governance

At CSRC, each plant and department identify the climate change risk and opportunity projects that are relevant to it and develops corresponding measures. Furthermore, CSRC regularly reports the identification results to the Corporate Sustainable Development Committee. The Corporate Sustainability Committee formulates control measures and action plans for various risks and opportunities related to climate change and reports implementation results to the Chairman of the Board every year. The Corporate Sustainability Committee also regularly reports the core climate risks and response strategies faced by CSRC to the Chairman of the Board, which makes the Board of directors fully aware of climate-related risks, decide on relevant management policies, and supervise their implementation.

Strategy

CSRC introduced a climate-related risk and opportunity identification mechanism in 2020 to fully inventory and evaluate the impact of various risks and opportunities issues on the Company's operations and manage them.

Risk Management

To understand the impact of climate change on the operations of CSRC, we gradually focus on and manage major risks and opportunities issues through the following identification mechanisms. First, we screened 17 risks and 6 opportunities related to the petrochemical industry based on the industry characteristics. We then handed them over to plant managers and departments to fully understand the impact of various climate risks and opportunities through literature research, case studies, collection of domestic and foreign laws and regulations, and market/tech trends. We then used a three-dimensional assessment of time range (short-range, medium-range, and long-range), the possibility of the issue, and the degree of impact on operations to summarize the major potential climate risks and opportunities. We further applied a climate change risk and opportunity matrix to identify and rank related risks, and in this way we ultimately identified three material risks and five material opportunities. Finally, the identification results were reviewed by senior management to identify relevant risks and opportunities and take relevant countermeasures.

Metrics and Targets

Goal	Base year	Status in 2022	Short-term (2023-2025)	Medium and long-term (2025-2030)
Lower the intensity of GHG emissions	2016	Emissions lower than base year ■ Linyuan Advanced Plant: 21% ■ Maanshan Plant: 21%[note1] ■ Anshan Plant: 16%[note2]	■ Linyuan Advanced Plant: Reduction of 25% in 2025 from the base year ■ Maanshan Plant: Reduction of 23% in 2025 from the base year ■ Anshan Plant: Reduction of 23% in 2025 from the base year	■ Linyuan Advanced Plant: Reduction of 30% in 2030 from the base year ■ Maanshan Plant: Reduction of 26% in 2030 from the base year ■ Anshan Plant: Reduction of 25% in 2030 from the base year
Cumulative replacement of energy-efficient motors (IE3) ratio	-	■ Linyuan Advanced: 6.3% ■ Maanshan Plant: 98% ■ Anshan Plant： 60%	■ Linyuan Advanced Plant: 10% ■ Maanshan Plant: 100% ■ Anshan Plant： 70%	■ Linyuan Advanced Plant: 20% ■ Maanshan Plant: Gradually adopt IE4-5 ■ Anshan Plant： 90%
Replace old equipment with new ones	-	■ Linyuan Advanced Plant: Replace 29% of air compressors ■ Maanshan Plant: Replace old air compressors with DC inverter air compressors ■ Anshan Plant: Replace 6.22% of aging equipment	Replacement rate of old equipment ■ Linyuan Advanced and Maanshan Plant: 40% ■ Anshan Plant： 20%	Replacement rate of old equipment ■ Linyuan Advanced and Maanshan Plant: 60% ■ Anshan Plant：40%

Note 1: Since the carbon emission intensity targets set by the Maanshan Plant and the Anshan Plant are motivated by local government policies, performance also covers the external power supply, emissions intensity in 2022 for offsetting external performance decreased by 21% compared to the base year, while the actual comparative emission intensity decreased by 31% compared to the base year.

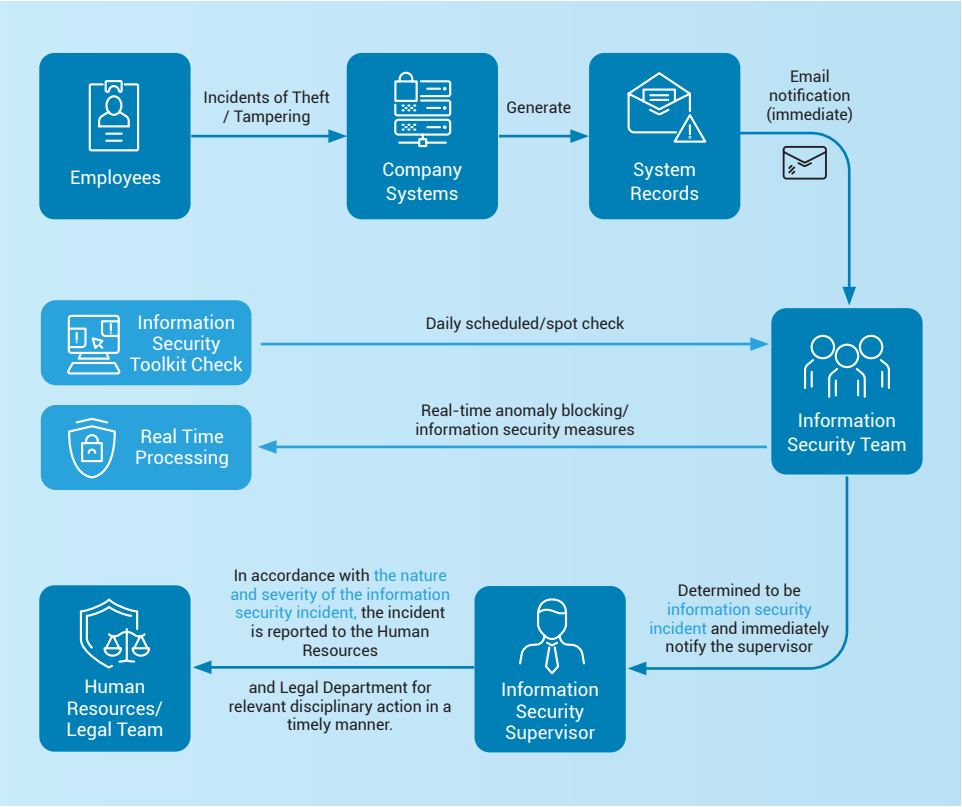
Note 2: Emissions intensity in 2022 for offsetting external performance decreased by 16.3% compared to the base year, while the actual comparative emission intensity decreased by 15.8% compared to the base year.

Information Security Risk Management

CSRC's information security responsibilities are mainly undertaken by Taiwan Cement Corporation - TCC Information Systems Corp (TCCI). They are responsible for the overall design of the information security architecture, security operations and monitoring, and response and investigation of internal and external security incidents. Although the Company has not established a specific position of a Chief Information Security Officer (CISO), TCCI (consisting of 20 staff members) is responsible for handling information security-related matters, with oversight from the CISO of Taiwan Cement Corporation.

In 2020, the Company adopted the PDCA (Plan-Do-Check-Act) cycle based on the international standard for information security management systems, ISO/IEC 27001:2013. The Company established and implemented an information security management system in accordance with this standard, and the information security policy was approved by the highest-level information security unit within the Group. In late 2020, the Company obtained ISO 27001 certification, valid until January 5, 2024. Furthermore, the Company undergoes annual ISO 27001 surveillance audits to maintain the certification. The Company's President convenes an interdepartmental "Information Security Management Committee", which meets once a year to review the effectiveness of information security planning and implementation and major information security resolutions, and to coordinate the allocation of resources required for information security matters. The Information Security Management Committee has established an "Information Security Management Team" responsible for planning, establishing, executing, maintaining, reviewing, and continuously improving the information security management system for the Company's information systems, and reports information security-related issues to the Information Security Management Committee. The Information Security Management Team meets regularly to review the implementation status and reports to the Board of Directors on the implementation status and review on an annual basis, and the report to the Board of Directors was submitted on December 15, 2022.

Information Security Incident Handling Flow Chart



Information Security Management and Protection Mechanism

Item	Explanation
Information Security Organization	The Information Security Department was established in 2022 and now has five dedicated information security staff members.
Information Security Awareness	Three information security training sessions and two social engineering exercises were conducted in 2022.
Network Security	■ The core network equipment, such as firewalls, Switches, and routers, are configured with a high-availability (HA) architecture to ensure continuous and uninterrupted operation. Additionally, a half-yearly audit is conducted to review firewall rules, router traffic, load, and configurations. ■ All external-facing service websites are protected by application firewalls to enhance security. ■ Two-factor authentication (MOTP) is required for VPN connections.
Asset Management	Verify the current status of assets through asset inventory software to prevent infringement.
Access Security	The password policy requires user account passwords to have a minimum length of 8 characters and include complexity requirements. Users are also subject to an account lockout mechanism after 3 unsuccessful login attempts. Passwords need to be changed every 90 days, and password reuse is limited to 4 occurrences.
Physical Security	Two-factor authentication (RFID card swipe with face recognition) is used for access to sensitive areas (e.g. sever room).
Data Leakage Protection	Restrictions on the use of USB and cloud drives, and email transmission records are all tracked.
System Security	■ Regular updates of system patches and daily updates of anti-virus code. ■ Perform system backup operations on a regular basis.
Incident Detection	Employ a 7x24 malicious connection detection mechanism to monitor abnormal connections. In the event of an incident, immediately notify the responsible personnel of the system and the Company's information security personnel. After assessing the severity of the security incident, we report the findings to the respective level of management.
Business Continuity	Disaster recovery drills are performed regularly each year to ensure system availability.
Education and Training	In 2022, we implemented a one-hour information security awareness and hacking prevention course for all employees to build up the concept of information security for all employees and ensure everyone understands and implements it.

Information Security Management Performance

In 2022, no complaints of invasion of customer privacy, information leakage, theft or loss of customer data were received at CSRC's Taipei headquarters, Linyuan Advanced Plant, Maanshan Plant and Anshan Plant.

Other Risk Items

In 2022, the various risks of CSRC were implemented under the existing management measures; no major abnormalities occurred.

Risk	Challenges	Corresponding Management Measures
Risk Management of Unethical Behavior	The scope of unethical conduct risk management includes bribery and corruption, providing illegal political donations, improper charitable donations or sponsorships, unreasonable gifts, hospitality, or other improper benefits, infringement of intellectual property rights, and safeguarding against harm to stakeholders due to products or services.	To prevent occurrences of unethical behavior, CSRC has established a whistleblower system in the form of its "Reporting System of Violations of Professional Ethics." Furthermore, it works regularly through internal control operations, routine audits and so on to reduce the risk of various types of unethical behavior.
Financial Risk Management	The scope of capital risk management includes significant capital expenditures are evaluated cautiously and prudently to further enhance the possibility of benefit realization and to set countermeasures for possible derivative risks in advance, so as to reduce and avoid risks that have negative impacts	1. The financial instruments used by CSRC include equity investments, beneficiary securities investments, accounts receivable, accounts payable, borrowing, and so on, which are prone to exchange rate fluctuations and inflation risks. The exchange rate is mainly affected by fluctuations in the US dollar and RMB market, and since the price of crude oil is linked to the prices of all bulk materials, it will also affect the changes in the cost of raw materials. The extent of the impact on profit and loss depends on the supply and demand of each product market. The financial management department conducts overall planning and coordination of the operation of domestic and foreign financial markets. It monitors and manages related financial risks through internal risk reports of risk level and scope analysis. In addition, a business management analysis department is set up to watch closely the changes in the prices of major raw materials and status of supply and demand, and review the purchasing status of the procurement plan regularly. 2. For accounts receivable customers, we regularly review customer credit status and confer ratings. In accordance with the approved credit limits, the control of sales loans and accounts receivable is carried out and the overdue accounts receivable are reviewed monthly to achieve the goal of zero overdue accounts for the year. CSRC also takes out related insurance policies to avoid operational risks such as fire insurance, business interruption insurance, earthquake insurance, typhoon and flood insurance, third-party liability insurance, directors, and executive managers liability insurance, etc. to reduce the loss caused by loss from disaster.
Capital Risk Management	The scope of financial risk management includes equity investments, investments in beneficiary securities, accounts receivable, accounts payable and borrowings, which are susceptible to risks such as exchange rate fluctuations and inflation.	Capital management focuses on a sound operating plan, and CSRC maintains sufficient capital based on its operating plan as it supports various business expansion and construction needs. Therefore, CSRC maintains good profitability and financial structure to support the needs of working capital, capital expenditure, debt repayment, and dividend payment in the mid- and long-term.
Risk Management of Purchases and Sales	Purchase risks include: 1. Unexpected risks caused by change in nature, economic policies, price and other factors in the procurement of raw materials. 2. The shortage of suppliers with effective sources may increase the risk of supply chain disruptions. Sales risks include: 1. The continuous increase in accounts receivable can easily lead to excessively high corporate debt-to-asset ratios. 2. When barter is used to offset accounts with one another, whereby costs rise and benefit is impacted.	We have "Sales Customer Credit Management Regulations" and "Supplier Evaluation Guidelines" to regularly evaluate customers and suppliers, evaluate related risk items, and use the SAP system for management and control.

1.5 Operating Performance

1.5.1 Operational Results

CSRC's business strategy is to integrate and diversify risks. Only large companies can meet the increasingly stringent environmental standards around the world. In terms of integration, this includes the acquisition of small-scale manufacturers that are unable to comply with environmental regulations and the deployment of new production capacity in a rapidly growing market (such as entering the fast-growing Indian and Turkish markets). In terms of risk diversification, we are developing large economies in Asia, America and Europe to diversify the risk of overly concentrating on a single market and investing in environmental protection equipment to strengthen our competitiveness. The biotechnology business unit continues to commission research institutions to develop new drugs, in the expectation of bringing more contributions to society. CSRC pays attention to the importance of ESG, taking circular economy as the core concept, sustainable operations as the goal, and operations with stable production and financial stability as the main axis. We will carry out flexible production and sales allocation in accordance with market conditions and the global production base, and we will continue to invest in research and development. This will all be done to continue to create economic value.

The two major Business Units[Note] of CSRC are Carbon Black and Biotechnology. The operations of the Carbon Black Business Unit have been impacted by the military conflict between Russia and Ukraine that erupted in the first quarter of 2022. Since international sanctions and trade restrictions imposed on Russia, combined with a significant increase in international oil prices and the resulting disruption in logistics and transportation, have led to regional market disparities in the carbon black industry. In 2022, CSRC recorded a consolidated revenue of NTD 23.368 billion with an earnings per share of NTD 0.7. The Carbon Black Business Unit contributed NTD 21.725 billion to revenue, accounting for 93% of the total annual revenue. The primary sales regions are the Americas and Asia, accounting for 48% and 47% respectively.

Note: For details of the discontinuation of sales recognition for the Battery Business Unit, refer to Chapter 9, Note 39, Organizational Information, P.75, of the Consolidated Financial Statements for FY2022.

Sales by business unit over the years

Unit: NTD million

	Carbon black	Biotechnology	Battery Product	Others
2022	21,725	1,333	-	311
2021	17,243	4,563	2,252	559
2020	11,025	2,396	3,234	451

Sales by region over the years

Unit: NTD million

	Americas	Asia	Others
2022	11,044	11,294	1,030
2021	11,922	12,473	221
2020	9,060	7,960	86

Direct economic value generated and distributed by CSRC

Unit: NTD million

		2020	2021	2022
Direct economic value generated	Operating Revenue	17,106	24,617	23,368
Economic value distributed	Operating costs	13,565	17,672	20,095
	Employee wages and benefits	2,212	2,019	1,586
	Payments to providers of capital	355	294	692
	Payment to the government	144	106	176
	Community investment	2	-	1
Economic value retained		827	4,525	819

Financial assistance received from government

Type of financial assistance	Taiwan (NTD)	Mainland China (RMB)
Tax relief	2,000	200,508 Note
Subsidies	2,860,403	1,578,788
R&D grants	20,000,000	-
Financial incentives	-	562,400
Total monetary value of financial assistance	22,862,403	2,341,696

Note: This statistic includes a 50% reduction in property tax for Anshan Plant, mainly to comply with the policy of 50% reduction for enterprises in financial difficulty.

The world's top tire manufacturers have invested a lot of manpower in the development of high-performance tires. Taking the improvement of braking performance, wear resistance, low rolling resistance, and service life as design considerations, in addition to actively producing carbon black for low-lag rubber tires that can reduce the rolling resistance of tires, thereby reducing fuel consumption and increasing tire service life, all of CSRC's subsidiaries have cooperated with the EU's incipient focus on the content restriction requirements of toxic and hazardous chemical substances in related imported substances. Furthermore, we have successively completed REACH certification to obtain the certificate. CSRC is committed to staying ahead of environmental regulations, strengthening environmental protection and prevention equipment, and ensuring compliance with local regulations and standards. In the case of stricter environmental protection regulations in various countries, CSRC can continue to operate, maintain production, and create growth. The business philosophies of "results oriented" and "precise, concise, accurate" are the foundation of our operations. In the future, we will continue to promote various research and development projects and develop fuel-saving equipment and methods while taking energy saving, carbon reduction, and increasing resource utilization as guidelines to create growth momentum and make every effort to create the highest interests for shareholders as the goal.

1.5.2 Tax Policy

CSRC is committed to information transparency and regulatory compliance in its tax policy and risk management, thus formulates relevant tax policies in response to international trends in tax governance, effectively controlling tax risks and implementing sustainable corporate development to enhance shareholder value. The highest decision-making and supervisory authority for tax management is the Board of Directors. Major transactions are subject to appropriate evaluations to facilitate management and control tax risks. Regular reviews of the tax status of Group companies are conducted, including an examination of the overall investment structure, operations and transaction activities, functional positioning and risk allocation, and changes in international tax laws. External experts are engaged to assist the company in assessing its risks and ensuring tax compliance and the management of derived potential tax risks. In case of doubts about the applicability of tax laws and regulations, CSRC takes the initiative to communicate and discuss with competent tax authorities, and if an official letter is received from the tax authorities, CSRC will cooperate fully in providing information, establishing a relationship of mutual respect with the tax authorities, and establishing a mechanism of mutual trust and communication with stakeholders.

CSRC has operating locations all over the world. Therefore, following local tax laws is the highest principle. To support government measures to promote enterprise innovation, research and development, and economic growth, we perform our corporate citizenship responsibilities.

Status of taxation of CSRC by country/region

Unit: NTD thousands

Region	Taiwan	Mainland China	Others	Total
Operating Revenue	5,470,869	3,911,139	13,986,277	23,368,285
Percentage (%)	23%	17%	60%	100%
Profit or loss before tax	1,590,758	(923,781)	805,549	1,472,526
Percentage (%)	108%	-63%	55%	100%
Income tax payable for the current year	198,710	0	(111,252)	87,458
Percentage (%)	227%	0%	-127%	100%
Income tax paid	198,710	0	(111,252)	87,458
Percentage (%)	227%	0%	-127%	100%

Income tax

Unit: NTD thousands

Financial Disclosures	2020	2021	2022
Income before income tax	1,424,195	5,355,288	1,472,526
Income tax expense	748,185	1,923,448	809,544
Income tax paid	319,760	1,248,975	87,458

Effective tax rate

Year	2020	2021	2022
Books-based effective tax rate (%)[Note 1]	53%	36%	55%
Cash-based effective tax rate (%)[Note 2]	22%	23%	59%

Note 1: Books-based effective tax rate (%) = Income tax expense/ Income before income tax
Note 2: Cash-based effective tax rate (%) = Income tax paid/ Income before income tax
Note 3: Tax information can be linked to the CSRC Annual Report 2022 P.195

CH2 Climate Change Response

Performance highlights

- In 2022, **Anshan Plant** was included in the Task Force on Climate-related Financial Disclosures (TCFD) for evaluation and disclosure.
- In 2022, Maanshan Plant won the honor of a **B-level** enterprise ranking in the Performance Evaluation of Heavy Air Pollution for a second consecutive year.
- In 2022, the emission intensity of air pollution of each operating plant area was lower than in 2021, and Anshan Plant reached the **ultra-low emissions standard**.
- In 2022, the system evaluation of natural gas replacing fuel oil has been planned, and the production of steam and electricity has been increased. By gradually replacing the use of high-emission fuel oil, greenhouse gas emissions has been effectively reduced. It is estimated that **20,000 tonnes** of high-emission fuel oil has been replaced and reduced about **25 tonnes** of CO_2e emissions.

Material Topics: Climate Change Response, GHG Emissions

GRI Standards: GRI 3-3、GRI 305-1、GRI 305-2、GRI 305-4、GRI 305-5

Description of Impacts

CSRC has a Sustainable Environment and Product Team under its Corporate Sustainability Development Committee that is responsible for the execution of energy conservation and carbon reduction plans. The team is also responsible for the calculation of emission volume and the management and mitigation of greenhouse gas emission and climate change impacts.

Policies and Commitments

The sustainable environment and product group under the jurisdiction of CSRC's Corporate Sustainability Committee is responsible for implementing the planned and proposed carbon reduction work of energy savings, calculating carbon emissions and greenhouse gas emissions, climate change impact management and mitigation work.

Goals

Goals	Base year	2022 Performance	Short-term (2023 ～ 2025)	Medium and Long-term (2025 ～ 2030)
Greenhouse gas emissions intensity	2016	Decrease in emissions intensity compared to base year ■ Linyuan Advanced Plant: 21% ■ Maanshan Plant: 21% Note ■ Anshan Plant: 16% Note	Decrease in emissions intensity compared to base year by 2025 ■ Linyuan Advanced Plant: 25% ■ Maanshan Plant: 23% ■ Anshan Plant: 23%	Decrease in emission intensity compared to base year by 2030 ■ Linyuan Advanced Plant: 30% ■ Maanshan Plant: 26% ■ Anshan Plant: 25%

Note: Since the carbon emission intensity targets set by the Maanshan Plant and the Anshan Plant are motivated by local government policies, performance also covers the external power supply. In 2022, the emissions intensity for Maanshan Plants' offsetting external supply performance decreased by 21% compared with the base year, while the actual emissions intensity decreased by 31% compared with the base year; the emissions intensity for Anshan Plants' offsetting external supply performance decreased by 16.3% compared with the base year, while the actual emissions intensity decreased by 15.8% compared with the base year.

Responsible Units

Environmental Health and Safety (EHS) Center, EHS Office of each operating plant and the operating divisions of each plant

Resources

- Regularly prepare a budget every year to invest in compliant, high-performance, and low-polluting machinery and equipment
- In 2022, total investment exceeded NTD 130 million for equipment construction and maintenance. (Linyuan Advanced Plant invested more than NTD 110.6 million, Maanshan Plant invested RMB 4.27 million, and Anshan Plant invested RMB 430,000.)

Grievance Mechanisms

The Company's website has a communication mailbox for stakeholders that can be used for complaints: E-mail: csrcir@csrcgroup.com

Action Plans

Negative Impact Managements

- Conduct annual greenhouse gas inventories to confirm energy saving and carbon reduction performance and to formulate improvement strategies.
- To achieve the goal of reducing greenhouse gas emissions, we have respectively formulated reduction strategies for Scope 1 and Scope 2 greenhouse gases. For Scope 1 greenhouse gas reduction, we regularly evaluate the performance improvement of process equipment and set goals for replacing old equipment, and we cut down on the consumption of crude oil by improving production efficiency. In response to the reduction of Scope 2, Linyuan Advanced Plant has purchased solar power panels from Chailease with plans to gradually increase the use of renewable energy in the future.
- Regularly review greenhouse gas emission KPIs and update the management status on the internal carbon management platform.
- Adjust carbon reduction goals and plans in a timely manner, and list carbon reduction performance as performance bonus evaluation criteria.

Positive Impact Managements

- Organize education and training related to carbon emissions management
- Linyuan Advanced Plant obtained greenhouse gas inventory certification in accordance with ISO 14064-1; Maanshan Plant and Anshan Plant conducted the inventory in accordance with the " Guidelines for Accounting and Reporting Greenhouse Gas Emissions, China Chemical Production Enterprises (Trial)"
- Introduce the action of replacing fuel oil with natural gas use to reduce greenhouse gas emissions.

Evaluation of Assessments

- Management review: Each operating plant reviews its environmental management system in accordance with ISO 14001 every year. Linyuan Advanced Plant conduct ISO 14064-1 greenhouse gas inventories and verification annually, Maanshan Plant and Anshan Plant conducted the inventory in accordance with the " Guidelines for Accounting and Reporting Greenhouse Gas Emissions, China Chemical Production Enterprises (Trial)".
- Regular KPI evaluation: Each operating plant reviews greenhouse gas emission KPIs monthly and quarterly, updates the management status on the internal carbon management platform, and adjusts carbon reduction goals and plans in a timely manner. Moreover, carbon reduction performance is listed as a performance bonus evaluation criterion.

Material Topics: Energy Management

GRI Standards: GRI 3-3、GRI 302-1、GRI 302-3、GRI 302-4

Description of Impacts	Excessive use of fossil fuel leads to greenhouse gas emission and is a major cause of rising temperatures around the world. As a result, energy management becomes the priority of the energy and carbon reduction movement. CSRC has always devoted attention to improving production procedures, optimizing production parameters and hardware, and adopting the use of green energy as direct ways to reduce energy consumption. Indirect approaches such as recycling and reuse of heat and residual gas are also being taken to conserve energy.				
Policies and Commitments	The sustainable environment and product group under the jurisdiction of CSRC's Corporate Sustainability Committee is responsible for collecting energy use data, confirming the carbon reduction effect of energy savings, and determining improvement strategies, and for formulating energy performance for monitoring.				
Goals	**Goals**	**Base year**	**2022 Performance**	**Short-term (2023 ～ 2025)**	**Medium and Long-term (2025 ～ 2030)**
	Cumulative replacement ratio of high-efficiency and energy-saving motors (IE3)	-	▪ Linyuan Advanced Plant: 6.3% ▪ Maanshan Plant: 98% ▪ Anshan Plant: 60%	▪ Linyuan Advanced Plant: 10% ▪ Maanshan Plant: 100% ▪ Anshan Plant: 70%	▪ Linyuan Advanced Plant: 20% ▪ Maanshan Plant: Orienting towards adoption of IE4-5 ▪ Anshan Plant: 90%
	Replace old equipment with new ones	-	▪ Linyuan Advanced Plant: Replacing 29% of air compressors ▪ Maanshan Plant: Replacing old air compressors with inverter air compressors ▪ Anshan Plant: Eliminating 6.22% of old equipment	Replacement rate of old equipment ▪ Linyuan Advanced Plant and Maanshan Plant: 40% ▪ Anshan Plant: 20%	Replacement rate of old equipment ▪ Linyuan Advanced Plant and Maanshan Plant: 60% ▪ Anshan Plant: 40%
Responsible Units	Environmental Health and Safety (EHS) Center, EHS Office of each operating plant and the operating divisions of each plant				
Resources	▪ Regularly prepare a budget every year to invest in compliant, high-performance, and low-polluting machinery and equipment ▪ The Group has invested more than NTD 110 million in equipment construction and maintenance (Linyuan Advanced Plant NTD 60.97 million, Maanshan Plant RMB 7.7 million, Anshan Plant RMB 4.99 million)				
Grievance Mechanisms	The Company's website has a communication mailbox for stakeholders that can be used for complaints: E-mail: csrcir@csrcgroup.com				
Action plans	**Negative Impact Management** ▪ Large-scale energy-consuming power equipment for power factor improvement (e.g., motors, capacitors, etc.) ▪ Replacement and renewal of older high-energy-consuming equipment ▪ Review energy saving and carbon reduction performance and formulate improvement strategies ▪ Formulate energy performance targets for monitoring and measurement			**Positive Impact Management** ▪ Carbon black production line process exhaust gas recovery and conversion into steam for reuse and power generation	
Evaluation of Assessments	▪ Internal audit: Each operating plant implements internal audit once a year ▪ Management review: Each operating plant audits the environmental management system annually in accordance with ISO 14001 ▪ Regular KPI evaluation: annual evaluation of energy use KPI				

Material Topics: Air Pollution Control

GRI Standards: GRI 3-3、GRI 305-7

Description of Impacts

Clean production and environment-friendly practices are part of CSRC's business philosophy and represent two issues of concern that we persistently improve upon. We are especially mindful of the quality of the neighboring environment and employees' health, which is why CSRC has installed pollution prevention equipment early on and examine the efficiency of prevention measures on a regular basis, so that emissions are kept lower than what the laws required.

Policies and Commitments

The sustainable environment and product group under the jurisdiction of CSRC's Corporate Sustainability Committee is responsible for the monitoring, control, and reduction of pollutants in the process. We continue to maintain the efficiency and stable operation of environmental protection facilities, and continue to pay attention to new technologies and methods to reduce future air pollutant emissions and respond to the trend of stricter laws and regulations.

Goals

Goals	Base year	2022 Performance	Short-term (2023 ～ 2025)	Medium and Long-term (2025 ～ 2030)
Volatile organic compound (VOC) emissions intensity	▪ Linyuan Advanced Plant: - [Note 1] ▪ Maanshan Plant and Anshan Plant: 2021 [Note 2]	Emissions intensity compared to 2021 ▪ Linyuan Advanced Plant: increase of 16.2% ▪ Maanshan factory: 0.01kg/tonne ▪ Anshan Plant: 0.12kg/tonne	▪ Linyuan Advanced Plant: The process is 100% sealed and collected under negative pressure, and with 95% control efficiency in recovery and reuse ▪ Maanshan Plant: The process is 100% sealed and collected under negative pressure, and the discharge rate for shutdown and overhaul is lower than the legal requirements by more than 92% ▪ Anshan Plant: The process is 100% sealed and collected under negative pressure, and the emissions concentration of shutdown overhaul is lower than the legal requirements by more than 95%	▪ Linyuan Advanced Plant: Maintain the process with100% sealed and collected under negative pressure and 95% control efficiency in recovery and reuse ▪ Maanshan Plant: Maintain the process with 100% sealed and collected under negative pressure, and the emissions rate for shutdown and overhaul is lower than the legal requirements by more than 93% ▪ Anshan Plant: Maintain the process with 100% sealed and collected under negative pressure, and the emissions concentration of shutdown overhaul is lower than the legal requirements by more than 95%
Sulfur oxides (SOx) emissions intensity	▪ Linyuan Advanced Plant: 2021 ▪ Maanshan Plant and Anshan Plant: 2018	Emissions intensity compared to the base year ▪ Linyuan Advanced Plant: Reduction of 10.6% ▪ Maanshan Plant: 91.2% reduction ▪ Anshan Plant: 95% reduction	Emissions intensity lower than base year ▪ Linyuan Advanced Plant: 30% ▪ Maanshan Plant: 92% ▪ Anshan Plant: Ensure the normal operation of equipments and maintain the best condition	Emissions intensity lower than base year ▪ Linyuan Advanced Plant: 50% ▪ Maanshan Plant: 95% ▪ Anshan Plant: 95%
Nitrogen oxides (NOx) emissions intensity	▪ Linyuan Advanced Plant: 2021 ▪ Maanshan Plant and Anshan Plant: 2018	Emissions intensity compared to the base year ▪ Linyuan Advanced Plant: increase of 22.9% ▪ Maanshan Plant: 63.1% reduction ▪ Anshan Plant: 68% reduction	Emissions intensity lower than base year ▪ Linyuan Advanced Plant: 30% ▪ Maanshan Plant: 70% ▪ Anshan Plant: 70%	Emissions intensity lower than base year ▪ Linyuan Advanced Plant: 50% ▪ Maanshan Plant: 85% ▪ Anshan Plant 75%
Total suspended particulates (TSP) emissions intensity	▪ Linyuan Advanced Plant: 2021 ▪ Maanshan Plant and Anshan Plant: 2018	Emissions intensity compared to base year ▪ Linyuan Advanced Plant: 18.7% reduction ▪ Maanshan Plant: 21.3% reduction ▪ Anshan Plant: 51% reduction	▪ Linyuan Advanced Plant: The improvement rate of heat dissipation in the Plant reached 20% ▪ Maanshan Plant: 25% reduction from base year ▪ Anshan Plant: 55% reduction from base year	▪ Linyuan Advanced Plant: The improvement rate of heat dissipation in the Plant reached 50% ▪ Maanshan Plant: 35% reduction from the base year ▪ Anshan Plant: 60% reduction from base year
The enterprise ranking in the Performance of Heavy Air Pollution	-	▪ Anshan Plant: Upgraded from a C-level enterprise to a B-level enterprise through the preliminary examination	▪ Maanshan Plant: Maintain B-level standard every year ▪ Anshan Plant: Continued to promote the adoption of B-level enterprise standards	▪ Maanshan Plant: A-level standards ▪ Anshan Plant: Maintain annual B-level standard

Note 1: All the VOCs of Linyuan Advanced Plant are recovered by reuse, so there is no emissions target baseline year set.
Note 2: In shutdown and overhaul, Anshan Plant emission concentration regulations require 120 mg/m^3; Maanshan Plant discharge rate regulations require 3kg/hr

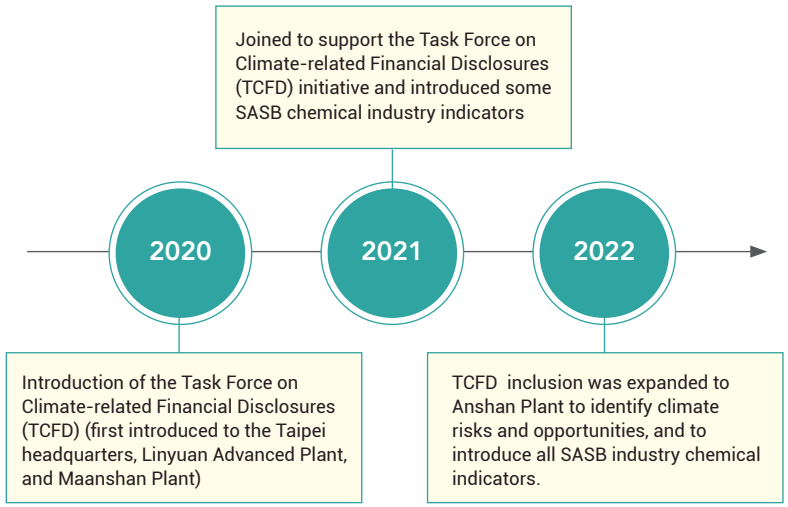
Responsible Units	▪ Monitored by the Environmental Health and Safety (EHS) Center and implemented by the EHS offices of each operating plant area and the operating divisions of each plant
Resources	▪ Regularly prepare a budget every year to invest in compliant, high-performance, and low-polluting machinery and equipment ▪ Invest in EBF desulfurization and denitrification system ▪ The Group has invested more than NTD 280 million for the construction and maintenance of equipment related to the maintenance of air emission quality (Linyuan Advanced Plant invested more than NTD 158 million, Maanshan Plant invested about RMB 23.02 million, and Anshan Plant invested about RMB 4.68 million)
Grievance Mechanisms	The Company's website has a communication mailbox for stakeholders that can be used for complaints: E-mail:csrcir@csrcgroup.com / csrcas-tb@continentalcarbonasia.com
Action Plans	**Negative Impact Management** ▪ Implement air quality monitoring and carry out the maintenance and construction of air pollution control equipment ▪ Replenish filter bags, maintain exhaust gas collection facilities, monitor specific facility maintenance costs and equipment conditions to reduce dust emissions **Positive Impact Management** ▪ All operating plants of CSRC have installed De-SOx desulfurization equipment in the plants' chimney emission channel, as well as low-nitrogen burners for production and boilers, Its investment will reduce the emission of sulfur oxides (SOx) and nitrogen oxides (NOx), and it will be equipped with low-emission facilities to reduce the discharge of air pollutants as much as possible.
Evaluation of Assessments	▪ Internal audit: Each operating plant conducts internal audit once a year ▪ Management review: All operating plants review their environmental management system in accordance with ISO 14001 every year. SOx and NOx monitoring have been introduced to use an online monitoring mechanism networked with government units. ▪ Regular KPI evaluations: Each plant evaluates air pollutant emission KPIs annually.

2.1 Climate Change Response

2.1.1 Climate Change Risks, Opportunities, and Financial Impact

After the Paris Agreement, climate change response has become an issue that governments and companies must actively face. After the 26th United Nations Climate Change (COP26) in 2021, representatives of various countries have proposed declarations and actions of "2050 Net-Zero Emissions." In 2022, COP27 reaffirmed the importance of controlling the temperature rise within 1.5 degrees Celsius. Taiwan's government also officially published "Taiwan's Pathway to Net-Zero Emissions in 2050" in 2022. Considering that domestic and international greenhouse gas emission regulations are becoming stricter, and that natural disasters brought about by extreme climates may have a direct impact on operating premises, the above transitions or physical climate-related risks will all have an impact on the Company's finances. Based on recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), CSRC has actively implemented the identification of risks and opportunities through project meeting discussions and has set climate change response goals to gradually reduce the impact of related risks since 2020. CSRC also publicly supported the international TCFD initiative in June 2021, introducing some SASB chemical indicators and completing the signing of the TCFD. In 2022, Anshan Plant was included into the disclosure boundaries to identify climate risks and opportunities, and to introduce all SASB chemical industry indicators.

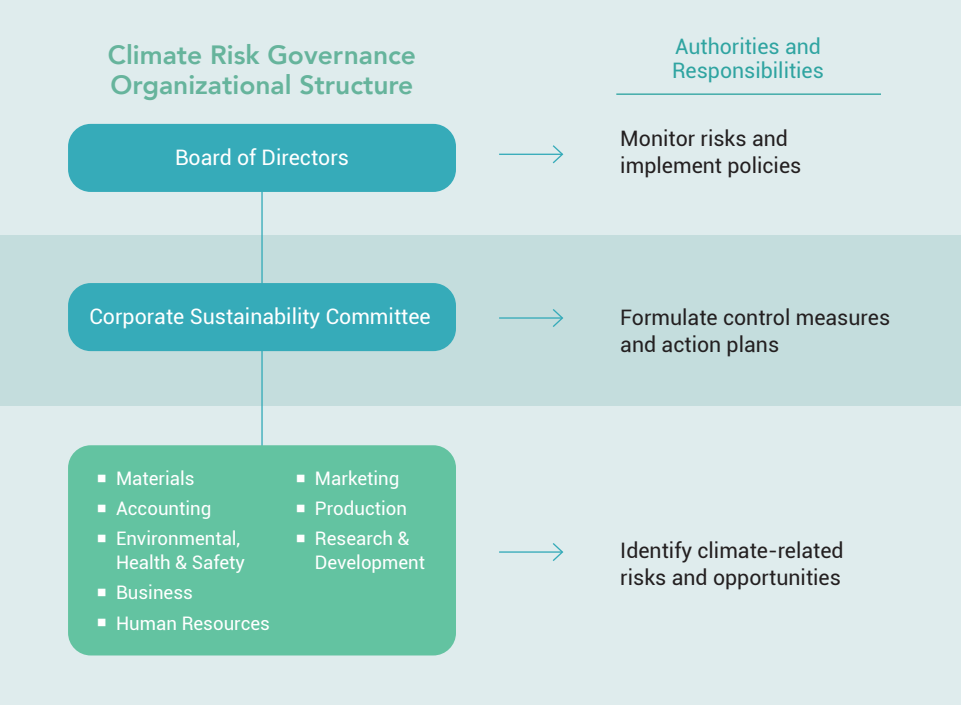
Climate change mitigation pathways



Governance

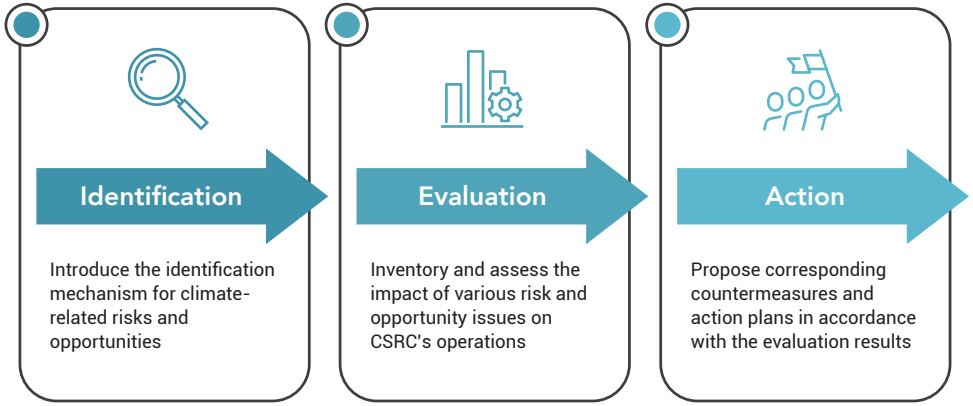
At CSRC, each operating plant and department identifies the climate change risk and opportunity projects that are relevant to it and develops corresponding response measures; and it regularly reports the identification results to the Corporate Sustainable Development Committee. The Corporate Sustainability Committee formulates control measures and action plans for various risks and opportunities related to climate change, adjusts and identifies climate change impact factors in a timely manner, and assigns the working groups of each committee to implement control and action plans in accordance with environmental policies. The Corporate Sustainability Committee regularly reports the major climate risks and response strategies faced by CSRC to the Board of Directors each year and reports on the effectiveness of their implementation, so that the Board of Directors can fully understand climate-related risks and opportunities, decide on relevant management policies, and supervise their implementation.

Note: For the complete sustainable governance organizational chart and corresponding responsibilities, please refer to ch0. Promotion of Sustainable Management.



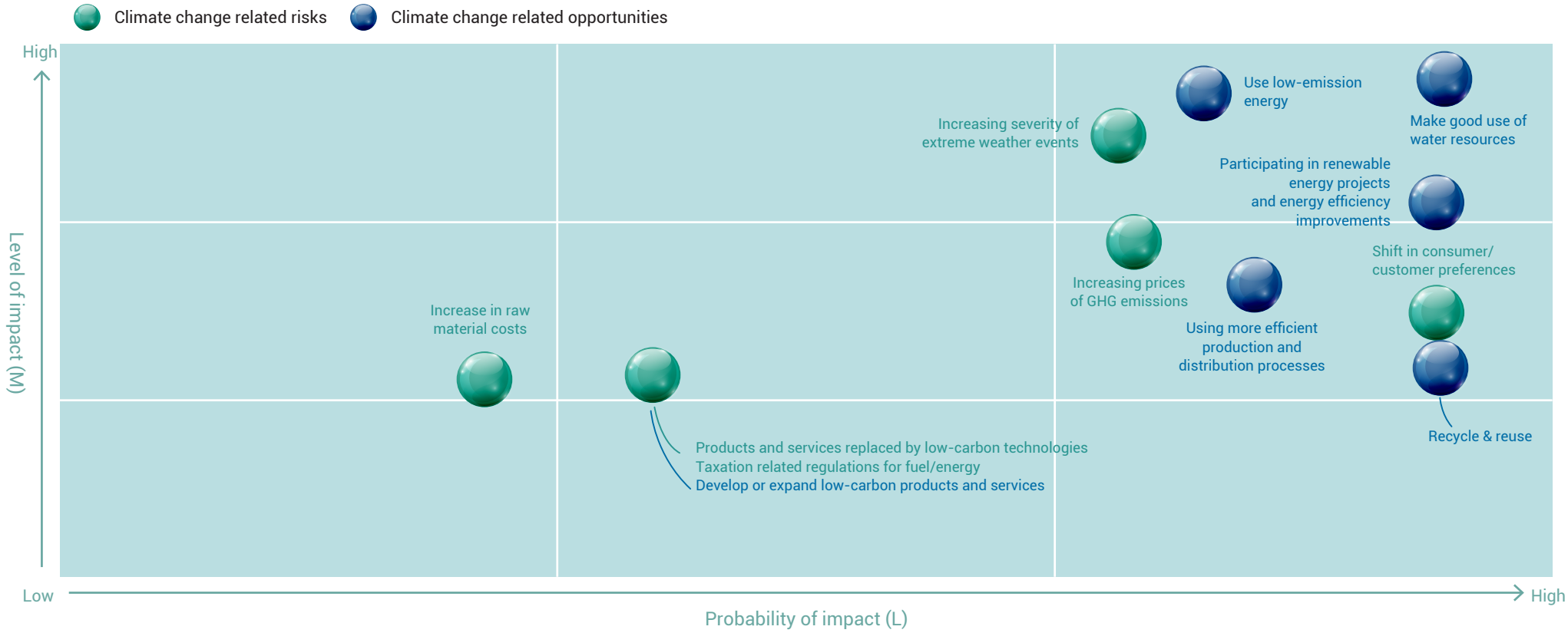
Strategy

CSRC implements a climate-related risk and opportunity identification mechanism each year through the three major procedures of "Identification, Evaluation, and Action". In doing so, we fully inventory and evaluate the impact of various risks and opportunities on the operations of CSRC and manage them. We adhered to the same framework in 2022 to update our inventories and evaluate climate-related risks and opportunities.



Based on the results of an evaluation of the degrees of impact and probability of impact, the matrix of the risks and opportunities in climate change was established. The top three potential risk factors where CSRC should prioritize include “Increasing prices of GHG emissions” categorized under regulatory risks; “Shift in consumer/customer preferences” categorized under market risk; and “Increasing severity of extreme weather events” categorized under physical risk. The top two potential opportunities that were identified include “Participating in renewable energy projects and energy efficiency improvements” and “Using more efficient production and distribution processes”. CSRC proposed corresponding response strategies based on the identification results of climate-related risks and opportunities and regularly tracking the results of implementation. In addition, we continue to pay attention to international benchmark peers, sustainable trends, and emerging climate-related risks and opportunities. We hope to strengthen CSRC's operational resilience to climate change and effectively reduce the impact of the operation process on the environment.

Matrix Diagram of Climate Change related Risks and Opportunities for CSRC in 2022



Risk Management

To understand the impact of climate change on the operations of CSRC, we gradually focus on and manage material risk and opportunity issues through the following identification mechanisms. First, we screened 17 risks and 6 opportunities related to the chemical industry based on the industry characteristics. We then handed them over to each operating plant manager and department to fully understand the impact of various climate risks and opportunities through literature research, case studies, collection of domestic and foreign laws and regulations, and market/tech trends. We thereupon used a three-dimensional evaluation of time range (short-range, medium-range, and long-range), the probability of the impact, and the degree of impact on operations to summarize the major potential climate risks and opportunities. We further applied a climate change risk and opportunity matrix to identify and rank related risks. In this way, we identified 3 material risks and 2 material opportunities. After internal discussion, 3 additional opportunities were added. (" Make good use of water resources" and "Recycle & reuse" under Efficient Use of Resources category, and "Use low-emission energy" under energy categories). Finally, senior management examined and confirmed the identified 3 material risks and 5 material opportunities to take relevant responses.

Risk		Risk description	Impact on the Company	Responses
Regulations	Increasing Prices of Greenhouse Gas Emissions	Due to the government's total control requirements, companies need to purchase carbon rights through carbon market transactions to offset emissions; or in response to total emissions controls, excess carbon emissions are subject to fines. Moreover, the price per tonne of carbon emissions may have yearly increase, causing cost pressures for enterprises.	The Environmental Protection Administration will implement total greenhouse gas control in the future, charging carbon fees for companies with carbon emissions of more than 25,000 tonnes, but the method of charging carbon fees is currently unclear. Linyuan Advanced Plant's carbon emission source is mainly Scope 1 (Feedstock fuel), and there are no other alternative raw materials. Due to the decrease in the carbon number of feedstock fuel in recent years, more feedstock fuels are now required to produce the same amount of carbon black, resulting in an increase in unit fuel consumption. This may lead to a continuous increase in greenhouse gas emissions, and it is expected to increase operating costs and carbon expenses.	1. Greenhouse gas inventory is carried out every year, and dedicated personnel are assigned to grasp the greenhouse gas emissions of each operating plant. 2. We undertake replacement of process equipment to improve fuel efficiency. 3. Build up the use of natural gas to replace a portion of fuel oil usage.
Market	Shift in Consumer/ Customer Preferences	Companies that have not taken actions in climate change mitigation are regarded by consumers/customers as the perpetrators of climate change and this affects their corporate images.	Financial impact accounts for 4.09% of the total financial impact in the TCFD assessment domain. Customers require their suppliers to pass sustainable certifications such as EcoVadis. Its content includes disclosing the energy conservation and emission reduction measures adopted by the organization. If the carbon emission disclosure and energy conservation and emission reduction responsibilities are not fulfilled, this may lead to a decrease in the customer's purchasing intention.	1. Actively respond to EcoVadis questionnaires and conduct annual greenhouse gas inventory, and formulate various emission reduction projects based on the results of the inventory. 2. Introduce the concept of a green supply chain to meet customer requirements.
Physical	Increasing Severity of Extreme Weather Events	Drought, flood, typhoon, or landslide causing water shortages or flooding and forcing work stoppages; damaged equipment/ tanks, damage of public equipment causing a power outage, water cut, etc.; deteriorating water quality (increased turbidity of raw water) affecting process water; potential increases in water prices; road blockages causing shortages of raw materials.	Impact from floods and droughts accounts for 0.28% of the total financial impact in the TCFD assessment domain. **Flooding** **Linyuan Advanced Plant** Although the factory site is located beside the Gaoping River, there is relatively no flooding problem and there is little history of flooding in the past **Maanshan Plant** Since the site is only 1 km away from the Yangtze River and is in a low-lying area, the risk of floods caused by extreme weather is relatively high. There were no floods or flood damage in 2022. **Anshan Plant** Anshan has relatively abundant water resources but they are limited by time and space, so distribution is uneven. It is dry in spring and rainy in summer. There were no floods or flood damage in 2022.	**Linyuan Advanced Plant** When the weather forecast predicts heavy rain, Linyuan Plant will initiate disaster prevention measures, such as: factory facilities in the basement will enable floodgate, sandbags are to be stacked at the warehouse door, and ditches are to be dredged before the rainy season. **Maanshan Plant** We have formulated emergency plans for flood prevention and conducts regular drills. At the same time, we cooperate with the emergency measures of local governments in mainland China during the annual flooding season. In addition, Maanshan Plant has joined the flood control working group of the Cihu High-Tech Zone, participates in meetings regularly, and follows the latest news. If any situation occurs, it will be reported to the factory manager as soon as possible to begin emergency measures. **Anshan Plant** During the flood season every year, we cooperate with the local government to prepare emergency measures and arrange flood control sandbags and flood control baffles in the factory. In addition, we participate in environmental protection and flood prevention working groups, regularly participate in meetings, and follow the latest news. If any situation occurs, it will be reported to the factory manager as soon as possible to begin emergency measures.

Risk		Risk description	Impact on the Company	Responses
Physical	Increasing Severity of Extreme Weather Events	Drought, flood, typhoon, or landslide causing water shortages or flooding and forcing work stoppages; damaged equipment/ tanks, damage of public equipment causing a power outage, water cut, etc.; deteriorating water quality (increased turbidity of raw water) affecting process water; potential increases in water prices; road blockages causing shortages of raw materials.	**Drought** **Linyuan Advanced Plant** The main source of water supply is the water withdrawal from Donggang Creek, which has characteristics of rising and falling tides. Normally, there is no shortage of water. Once a drought occurs, though, it will have a huge impact on Linyuan Advanced Plant. Although the rainfall in 2022 is more than that in 2021, it is also below the average. Although the water scarcity condition occurs, due to the water dispatching of factories in the industrial zone, the increase in water consumption is relatively flat. Linyuan Plant also appropriately adjusted its inventory and stopped certain production lines in response to the water stress. Although Plant operations have not yet been seriously affected, there may be operational risks if the water limitations continue in the future. If production capacity is reduced due to water shortages and orders cannot be relocated, revenue may decrease. If the number of orders cannot be reduced, the cost of renting a water vehicle will likely increase operating costs. **Maanshan Plant, Anshan Plant** The probability of drought-related risks at the two plants is low	**Linyuan Advanced Plant** 1. In response to the government's water restriction action through the implementation of water restrictions and production shutdown SOP, a specific number of production lines or reactors have been suspended according to different water restriction levels. 2. We coordinate with steam customers to reduce the supply of steam to mitigate the water consumption of Linyuan Advanced Plant. 3. Calculate the cost-effectiveness through the water-restricted shutdown SOP in point 1, and rent water vehicles to go to Pingtung Reservoir and Mudan Reservoir to withdraw water.

Opportunities		Opportunity Descriptions	Description of Impact on the Company	Responses
Energy	Participating in Renewable Energy Projects and Energy Efficiency Improvements	Participate in local or national renewable energy development or energy efficiency improvement plans, and obtain market opportunities.	The potential financial impacts accounts for about 0.13% of the total financial impact in the TCFD assessment. **Linyuan Advanced Plant** We promote green power generation, build solar panels in the idle space on the roofs of warehouses in the plants, and lease them to related businesses. **Maanshan Plant and Anshan Plant** According to the "Technical Guidelines on Emergency Management of important Industries in Heavy Air Pollution" issued by the General Office of the Ministry of Ecology and Environment of the People's Republic of China, if the air quality index (AQI) within urban areas reaches the yellow warning standard, heavy pollution industries will follow the corresponding emission reduction measures according to levels A to D. The higher the level, the better the pollution control technology of the company. The Company can still operate normally in heavy air pollution conditions without stopping work, and continue to meet customer needs. Maanshan Plant complies with B-level corporate standards, which greatly enhances our corporate image without affecting production capacity.	**Linyuan Advanced Plant** 1. Solar panels have been repurchased from Chailease and the watt-hour meter lease contract was completed with Taiwan Power Co., Ltd. on January 7, 2023. 2. Using waste tires to recover pyrolysis oil as a substitute for fossil fuels. **Maanshan Plant** Regularly accepted the evaluation required by B-level enterprises every year, and passed the evaluation in 2022. **Anshan Plant** Strive to obtain the B-level enterprise standard

Opportunities		Opportunity Descriptions	Description of Impact on the Company	Responses
Energy	Use Low-emission Energy	Low-emissions energy usage reduces outsourced electricity and reduces electricity costs.	The potential financial impacts account for about 26.37% of the total financial impact in the TCFD assessment.	
			Recycled tail gas is converted into steam for power generation or waste heat from operational production is used for power generation. In addition to supplying the plant for its own operations and reducing the requirement and cost of outsourced power, surplus power can also be sold to increase income.	**Linyuan Advanced Plant** Recycled tail gas is converted into steam for power generation; and, depending on customer demand, sales are the main focus. **Maanshan Plant and Anshan Plant** Waste heat generated during operations is used for power generation, which can supply the electricity required for self-operation use, where surplus electricity can be sold to the national grid.
Efficient Use of Resources	Using More Efficient Production and Distribution Processes	The application of new technologies (such as the Internet of Things, big data analysis, automation and intelligence) improves yield, reduces material usage and waste generation, shortens delivery time and improves employee health and safety, so as to reduce operating costs and increase productivity.	The potential financial impacts accounts for about 7.75% of the total financial impact in the TCFD assessment.	
			Linyuan Advanced Plant Some internal heat exchange tubes of the air pre-heater (APH) used in the factory area have been damaged and blocked, resulting in reduced heat exchange area and poor heat exchange efficiency. In turn, the furnace temperature in the process cannot be increased, and the fuel consumption is limited. If the old pipeline is replaced, it will help to adjust the furnace temperature and reduce the unit fuel consumption, and it will facilitate an increase in carbon black production under the same fuel intake. **Maanshan Plant** The Plant continues to implement technical transformation projects to reduce carbon emissions. **Anshan Plant** Strengthen the insulation of combustion air pipes through technical transformation, improve the efficiency of carbon black reaction; add an independent air compressor to change atomization steam into atomization air, to reduce oil consumption and improve related processes.	**Linyuan Advanced Plant** By continuously updating the APH (replacement of three APHs in the hard line U1-T3, T4, and soft line U3-C1) to raise the furnace temperature of the reactor, the combustion temperature can be increased so that the carbon black can be burned more completely, thereby reducing the unit fuel consumption. The replacement of U1-T3 and U3-C1 was completed in 2022. **Maanshan Plant** In 2022, the U6 online heat recovery boiler technical transformation was implemented. By reducing the secondary water used for cooling and using the waste heat to generate steam for the production line's own use, the heating value of the tail gas is increased and the excess tail gas can be sent to steam power generation. In 2022, the carbon reduction was about 1,608 tonnes of CO_2. **Anshan Plant** In 2022, the hard line U4 reactor quenching section was adopted, and pipeline insulation was strengthened to improve the reaction efficiency of carbon black. The fuel consumption per unit of carbon black production was reduced by about 3%-5%. The soft line added an independent air compressor and changed the N660 atomizing steam to atomizing air, which can reduce fuel consumption by about 12.3%. In 2022, a toner recycling device was used to help reduce the generation of waste carbon.
			Maanshan Plant and Anshan Plant When Heavy Air Pollution warning is issued, the Company must control road transport vehicles, incoming trucks, and in-plant stackers in accordance with the Heavy Air Pollution Performance classification standards.	**Maanshan Plant & Anshan Plant** Road transport vehicles and in-plant transport vehicles that transport raw materials all meet the National V emission standards, and stackers used in the plant meet National III and higher standards

Opportunities		Opportunity Descriptions	Description of Impact on the Company	Responses
Efficient Use of Resources	Make Good Use of Water Resources	Process wastewater recycling can reduce water consumption and reduce operating costs.	The potential financial impacts accounts for about 32.04% of the total financial impact in the TCFD assessment.	
			▪ Steam generated during operations can be sold to neighboring factories to increase revenue. At the same time, neighboring factories give back the remaining pure water to reduce the Company's water expenses. ▪ The process wastewater recycling in each operating plant will help reduce withdrawal of raw water intake, thereby reducing water bills.	**Linyuan Advanced Plant** Through the water balance project, the recovered water from the cooling water tower is returned to the desulfurization tower and the external drainage of the air dryer in the steam power area is recycled. Wastewater from the rain exposure tank is recovered, and the regeneration and backwash water of the pure water manufacturing equipment is recycled. **Maanshan Plant** The recycling of process wastewater is carried out, and more than 90% of it is recycled in the process after purification in the sewage treatment plant in the factory. The remainder can be used for ground sanitation washing and other purposes, replacing the use of tap water. **Anshan Plant** Wastewater recycling is planned to begin in 2023.
	Recycling & Reuse	Through recycling and reuse materials, life cycles can be extended, and operating costs can be reduced.	The potential financial impacts account for 0.43% of the total financial impact in the TCFD assessment.	
			▪ Change the wooden pallets to plastic pallets to extend the useful life by reuse, and reduce maintenance costs. ▪ Renting pallets, the pallet rental company is responsible for recycling the pallets, increasing the use rate.	**Linyuan Advanced Plant** Changed wooden pallets to plastic pallets. **Maanshan Plant** We continued to use a rental pallet service, and the pallet rental company is responsible for recycling the pallets, maximum the recycling and reuse. All manufacturers are not required to purchase additional pallets. In 2022, 16,309 shared plastic pallets were reused, accounting for 36.8% of total pallet use. **Anshan Plant** Increase the use of customers who share pallets, reduce the use of wooden pallets, and reduce the cost of packaging. In 2021-2022, shared pallet usage accounted for 8.1%.

Indicators and Targets

The key indicators used by CSRC to measure and manage climate-related risks and opportunities include greenhouse gas emissions, energy use, water resource recovery and reuse, and circular economy. All indicators set annual goals for management and performance tracking. For detailed target setting (short-term, medium- and long-term goals) and performance in 2022 for each key indicator, please refer to ch0. Promotion of Sustainable Management and the corresponding Sustainability Report chapters.

Indicator	Item	Sustainability Report Section
Greenhouse gas emissions	▪ Implementation of ISO 14064-1 greenhouse gas inventories and verification ▪ Renewable energy generation	Ch 2.2 Energy Management and Greenhouse Gas Management
Energy use	▪ Improving energy efficiency ▪ Recycling process exhaust gas for self-generated electricity ▪ Using high performance equipment	Ch 2.2 Energy Management and Greenhouse Gas Management
Water resource recovery and reuse	▪ Water balance project ▪ Wastewater recycling	Ch 3.1 Water Resource Management
Circular Economy	▪ Increase the numbers and revenues of green product series ▪ Build a green supply chain	Ch 4.2 New Circular Economy Model in Practice Ch 5.2 Green Products

2.2 Energy Management and Greenhouse Gas Management

2.2.1 Improving Energy Efficiency

Energy usage

In the process of manufacturing carbon black, CSRC mainly uses heavy oil, purchased electricity, self-produced electricity, and process tail gas. Total energy consumption within the Group in 2022 was 13,466,890 GJ, including Linyuan Advanced Plant, 7,984,974 GJ; Maanshan Plant, 3,370,299 GJ; Anshan Plant, 2,111,098 GJ; and Taipei Headquarters, 519 GJ. Since the total carbon black production in 2022 was reduced compared with 2021, and through the improvement of process technology, it will directly reflect the significant decline in the overall feedstock fuel consumption, energy consumption, and energy intensity. The respective energy intensity of each operating plant in 2022 was: Linyuan Advanced Plant, 82.5 GJ/tonne; Maanshan Plant,75 GJ/tonne; and Anshan Plant, 71.8 GJ/tonne. Aside from Linyuan Advanced Plant's increased steam sales volume in 2022, which raised the energy intensity of outsourced power consumption, the energy intensity of Maanshan Plant and Anshan Plant have decreased or with minor changes compared with 2021.

CSRC will continue to track Carbon black output, gas generation and power consumption per unit of carbon black, power generation per unit of steam, boiler usage, and steam feed water quality and other items to manage energy efficiency in eacch operating plant. Furthermore, we shall undertake regular equipment upkeep and maintenance to ensure that the equipment maintains high energy-efficiency operations.

Energy Usage of Each Operating Plant of CSRC over the Past 3 Years

Unit: GJ

Category		Linyuan Advanced Plant			Maanshan Plant			Anshan Plant		
		2020	2021	2022	2020	2021	2022	2020	2021	2022
Heavy oil		7,442,090	8,229,437	7,824,828	2,855,516	5,316,611	2,983,531	2,716,145	3,603,480	2,067,775
Purchased electricity		82,361	54,075	159,623	6,568	5,778	8,281	24,952	38,656	37,372
Natural gas		441	703	523	-	-	377,576	-	-	-
Diesel		-	-	-	-	-	911	4,954	7,306	5,951
Total internal energy consumption		7,524,892	8,284,215	7,984,974	2,862,084	5,322,389	3,370,299	2,746,051	3,649,442	2,111,098
Energy intensity (GJ/tonne)		79.0	79.3	82.5	74.6	74	75	74.0	74.7	71.8
Process tail gas		2,763,427	2,456,204	2,270,081	844,022	1,649,483	932,817	979	1,162	803
Self-generated steam	Sold externally	0	0	1,269,068	0	0	0	0	0	0
Self-generated electricity	Self-use	702,807	1,122,849	61,750	702,807	1,168,665	109,013	70,592	102,706	57,405
	Sold externally	1,027,782	1,013,113	0	-	-	34,035	1,053	4,598	1,700

Note 1: There are two sources of process tail gas. One refers to the tail gas produced from cracking oil products to produce carbon black. The composition of tail gas includes H_2, C_2H_2, CH_2, CO and other substances, which are flammable. Another source is the gas-solid phase carbon black generated by combustion, and the carbon black gas generated by gas-solid separation through the bag dust collector. This carbon black gas plus the above-mentioned waste gas from oil pyrolysis can be used for granulating carbon black drying and burning fuel for steam and electric boilers after being collected by tail gas reflux

Note 2: The self-produced electricity mainly comes from the recovery of reuse steam generated during operation and production. However, the sales of steam will affect the amount of steam recovered, which in turn will affect self-generated electricity and self-consumed electricity. To comply with the GRI 302-1 internal energy consumption disclosure requirements of the organization, the calculation method of energy consumption was updated in 2022, and the intensity of energy consumption was also adjusted simultaneously, with further retrospective correction to 2020. The total internal energy consumption is calculated according to the type of fuel and energy used in each operating plant. This is respectively Linyuan Advanced Plant = heavy oil + purchased electricity + natural gas; Maanshan Plant = heavy oil + purchased electricity + natural gas + diesel; and Anshan Plant = heavy oil + purchased electricity + diesel. Among them, the process tail gas, self-generated steam and self-generated electricity were the products from the burning of feedstock fuel, and are not included in the calculations to avoid double counting of energy consumption

Note 3: The calorific value coefficients of each energy conversion are calculated with reference to the energy product unit calorific value table coefficients announced by the Energy Bureau of the Ministry of Economic Affairs in 2022. Among them, the heating value of the process tail gas is similar to the process conditions of Maanshan Plant and Linyuan Plant. Therefore, both plants use the 2019 Linyuan Advanced tail gas composition analysis, with a heating value of 680 kcal/m^3. The heating value of Anshan Plant process tail gas and the heating value of heavy oil are based on the data provided by Anshan thermal energy research staff, which are respectively 716 kcal/m^3 and 9,000 cal/g

Note 4: Energy intensity is energy consumption (GJ) per unit of carbon black production (tonnes). The calculation method is energy intensity = total internal energy consumption ÷ carbon black production in 2022

Note 5: In 2022, the electricity consumption data of the Taipei headquarters building was included in the scope of disclosure, and a total of 144,237 kilowatt-hours of electricity was used

Energy management

CSRC regularly measure the energy usage status of each operating plant area as the basis for the revision of the energy policy direction. Moreover, the relevant data are all obtained through Finance Department audits to ensure the correctness of the data. The President and the associate financial manager shall participate in the meeting from time to time to guide the Company's operational direction for energy savings emission reduction. At present, energy management is divided into the two dimensions of energy structure management and improving energy efficiency. Energy structure management is mainly adjusted towards the circular economy model. Examples include energy savings programs such as recovering process tail gas and transform into steam for power generation for internal and external use and building a solar power generation system to increase renewable energy generation. Improving energy efficiency is mainly to improve the power efficiency of equipment, or to maximize the value of heat energy reuse. Examples include reducing the demand for purchased electricity using waste heat boiler to recover heat or regularly carrying out large-scale equipment maintenance and replacement operations.

The total power generation of CSRC's operating plants in 2022 in the relevant energy savings program of energy structural management exceeded 72,000 kilowatt-hours, including 955 thousand kilowatt-hours of renewable energy power generation. Among the energy-saving programs to improve energy efficiency, the reduction of electricity consumption by recovering heat from the waste heat boiler reduced a total of 1,743 kilowatt-hours of electricity consumption, which is equivalent to a reduction of 2,286 tonnes of CO_2e greenhouse gas emissions, and the reduced greenhouse gas emissions are approximately equivalent to the carbon adsorption of 5.9 Daan Forest Park for a whole year [Note].

Each operating plant will continue to improve its energy management capabilities. In 2022, we started to plan the systematic evaluation of natural gas to replace fuel use. It was planned to increase the production of steam and electricity, and effectively reduce greenhouse gas emissions by gradually replacing the use of high-emission fuel. It is estimated that 20,000 tonnes of high-emission fuel can be replaced, and the emission of about 25 tonnes of CO_2e can be reduced.

Replacement with High Performance Mechanical and Electrical Equipment

Note: According to the conversion given by the the Council of Agriculture of 15 tonnes of carbon absorbed per hectare of forest per year, one Daan Forest Park (25.8 hectares) can absorb 386.4 tonnes of CO_2e per year.

2022 Energy Conservation Program Implementation Results

Linyuan Advanced Plant Energy Conservation Program		Description	2022 Performance
Energy structure management	Recycling process tail gas is converted into steam for power generation	The steam produced from process tail gas combustion is supplied to neighboring factories, any remaining steam can also generate electricity for self-operations	▪ Electricity generation is 17,153,000 kWh, accounting for 27.87% of total electricity consumption
	Building a solar power generation system	The idle roof space of the factory warehouse is provided to the solar energy company Chailease and building solar panel systems	▪ Device capacity is 796.5 kW and electricity generation is 954,979 kWh
Improving energy efficiency	Waste heat recovery from boilers	Waste heat boilers can recover waste heat in the production process for heat exchange to generate steam, it can be recovered for steam power generation, thus saving the use of purchased electricity.	▪ Reduction in electricity consumption of approximately 1,351,520 kWh ▪ Reduction in CO_2e emissions of approximately 678 tonnes
	Equipment optimization	Replace the C2 air preheater and increase the temperature of the T4 air preheater	▪ Actual carbon reduction of 1,523 tonnes of CO_2e
		Improvement of steam-electricity performance and improvement of boiler efficiency	▪ Actual carbon reduction of 346 tonnes of CO_2e
	Reduction of energy consumption per unit of output	Track energy consumption per unit output of main products and continuously reduce fuel consumption and control daily/monthly	▪ Total fuel consumption was reduced by 0.2258 tonnes per tonne of carbon black compared with 2021
Construction of an energy management system		ISO 50001 Energy Management System	▪ Completed the establishment of an ISO 50001 energy management system

Maanshan Plant Energy Conservation Program		Description	2022 Performance
Energy structure management	Recycling process tail gas is converted into steam for power generation	The steam produced from process tail gas combustion is supplied to neighboring factories, any remaining steam can also generate electricity for self operations	▪ Power generation is 37,508,760 kWh, accounting for 124% of total electricity consumption
Improving energy efficiency	Waste heat recovery from boilers	Waste heat boilers can recover waste heat in the production process for heat exchange to generate steam, steam can then recovered for steam power generation, saving the use of purchased electricity.	▪ Reduction in electricity consumption of approximately 391,680 kWh ▪ Reduction in CO_2e emissions of approximately 1,608 tonnes
	Replacements using high efficiency and energy saving motors	Continue to replace high-efficiency energy savings motors, in line with energy savings work promotions	▪ Reduction in electricity consumption of about 96,127 kWh ▪ Reduction in CO_2e emissions of approximately 126 tonnes

Anshan Plant Energy Conservation Program		Description	2022 Performance
Energy structure management	Recycling process tail gas is converted into steam for power generation	The steam produced from process tail gas combustion is supplied to neighboring factories, any remaining steam can also generate electricity for the plant's own operations	▪ Power generation is 16,418,280 kWh, accounting for 64% of total electricity consumption
Improving energy efficiency	Replacements using high efficiency and energy saving motors	Replacement of original IE2 series motors with IE3 series ultra-high efficiency motors	▪ Reduction in annual electricity consumption of approximately 332,361 kWh ▪ Reduction in annual CO_2e emissions of approximately 189 tonnes
	Replacement of old equipment	Implementation of 90T boiler equipment improvement, replacing the upper economizer tube bundle to improve boiler efficiency and increase steam production	▪ Increase in power generation of 270 kWh/hr ▪ Estimated annual carbon reduction of 1,232 tonnes of CO_2e
	Reduction of energy consumption per unit output of main products and continue to reduce fuel use	Track energy consumption per unit output of main products and continue to reduce fuel use	▪ Savings of 4,542 tonnes of oil consumption ▪ CO_2e reduction of approximately 3,343 tonnes

ISO 14001 environmental management system certification statement maintained in 2022

Linyuan Advanced Plant

Maanshan Plant

Anshan Plant

ISO 50001 energy management system certification statement maintained in 2022

Linyuan Advanced Plant

2.2.2 Reduction of Greenhouse Gas Emissions

Greenhouse gas inventories

CSRC pays attention to global climate change issues. To mitigate the impact of carbon black process on the environment, CSRC conducts greenhouse gases inventory at Linyuan Advanced Plant, Maanshan Plant, and Anshan Plant every year and third-party verification are used to check the data accuracy. To ensure complete data disclosure, the Scope 2 emission data of the Taipei headquarters building was included in the disclosure in 2022. All operating plants and buildings are tracked, reviewed, and adjusted based on the results of the inventory to clarify the operational efficiency of production equipment and operation process.

In 2022, CSRC's total emissions came to 358,750 tonnes of CO_2e. Out of this, Scope 1 emissions constituted 326,336 tonnes CO_2e and Scope 2 emissions constituted 32,414 tonnes CO_2e.

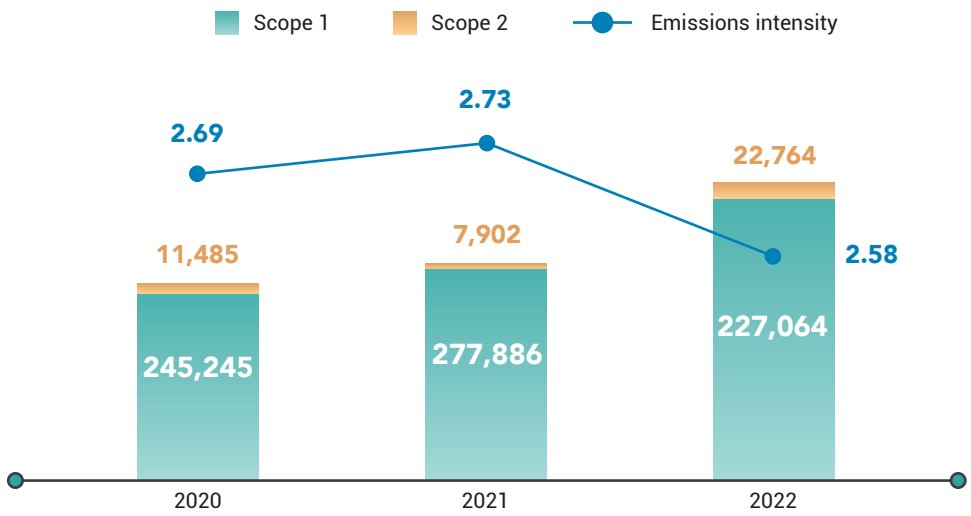
CSRC Greenhouse Gas Emissions Statistics for the Past 3 Years

Item	2020	2021	2022
Scope 1 (tonnes of CO_2e)	360,018	459,894	326,336
Scope 2 (tonnes of CO_2e)	18,154	17,373	32,414
Total emissions (tonnes of CO_2e)	378,171	477,267	358,750

Note: The energy used data of Taipei Headquarters building was included in scope 2 in 2022, total of 73.42 tonnes CO_2e, whereas it was not included in 2020 and 2021 for it's rather small to overall data.

The total greenhouse gas emissions of Linyuan Advanced Plant in 2022 came to 249,828 tonnes of CO_2e. Out of this, Scope 1 emissions contributed 227,064 tonnes and constituted the main source of greenhouse gas emissions. Inventory items included tail gas, heavy oil, acetylene, diesel, motor gasoline, manure waste, and liquefied petroleum gas. Scope 2 emissions came to 22,764 tonnes of CO_2e, and the emissions source was only indirect emissions from purchased electricity. And in terms of electricity use, the total amount of purchased electricity has increased due to the reduction of self-generated steam power for self-use and sale, which is the main reason for the increase in Scope 2. In 2022, the intensity of greenhouse gas emissions was 2.58 tonnes of CO_2e/tonne, has decreased from 2021.

Linyuan Advanced Plant Greenhouse Gas Emissions Statistics for the Past 3 Years



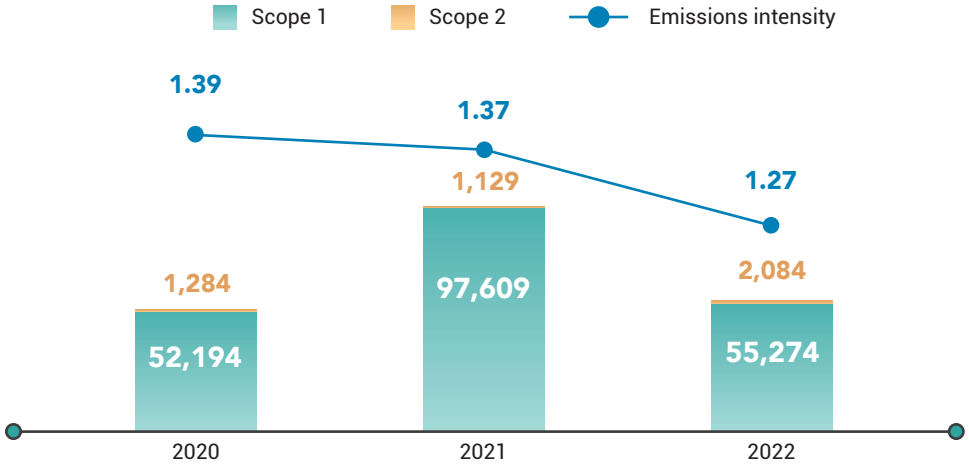
Greenhouse Gas Emissions Scope	2020	2021	2022
Scope 1 (tonnes of CO_2e)	245,245	277,886	227,064
Scope 2 (tonnes of CO_2e)	11,485	7,902	22,764
Total emissions (tonnes of CO_2e)	256,730	285,788	249,828
Emissions intensity (tonnes of CO_2e/tonne)	2.69	2.73	2.58

Note 1: The calculation of greenhouse gas emissions is carried out according to the Operations Control, and the calculation method is activity data × emission factor × GWP. (The emission factor refers to version 6.0.4 of the Greenhouse Gas Emission Factor Management Table announced by the Environmental Protection Administration in 2019, and the GWP value refers to the IPCC Fourth Assessment Report (2007).) Greenhouse gases include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride, a total of seven greenhouse gases

Note 2: The carbon emission factor of Scope 2 purchased electricity for 2022 calculation has not yet been announced. Therefore, the calculation is based on the 2021 electricity carbon emission coefficient announced by the Energy Bureau of 0.509 kg CO_2e/unit.

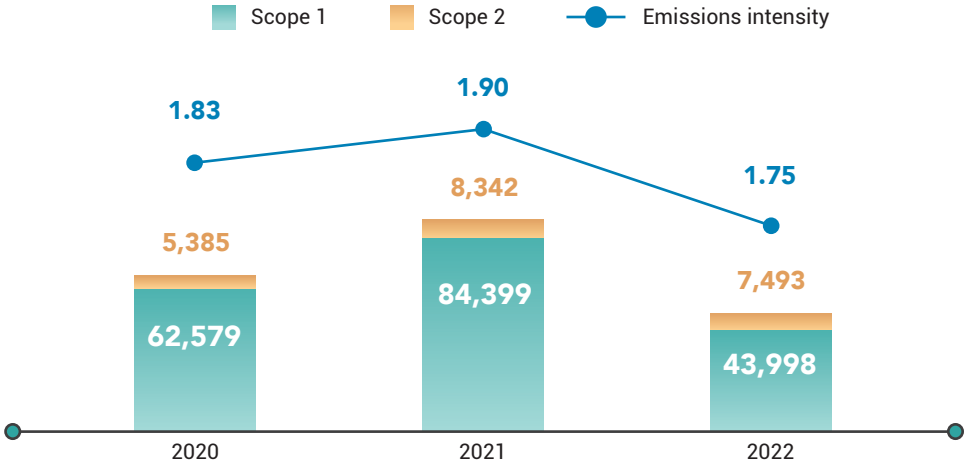
The total greenhouse gas emissions of Maanshan Plant came to 57,358 tonnes of CO_2e in 2022 and the emissions intensity was 1.27 tonnes of CO_2e/tonne, 7.3% lower than in 2021. The main reason was that the production of carbon black in 2022 decreased compared with that in 2021 and fuel consumption per unit declined by 3%. The total greenhouse gas emissions of Anshan Plant stood at 51,491 tonnes of CO_2e in 2022 and the emissions intensity was 1.75 tonnes of CO_2e/tonne. Both total emissions and emissions intensity dropped significantly, mainly due to the decline in carbon black production compared with 2021, the reduction in fuel consumption, and the replacement of energy-saving equipment. Moving forward, we will continue to pay attention to the trend of carbon emissions while monitoring and tracking the consumption of each energy source, implementing sustainable business concepts and energy conservation and environmental protection policies to reduce environmental impact.

Maanshan Plant Greenhouse Gas Emissions Statistics for the Past 3 Years



Greenhouse Gas Emissions Scope	2020	2021	2022
Scope 1 (tonnes of CO_2e)	52,194	97,609	55,274
Scope 2 (tonnes of CO_2e)	1,284	1,129	2,084
Total emissions (tonnes of CO_2e)	53,477	98,738	57,358
Emissions intensity (tonnes of CO_2e/tonne)	1.39	1.37	1.27

Anshan Plant Greenhouse Gas Emissions Statistics for the Past 3 Years



Greenhouse Gas Emissions Scope	2020	2021	2022
Scope 1 (tonnes of CO_2e)	62,579	84,399	43,998
Scope 2 (tonnes of CO_2e)	5,385	8,342	7,493
Total emissions (tonnes of CO_2e)	67,964	92,741	51,491
Emissions intensity (tonnes of CO_2e/tonne)	1.83	1.90	1.75

Note 1: The calculation of greenhouse gas emissions is carried out according to the Operations Control. The calculation method is activity data × average low heating value × carbon content per heating value × carbon oxidation rate × carbon conversion factor, of which the average low heating value, carbon content per heating value, carbon oxidation rate, and carbon conversion factor refer to the "Guidelines for Accounting and Reporting of Greenhouse Gas Emissions, China Chemical Production Enterprises (Trial)"

Note 2: Greenhouse gas included carbon dioxide

Note 3: Scope 1 emission sources include fuel, diesel, natural gas, and feedstock fuel

Note 4: Scope 2 calculations for Maanshan Plant use the electricity carbon emission coefficient of 0.7035 kg CO_2e/kWh announced in the "2011-2012 Provincial Power Grid Average Emission Factor" for calculation. Anshan Plant Scope 2 calculation uses the electricity emission factor of 0.7769 kg CO_2e/kWh announced in the "Notice on Doing a Good Job in the 2023-2025 Reporting and Management of Greenhouse Gas Emissions of Power Generation Enterprises"

Greenhouse gas inventory verification statement maintained by each operating plant in 2022

Note: In 2022, the third-party verification of Linyuan Advanced Plant was expected to be obtained by the end of 2023 due to the operational schedules, therefor supplemented by the 2021 certificates

Greenhouse gas management

In the face of global climate change, CSRC keeps strengthening our climate adaptation and resilience, and we continue striving to mitigate greenhouse gas emissions. CSRC conducts annual greenhouse gas inventories and formulates greenhouse gas management policies based on the results of the inventories, and then formulates reduction targets and reduction measures. In this regard, we have based on the greenhouse gas emissions and management conditions of each operating plant area. Among them, Linyuan Advanced Plant setting is 30% lower than 2016 base year. In 2030, the carbon emission intensity of Maanshan Plant will be reduced by 26% from a 2016 base year. Anshan Plants' long-term carbon reduction target is to reduce 25% emission from a 2016 base year. In 2022, the greenhouse gas emissions density in each operating plant area continued to decline. Compared with the base year of 2016, Linyuan Advanced Plant decreased by 21%, Maanshan Plant decreased by 21% [Note], and there was a 16% [Note] reduction in Anshan Plant. CSRC will continue to move towards the 2030 emission reduction target.

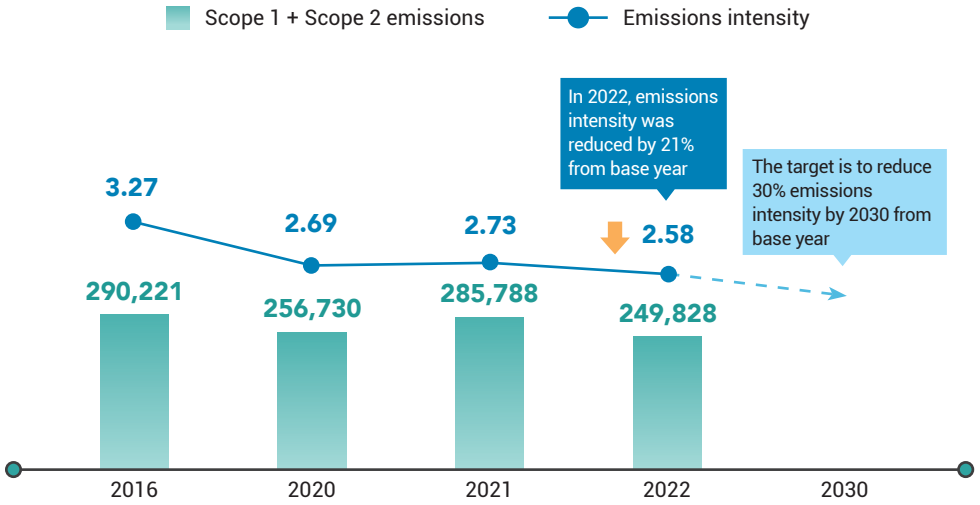
Note: Since the carbon emission intensity targets set by the Maanshan Plant and the Anshan Plant are motivated by local government policies, performance also covers the external power supply. In 2022, the emissions intensity for Maanshan Plants' offsetting external supply performance decreased by 21% compared with the base year, while the actual emissions intensity decreased by 31% compared with the base year; the emissions intensity for Anshan Plants' offsetting external supply performance decreased by 16.3% compared with the base year, while the actual emissions intensity decreased by 15.8% compared with the base year.

To continue achieving the goal of reducing greenhouse gas emissions, we have respectively formulated reduction strategies for Scope 1 and Scope 2 greenhouse gases. For Scope 1 greenhouse gas reduction, we regularly evaluate the performance improvement of process equipment and set goals for replacing old equipment, and we cut down on the consumption of crude oil by improving production efficiency. Each of the operating plants has planned to use natural gas instead of fuel oil. Among them, Linyuan Advanced Plant and Maanshan Plant have begun to implement related projects, and each operating plant continues to plan the process improvement of the exhaust gas furnace. We thus expect to reduce future dependence on high-carbon-emitting fuels.

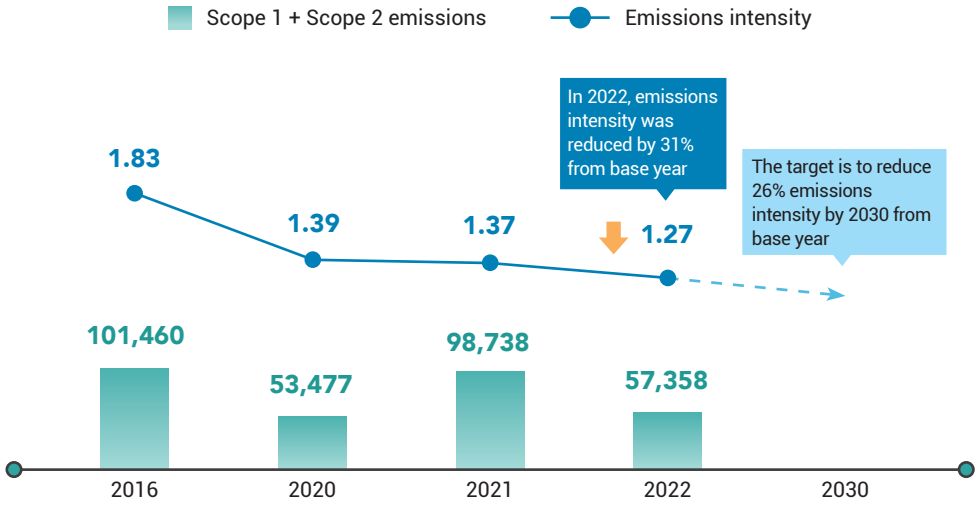
In response to the reduction of Scope 2, Linyuan Advanced Plant has repurchased solar panels from Chailease with plans to gradually increase the use of renewable energy in the future. In respect to process improvements and adoption of energy-saving equipment in Maanshan Plant (such as improvement of online waste heat boilers and adoption of energy-saving fans), reductions have been made each year totaling about 487,807 kWh of purchased electricity, equivalent to emissions reductions of 1,734 tonnes of CO_2e. This effectively saves energy and reduces consumption, and we have economic and emissions reduction benefits at the same time. Anshan Plant also adopted the use of energy-saving equipment, resulting in a total reduction of 332,361 kWh in purchased electricity (equivalent to 189 tonnes of CO_2e).

To effectively achieve the emission reduction target of greenhouse gases, the Company has established a carbon emission management task force, members include the IT Department, the Safety and Environment Center, and the personnel of each operating plant. Furthermore, we have set up a cross-factory online e-carbon emission monitoring system to check the carbon emission situation at any time. In addition to holding regular monthly meetings to review and track the carbon emissions of each operating plant, each operating plant is also invited to share carbon reduction plans and performance for other plants to learn from each other. The monthly and quarterly greenhouse gas emission intensity has been included in the KPI of each operating plant and linked to performance bonuses to encourage all employees to work together for energy conservation and emission reduction.

Linyuan Advanced Plant long-term energy saving and carbon reduction goals

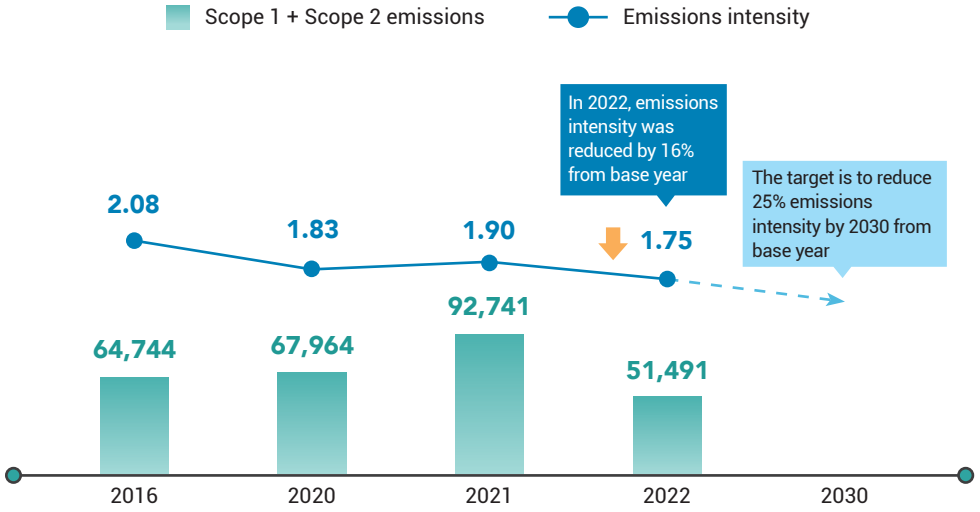


Maanshan Plant long-term energy saving and carbon reduction target Note



Note: Since the carbon emission intensity targets set by the Maanshan Plant and the Anshan Plant are motivated by local government policies, performance also covers the external power supply.

Anshan Plant long-term energy saving and carbon reduction target Note



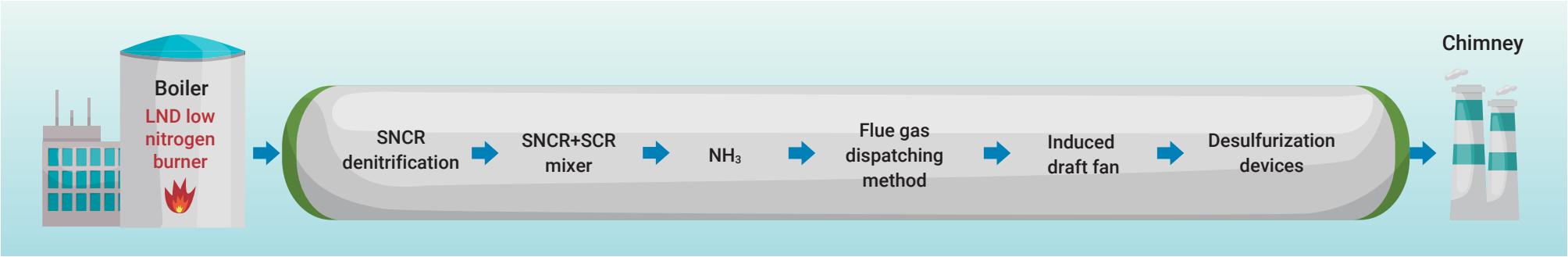
Item	2016	2020	2021	2022
Linyuan Advanced Plant				
Total Greenhouse Gas Emissions (tonnes of CO_2e)	290,221	256,730	285,788	249,828
Greenhouse Gas Emissions Intensity (Tonnes of CO_2e/tonne)	3.27	2.69	2.73	2.58
Maanshan Plant				
Total Greenhouse Gas Emissions (tonnes of CO_2e)	101,460	53,477	98,738	57,358
Greenhouse Gas Emissions Intensity (Tonnes of CO_2e/tonne)	1.83	1.39	1.37	1.27
Anshan Plant				
Total Greenhouse Gas Emissions (tonnes of CO_2e)	64,744	67,964	92,741	51,491
Greenhouse Gas Emissions Intensity (Tonnes of CO_2e/tonne)	2.08	1.83	1.90	1.75

2.3 Air Pollution Prevention and Control

Air pollutant emissions management

CSRC uses feedstock fuel to be burnt and pyrolyzed in a reaction furnace to produce carbon black. At the same time, it produces four major air pollutants: volatile organic compounds (VOCs), sulfur oxides (SOx), nitrogen oxides (NOx), and particulate pollutants (total suspended particulates, TSP). The identification and measures harmful air pollutants (HAPs) from 2021 have been included, and no HAPs emission has been identified in each operating plant. To reduce air pollution in the carbon black production process, we monitor the gas emission data as a management basis at all time and actively deploy air pollution reduction and control measures.

Schematic Diagram of Air Pollution Prevention and Control Measures of CSRC



◆ The prevention and control of volatile organic compounds (VOCs)

To control the volatile organic compounds in feedstock fuel and fuel tanks, CSRC continues to adjust the production process and formula while installing fuel gas collection systems above each storage tank, setting up connecting pipes at breather valves, and using power fans to draw air to maintain a slight negative pressure in the tanks. Then the extracted exhaust gas is introduced into the combustion furnace air for use to achieve the control effect of the end-of-pipe treatment.

Breather valve connecting pipe setup

◆ The prevention and control of Sulfur oxides (SOx)

The sulfur content of coal tar used in the carbon black process is about 0.3-0.5%, and the sulfur content of Fluid Catalytic Cracking oil (FCC) is as high as 2-4%, which is higher than the current sulfur content standards of oil products. Therefore, they need to undergo desulfurization treatment to meet the SOx emission standard of air pollutants. For this reason, all the operating plants of CSRC have installed De-SOx desulfurization equipment in the exhaust pipes of the factory chimneys. Through limestone desulfurization, we have successfully reduced the monthly average SOx emission concentration from 160 ppm to below 22 ppm. With the equipped low-emission facilities, can minimize the air pollutant emission. Linyuan Advanced Plant continues to adjust the process and formula, and some fuels (such as diesel and liquefied petroleum gas) are to be changed to low-sulfur fuels for heating.

Advantages of De-SOx desulfurization tower

- Material usage of the scrubber system is only1/2 or 1/3 of the conventional approach
- The pressure loss and the power required for air supply is relatively small
- Operate in a state of suspension
- Liquid supply does not require a nozzle, and the power of liquid delivery is small
- Easier to start, stop and operate
- It can maintain a stable desulfurization rate even when the amount of gas changes significantly
- Rarely produce gas bias flow, and is especially suitable for large-scales
- Optimal gas absorption efficiency and dust removal efficiency
- The system has a long operating time, stable operations, and convenient maintenance and repair

◆ The prevention and control of Nitrogen oxides (NOx)

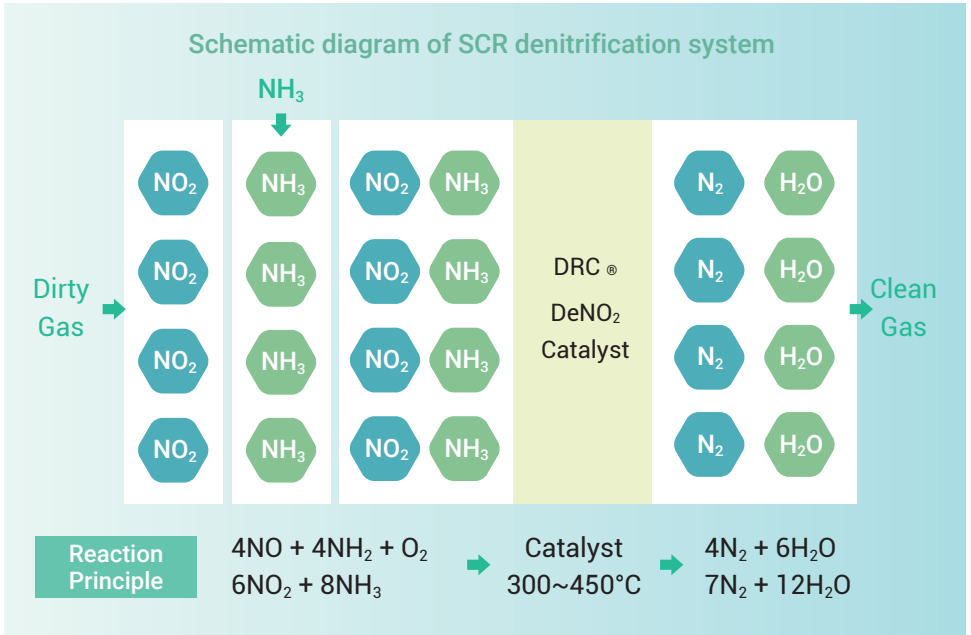
Methods currently adopted by CSRC to reduce nitrogen oxides (NOx) include:

1 Staged combustion of flue gas reflux:

The flue gas is divided into three stages of combustion. In the first stage, a portion of the flue gas is returned to the boiler combustion zone and supplies less air than in complete combustion, thereby achieving a dilute oxygen concentration that prevents nitrogen in the fuel from generating NOx. The second and third stages are burned with residual fuel and air, which, because of its slower combustion rate, reduces the flame temperature and creates a low oxygen concentration environment while reducing NOx generation.

2 Selective catalytic reduction (SCR) denitrification system:

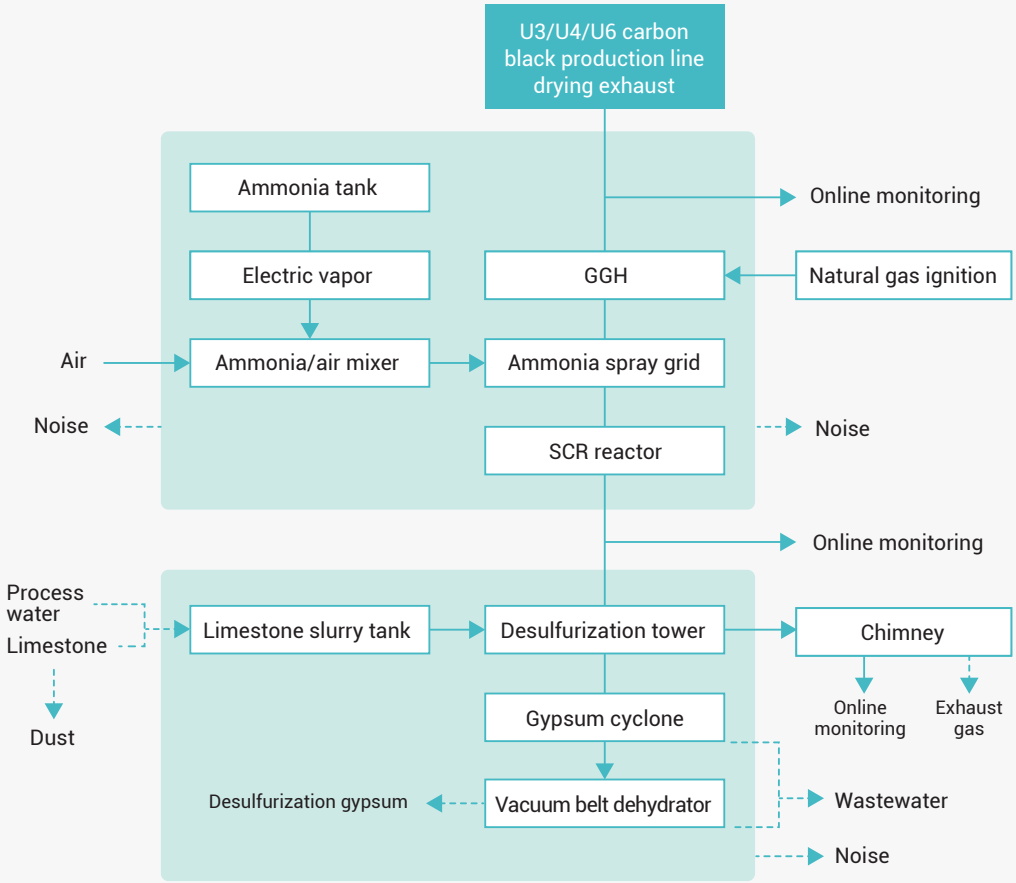
This is currently the most common technology with the highest denitrification efficiency. The treatment principle is to inject the reducing agent ammonia into the flue at 300-450°C downstream of the boiler economizer. Under the action of a catalyst, the NOx in the flue gas is reduced to harmless N_2 and H_2O, and the removal efficiency of NOx can reach more than 90% (calculated by the EPA NOx emission concentration of 30 ppm). This successfully solves the problem of nitrogen oxides emissions from the flue gas generated by boiler exhaust of Linyuan Advanced Plant and Anshan Plant.



Desulfurization and denitrification system of EBF production line

The desulfurization and denitrification system of the EBF production line of Maanshan Plant was officially put into operation in December 2020. In 2021, the emission of sulfur oxide (SOx) was effectively reduced and air quality was effectively improved. The desulfurization and denitrification system of the EBF production line of Linyuan Advanced Plant was completed in 2022 and has started trial operation. It is expected to further reduce the emissions of sulfur oxides (SOx) and nitrogen oxides (NOx). The desulfurization and denitrification of Anshan Plant EBF production line is expected to operate in 2023.

Processing flow chart



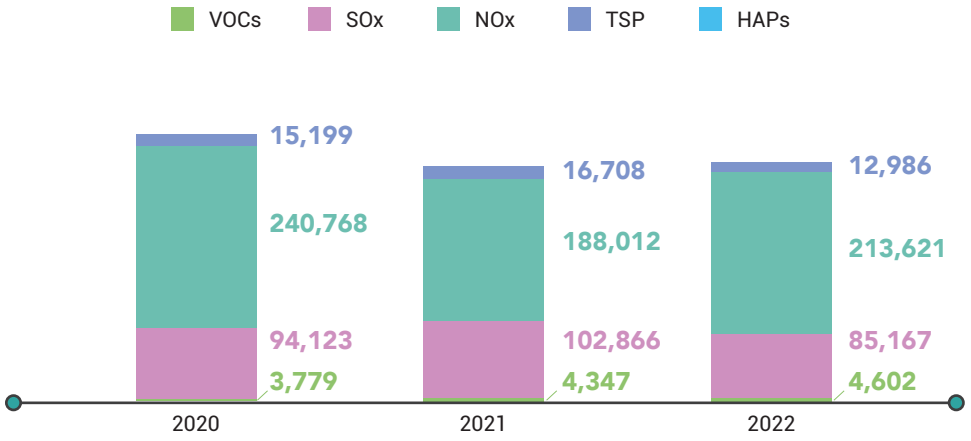
◆ The prevention and control of Particulate Pollutant (Total Suspended Particulates, TSP)

CSRC continues to improve production equipment to reduce pollutants. For example, filter bags are replaced earlier for the bag dust collector, and a circular pulse cleaning bag dust collector has been developed. The dust collection efficiency to prevent particulate pollutants can reach more than 99%. A personal digital assistant (PDA) inspection system is also used, which can grasp the production status at any time and adjust it in real time. This can effectively solve the defects of easily blocked carbon deposits and smoke leakage in bag dust collector as it was originally designed.

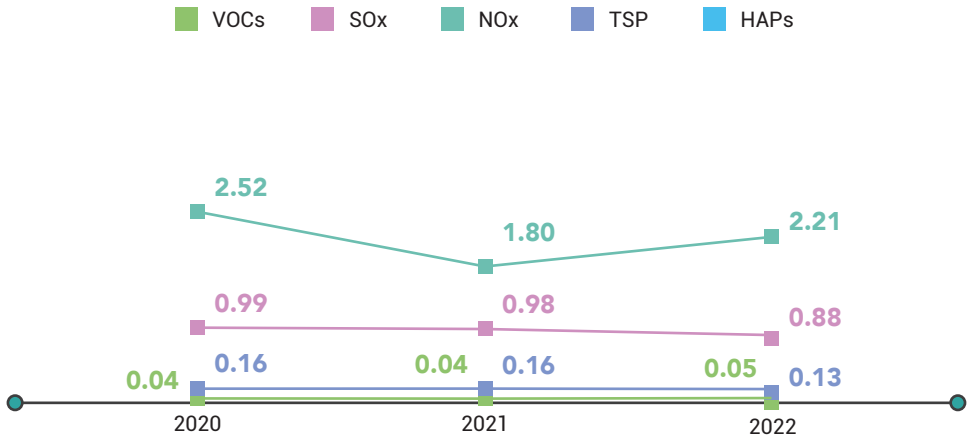
Air pollutant emissions

Linyuan Advanced Plant declares its air pollution to the Environmental Protection Bureau every year and regularly tracks the emission of air pollutants generated during the operation period through the declared amount of air pollution fees. Except for an incident where nitrogen oxides (NOx) concentration emissions exceeded the standards due improper processing operations (for details, please refer to the description under the Handling Process for Notification of Abnormal Air Pollutant Discharge), the emissions of all other air pollutants of Linyuan Advanced Plant in 2022 were lower than or similar to the emissions in 2021. Moving forward, we will continue to invest in air pollution reduction measures and hopefully to reduce the absolute emissions while maintain the production of carbon black.

Linyuan Advanced Plant Absolute Emissions of Air Pollutants in the Past 3 Years



Linyuan Advanced Plant Air Pollutant Emissions Intensity in the Past 3 Years



Air Pollutant Emissions (kg)	2020	2021	2022
Volatile organic compounds (VOCs)	3,779	4,347	4,602
Sulfur oxides (SOx)	94,123	102,866	85,167
Nitrogen oxides (NOx)	240,768	188,012	213,621
Total suspended particulates (TSP)	15,199	16,708	12,986
Hazardous air pollutants (HAPs)	0	0	0

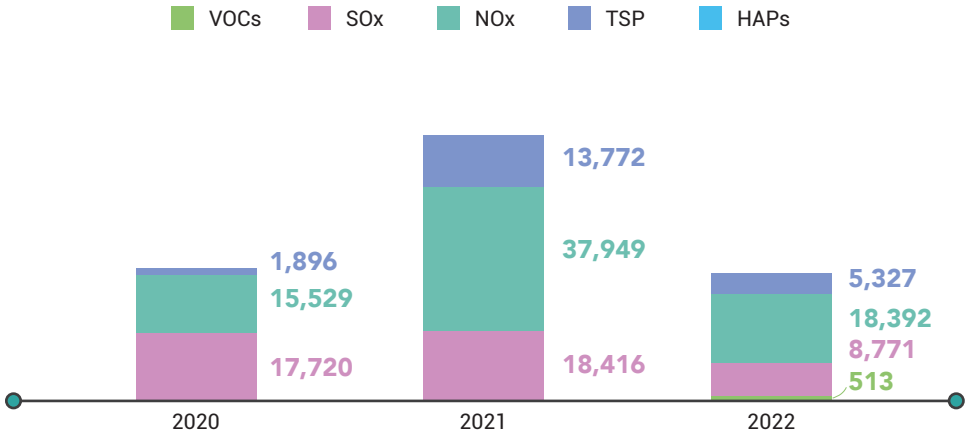
Note: The emissions data of various air pollutants are estimated based on the testing methods, emission factors, and emission calculation formulas announced by the Environmental Protection Administration.

Air pollutant emissions intensity (kg/tonne)	2020	2021	2022
Volatile organic compounds (VOCs)	0.04	0.04	0.05
Sulfur oxides (SOx)	0.99	0.98	0.88
Nitrogen oxides (NOx)	2.52	1.80	2.21
Total suspended particulates (TSP)	0.16	0.16	0.13
Hazardous air pollutants (HAPs)	0	0	0

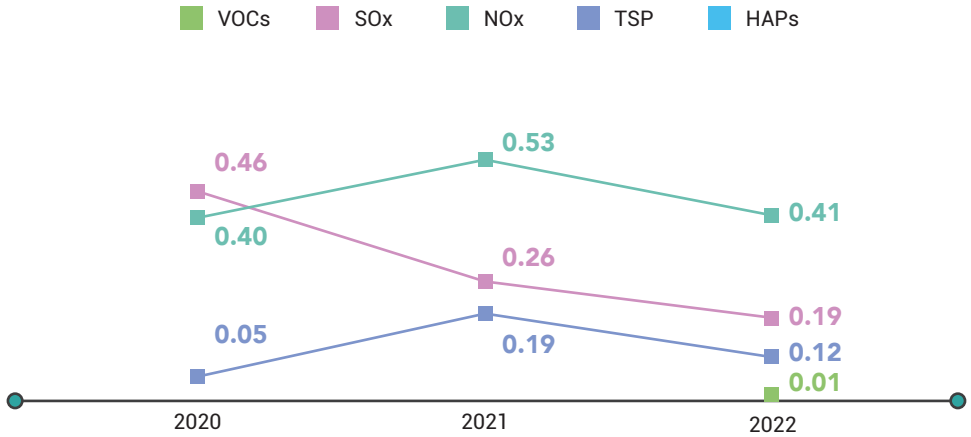
Note: Air pollution emissions intensity is the absolute emission of air pollutants (kg) per unit of carbon black production (tonnes)

For Maanshan Plant, the emissions of air pollutants in 2022 was greatly reduced from 2021 mainly due to the decrease in carbon black production and the increase in the use of fuel with low sulfur content as raw material. Among them, the emissions of nitrogen oxides (NOx) and total suspended particulates (TSP) dropped the most, respectively falling by 52% (23% in emissions intensity) and 61% (38% in emissions intensity). In 2022, Maanshan Plant continued to receive the honor of a B-level enterprise ranking in the Heavy Air Pollution Performance Evaluation. Moving forward, we will continuously invest in environmental protection equipment, strive to reduce process emissions, and conduct regular management reviews and internal audit of air pollutant emissions.

Maanshan Plant Absolute Emissions of Air Pollutants in the Past 3 Years



Maanshan Plant Air Pollutant Emissions Intensity in the Past 3 Years



Air Pollutant Emissions (kg)	2020	2021	2022
Volatile organic compounds (VOCs)	N/A	N/A	513
Sulfur oxides (SOx)	17,720	18,416	8,771
Nitrogen oxides (NOx)	15,529	37,949	18,392
Total suspended particulates (TSP)	1,896	13,772	5,327
Hazardous air pollutants (HAPs)	0	0	0

Note: The emissions data of various air pollutants are estimated based on the testing methods, emission factors, and emission calculation formulas announced in the mainland region.

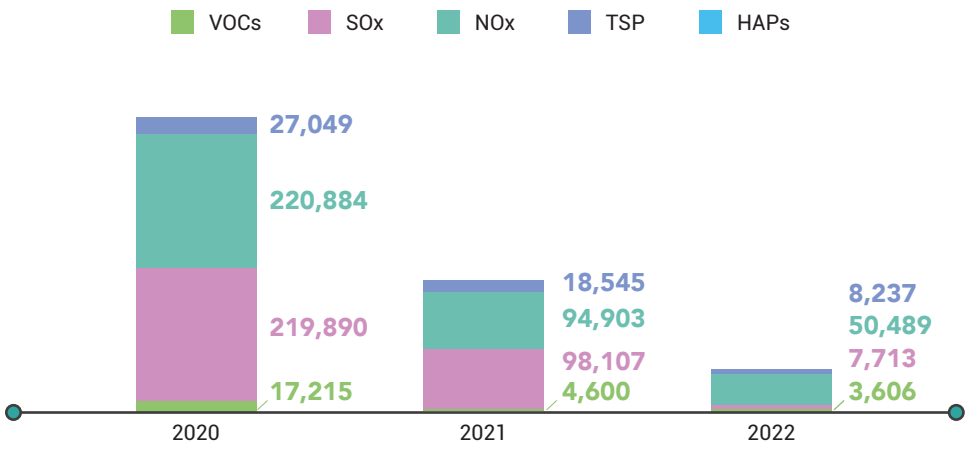
Air pollutant emissions intensity (kg/tonne)	2020	2021	2022
Volatile organic compounds (VOCs)	N/A	N/A	0.01
Sulfur oxides (SOx)	0.46	0.26	0.19
Nitrogen oxides (NOx)	0.40	0.53	0.41
Total suspended particulates (TSP)	0.05	0.19	0.12
Hazardous air pollutants (HAPs)	0	0	0

Note: Air pollution emissions intensity is the absolute emission of air pollutants (kg) per unit of carbon black production (tonne)

The air pollutant emissions of Anshan Plant in 2022 were greatly reduced from 2021, and reached the ultra-low emission standard. Among them, the emissions of sulfur oxides (SOx) has the largest reduction, falling by 92% (87% reduction in emissions intensity) and a reduction of 47% (12% reduction in emissions intensity) in Nitrogen oxides (NOx). The main reason for the decreases is that Anshan Plant has added a variety of air pollution prevention and control equipment since 2022 to reduce boiler emissions. These include the use of activated carbon adsorption facilities, low NOx combustion system and new limestone desulfurization projects.

Note: To comply with ultra-low emission standards, TSP emissions should be less than 5 mg/m^3, sulfur dioxides less than 35 mg/m^3, and nitrogen oxides less than 50 mg/m^3

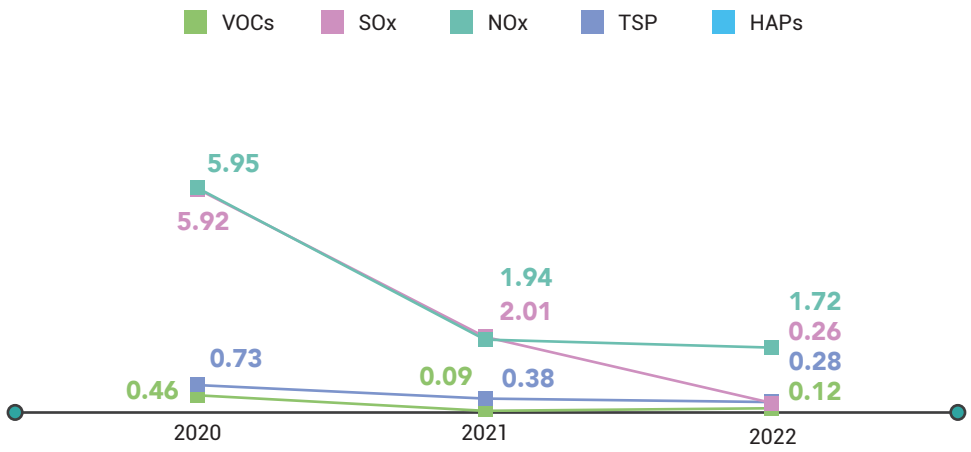
Anshan Plant Absolute Emissions of Air Pollutants in the Past 3 Years



Air Pollutant Emissions (kg)	2020	2021	2022
Volatile organic compounds (VOCs)	17,215	4,600	3,606
Sulfur oxides (SOx)	219,890	98,107	7,713
Nitrogen oxides (NOx)	220,884	94,903	50,489
Total suspended particulates (TSP)	27,049	18,545	8,237
Hazardous air pollutants (HAPs)	0	0	0

Note: The emissions data of various air pollutants are estimated based on the testing methods, emission factors, and emission calculation formulas announced in the mainland region.

Anshan Plant Air Pollutant Emissions Intensity in the Past 3 Years



Air pollutant emissions intensity (kg/tonne)	2020	2021	2022
Volatile organic compounds (VOCs)	0.46	0.09	0.12
Sulfur oxides (SOx)	5.92	2.01	0.26
Nitrogen oxides (NOx)	5.95	1.94	1.72
Total suspended particulates (TSP)	0.73	0.38	0.28
Hazardous air pollutants (HAPs)	0	0	0

Note: Air pollution emissions intensity is the absolute emission of air pollutants (kg) per unit of carbon black production (tonne)

Handling Process for Notification of Abnormal Air Pollutant Emissions

To ensure that air pollutants are properly handled and monitored, CSRC has established a integral air pollutant notification and treatment process. The notification and treatment process will proceed when the monitoring system detects abnormal discharge events (such as: air pollution concentrations exceeding the standards).

Notification Process and Complaints in 2022

Linyuan Advanced Plant

- 2022 emissions anomaly incidents: 1
  Abnormal incident: NOx exceeding the standard due to improper processing operations
  Solution: Increase the amount of ammonia water added to control equipment such as SNCR to reduce the concentration of NOx emissions
- No air pollution related complaints in 2022

Notification Process

Detection system detects abnormality → EHS Office → Control Office → Kaohsiung City CEMS Digital Platform → CEMS instantly notify for abnormalities → Confirmation of the cause, followed by source improvement and report status

Maanshan Plant

- 2022 emissions anomaly incidents: 0
- No air pollution related complaints in 2022

Notification Process

Detection system detects anomalies → System dispatch → Notify the scene to clarify the cause of the abnormality → Notify the Environmental Protection Agency → Mark on the automatic monitoring platform of key pollutant discharge units → Submit to the Environmental Protection Bureau in the form of an official document for filing

Anshan Plant

- 2022 emissions anomaly incidents: 0
- No air pollution related complaints in 2022

Notification Process

Detection system detects anomalies → Start "Emergency Handling of Abnormal Online Monitoring Data" → Classification by exception type → Assign to relevant departments for notification and handling

Note: SNCR stands for selective non-catalytic reduction. It is an air pollution control technology commonly used to reduce nitrogen oxides (NOx) emissions.

CH 3 Water Resources and Waste Management

Performance highlights

- Maanshan Plant and Anshan Plants were rated as **water-saving enterprises** in 2022.
- In 2022, **90%** of the wastewater from the recycling process in Maanshan Plant was reused after a purification process.
- In 2022, **the waste recycling rate** of each plant **reached targets**.
- In 2022, all 3 plants implemented PE packaging instead of paper bag packaging to reduce paper waste by over **189 tonnes**.
- In 2022, the water use intensity of Linyuan Advanced Plant was reduced by about **19%** compared with the base year.

Material topics: Water Resource Management

GRI Standards: GRI 3-3、GRI 303-1、GRI 303-2、GRI 303-3

Description of Impacts	Increasing frequency of droughts and water shortages caused by extreme weathers highlights the importance of water resource management. CSRC strictly controls the use of water resources and continues to improve the efficiency of water recycling while at the same time avoiding excessive water intake that may cause damage to the surrounding environment. In addition, we will continue to promote the water balance plan.				
Policies and commitments	Reduce, Recycle, and Reuse (3R) is an important water resources management policy for the CSRC. We aim to recycle and reuse water resources to reduce water use intensity and achieve zero discharge of wastewater, which is our end goal. We will continue to invest in water conservation actions and measures, expand the influence of water cycling, and actively improve the water utilization of each operating plant.				
Goals	**Goals**	**Base year**	**Current Status in 2022**	**Short-term (2023 ～ 2025)**	**Mid-Long Term (2025 ～ 2030)**
	Reduce water use intensity	Linyuan Advanced Plant &Anshan Plan: 2019 Maanshan Plant:2020	▪ Linyuan Advanced Plant: Approximately 19% reduction from the base year ▪ Maanshan Plant: The water use intensity was the same as in the base year ▪ Anshan Plant: the water use intensity increased by 25.3% [Note] from the base year	Decrease in water use intensity compared to the base year ▪ Linyuan Advanced Plant: 13% - 15% ▪ Maanshan Plant:10% ▪ Anshan Plant: 5% - 7%	Decrease in water use intensity compared to the base year ▪ Linyuan Advanced Plant: 22% reduction from the base year ▪ Maanshan Plant: the water use intensity in 2030 is expected to be reduced by 13%-15% compared to the base year. ▪ Anshan Plant: 8% - 10%
	Increase wastewater recycling rate	2019	Wastewater recycling rate ▪ Linyuan Advanced Plant: 14% ▪ Maanshan Plant: 10% ▪ Anshan Plant: The recycling of wastewater has yet to be adopted	Wastewater recycling rate ▪ Linyuan Advanced Plant: exceed 16% by 2025 ▪ Maanshan Plant: Exceed 10% - 12% in 2025 ▪ Anshan Plant: Planned to activate wastewater reuse in 2023 and increase wastewater recycling rate by 5% in 2025	Wastewater recycling rate ▪ Linyuan Advanced Plant: Expected to reach 18% or higher ▪ Maanshan Plant: 13% ~ 15% ▪ Anshan Plant: The wastewater recycling rate will reach 10% by 2030
	Note: The water intensity of Anshan Plant was increased by 25.3% in 2022, mainly due to the boiler denitrification system commissioning in 2022.				
Responsible units	Environmental, Health & Safety (EHS) Center, and EHS office of each plant				
Resources	The Group has invested about NTD 8.98 million (NTD 2.39 million for Linyuan Advanced Plant, RMB 1.07 million for Maanshan Plant, and RMB 430,000 for Anshan Plant) for the wastewater-related equipment and CEMS system maintenance costs.				
Grievance Mechanisms	csrcir@csrcgroup.com				
Action plans	**Negative Impact Management** ▪ Continuously improve wastewater treatment facilities in plants ▪ Expand the implementation of water recycling and water-saving measures in each plant. ▪ Improve the water use efficiency of processes in each plant			**Positive Impact Management** ▪ Execute the water balance project, water use inventory, and monitor the water use in the plant area. ▪ Cooperate with external companies to jointly improve water recycling and reuse activities.	
Evaluation of Assessments	▪ Continue to monitor the wastewater quality and water intake in the plant areas and set water resource management KPIs for a regular follow-up review. ▪ Each month, each plant inspects the water consumption status, conducts analysis and management, and reports to the chief plant manager and general manager. ▪ Once a year, conduct an internal audit and management assessment of the environmental management system.				

Material topics: Waste Management

GRI Standards: GRI 3-3、GRI 306-1、GRI 306-2

Description of Impacts	CSRC implements the circular economy spirit of waste reuse. We properly deal with the business waste disposal, comply with the requirements of various waste laws and regulations, and look for opportunities for resource reuse.
Policies and commitments	In addition to reducing resource consumption, the CSRC has adopted the 3R method as the key internal waste management policy to prevent environmental pollution. Examples include reusing wastes such as the material storage tanks (sludge heat recovery), replacement of process consumables, packaging materials, and pallets to improve the source of material use.

Goals

Goals	Current Status in 2022	Short-term (2023 ～ 2025)	Mid-Long Term (2025 ～ 2030)
Improve waste recycling rate	Waste recycling rate ■ Linyuan Advanced Plant: 88.1% ■ Maanshan Plant: 81.5% ■ Anshan Plant: 70.4%	Improve waste recycling rate ■ Linyuan Advanced Plant, Maanshan, and Anshan Plant > 85%	Improve waste recycling rate ■ Linyuan Advanced Plant: 100% ■ Maanshan and Anshab Plant > 95%

Responsible units	EHS Center, EHS Office of each plant, Storage and Transportation team, and Production team
Resources	The Group has invested about NTD 24.1 million (approximately NTD 10.3 million at Linyuan Advanced Plant, RMB 1.6 million at Maanshan Plant, and RMB 1.54 million at Anshan Plant) for waste disposal and treatment
Grievance Mechanisms	E-mail: csrcir@csrcgroup.com

Action plans

Management of Negative Impacts
- Implement waste disposal control measures in the plants

Management of Positive Impacts
- Promote the reduction and recycling of waste in plants
- Continue to invest in pollution prevention equipment based on resource utilization and reduction principles.
- Introduce the use of PE bags, the reduction of waste wood pallets, the recycling, and reuse of used refractory waste bricks, desulfurization gypsum (from inorganic sludge), and the recycling and reuse of slag.

Evaluation of Assessments
- Continue to monitor the production of various types of waste in the plant area and set up waste management KPIs for regular follow-up reviews.
- Each month, each factory reviews the implementation performance and reports regularly to the chief plant manager and general manager.
- Once a year, conduct an internal audit and management assessment of the environmental management system.

3.1 Water Resource Management

3.1.1 Water Usage Management

CSRC strictly controls the use of water resources and continues to improve water recycling efficiency to avoid environmental damage caused by excessive water withdrawal. We also implement the water balance project to continuously adjust the use of water resources. Active water-saving measures have been promoted starting from 2021. The Company also cooperates with external neighboring factories. After selling steam to neighboring factories, the external partners will feedback the condensed water generated by their processes to Linyuan Advanced Plant for reuse. Other internal water conservation actions include divert the discharge cooling water and returning to the desulfurization absorption tower as a supplementary water source, expanding water recycling, regularly checking the leaks in the factory pipelines, and repairing them to reduce the risk of wasting water resources. We continued to adopt water conservation measures and review the practical operation in 2022 to devise the best water use efficiency.

The total water withdrawal by CSRC in 2022 was 2,625,557 m^3. The usage includes the Group's overall process, packaging, and office use. The water withdrawal of Linyuan Advanced Plant was 1,387,189 m^3, the water withdrawal of Maanshan Plant was 564,941 m^3, the water withdrawal of Anshan Plant is 673,427 m^3, the water withdrawal of Taipei Headquarters Building was 0.47 m^3.

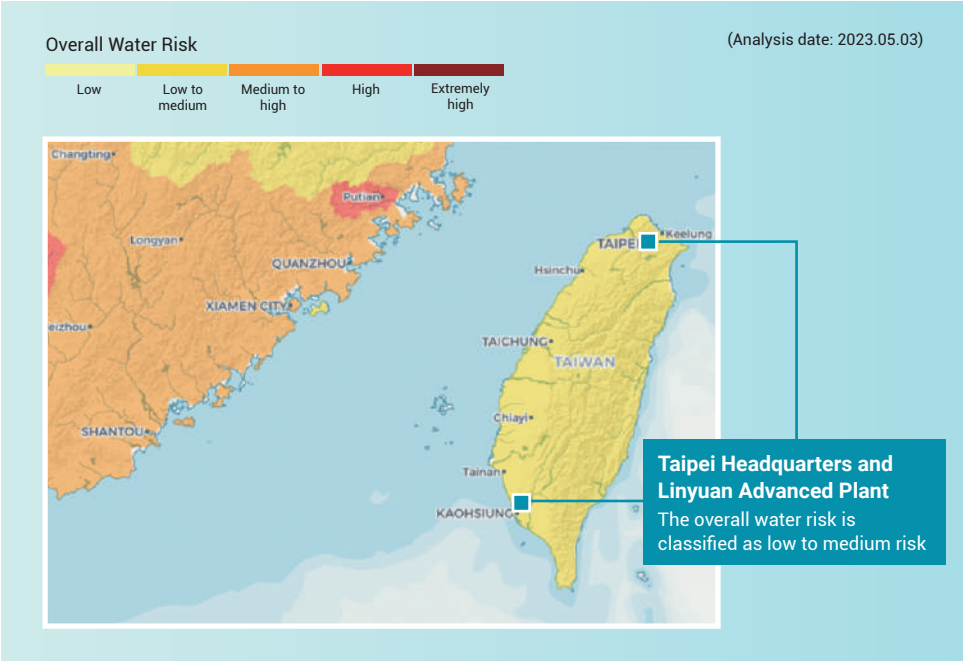
Regarding water resource management, CSRC continues to inventory process water use in each plant and implement water-saving and water-recycling projects, thereby making the most effective use of water resources. Linyuan Advanced Plant's wastewater recycling rate was 14% in 2022, whereas Maanshan Plant's was 10%.

Linyuan Advanced Plant

Linyuan Advanced Plant's overall water risk classification by the Aqueduct Water Risk Atlas of the World Resources Institute (WRI) is low to medium risk, and no water source was withdrawn from water stress areas. Linyuan Advanced Plant's water withdrawal comes from the tap water of the Fengshan Reservoir. The generated sewage is treated in the plant, discharged into the wastewater treatment plant of Linyuan Industrial Zone, and eventually to be released into sea. In 2022, Linyuan Advanced Plant responded to water scarcity by dispatching water to the plant area due to the below average rainfall in central and southern Taiwan. The water supply was interrupted during the maintenance of Taiwan Water Corporation's pipelines, and caused a brief water shortage. The water shortage response SOP in the plant was activated, and water trucks were deployed to relieve water stress. Production and operation were not significantly affected.

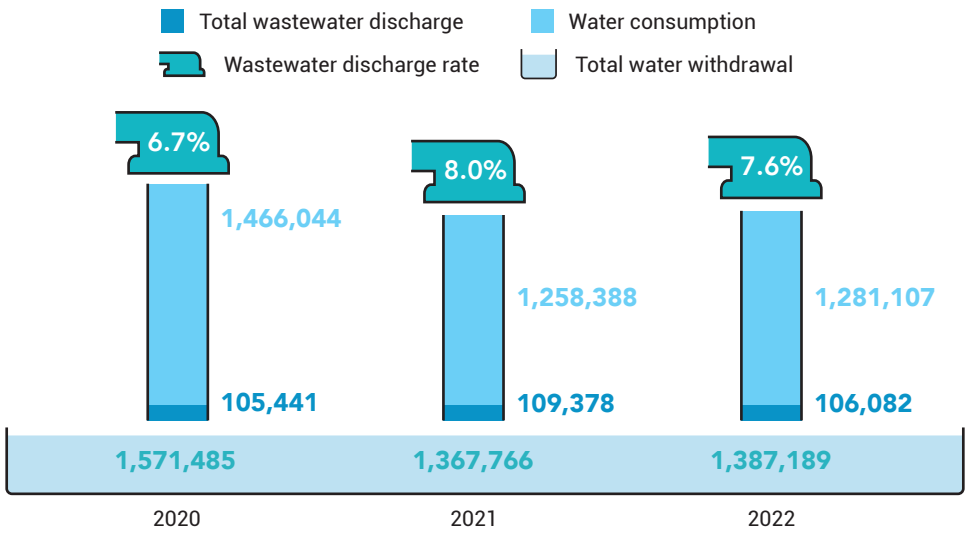
The Engineering and Materials Instrumentation team survey the tap water meter every month to track and manage water consumption of the entire Plant. The process water in the Plant is collected separately by the Carbon Black Production team and the Steam Power team. According to the overall water resource flow analysis, the water withdrawal in 2022 was 1,387,189 m^3 while the total process tap water consumption was 1,380,720 m^3. Since 2022, domestic regulations have tightened air pollution control from stationary pollution sources, and to achieve compliance, our plants inject ammonia water and mixed liquid to reduce NOx emissions. The Plant also implemented EBF desulfurization and denitrification projects in 2022. According to the test results, all preceding actions have slightly increased overall water consumption compared to 2021.

To promote the effective use of water resources, Linyuan Advanced Plant recovers the recyclable process wastewater, collects rainwater, and reuses in the carbon black process after purification. In 2022, 188,771 m^3 of processing water was recovered. The wastewater plant increased its operation and treatment capacity in 2022, thus the recovery rate increased by 8% to 14% in 2021. We will continue to increase the amount of water recycled by the wastewater plant in the future, examine and enhance the water usage inventory via the water balancing project, and continual to improve the efficiency of water resource use.



Note: This is the analysis result of the overall water risk assessment for Linyuan Advanced Plant conducted using the World Resources Institute (WRI) Aqueduct Water Risk Atlas.

Water Resource Flow for Linyuan Advanced Plant in Last 3 Years



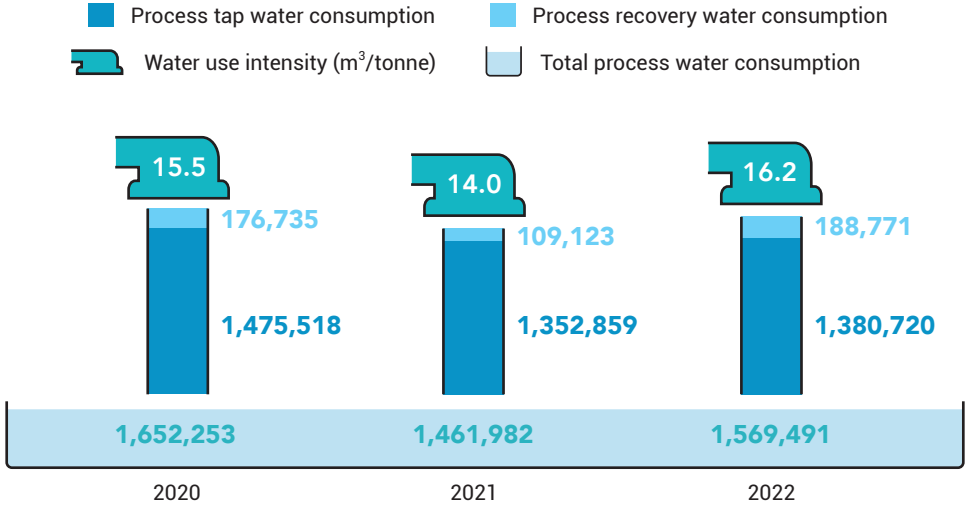
Water Resource Flow for Linyuan Advanced Plant in Last 3 Years

Unit: m^3

Item		2020	2021	2022
Total water withdrawal		1,571,485	1,367,766	1,387,189
Water source	Third-party water	1,571,485	1,367,766	1,380,720
	Rainwater	N/A	N/A	N/A
	Groundwater	0	0	0
	Condensate water	0	0	6,469
Total wastewater discharge		105,441	109,378	106,082
Water consumption		1,466,044	1,258,388	1,281,107
Wastewater discharge rate		6.7%	8.0%	7.6%

Note 1: Water withdrawal purpose includes processing, packaging and office administration use. Water sources includes third-party water (tap water) and condensed water.
Note 2: Water consumption = water withdrawal - wastewater discharge
Note 3: Wastewater discharge rate = wastewater discharge ÷ water withdrawal
Note 4: In addition to third-party water and condensate water, Linyuan Advanced Plant also uses rainwater. Currently, no water flow meter is installed, so data is not available.

Linyuan Advanced Plant Process Water Consumption in Last 3 Years



Linyuan Advanced Plant Process Water Consumption in Last 3 Years

Unit: m^3

Item	2020	2021	2022
Process tap water consumption	1,475,518	1,352,859	1,380,720
Process recovery water consumption	176,735	109,123	188,771
Total process water consumption	1,652,253	1,461,982	1,569,491
Process water recovering rate	12.0%	8.1%	13.7%
Water use intensity (m^3/tonne)	15.5	14.0	16.2

Note 1: The statistical source is from the monthly bill of Taiwan Water Corp.
Note 2: Total process water consumption = process tap water consumption + process recovery water consumption
Note 3: Process recovery rate (%) = the amount of water recovered in the process (m^3) ÷ processing tap water consumption (m^3)
Note 4: Water use intensity = total process water consumption (m^3) ÷ annual carbon black production (tonne)

Linyuan Advanced Plant: Water Resource Management Implementation Plan

Water balance project

Install flow meter to control the water consumption of the process in real time, with the primary goal of achieving zero discharge of wastewater.

Water recovery measures

- Recovered water from the cooling water tower is divert to the desulfurization tower
  Processing capacity is **120** m^3/day
- Drainage recovery from steam power zone (outside of air dryer)
  Processing capacity is **120** m^3/day
- Wastewater treatment and recovery
  Allowed processing capacity is **500** m^3/day
- Pure water production equipment regeneration backwash water recovery
  Processing capacity is **120** m^3/day
- Actively maintain the wastewater treatment plant, ensuring that process wastewater is properly treated and recycled

Improve process water efficiency

Increase air cooling and water-cooling efficiency

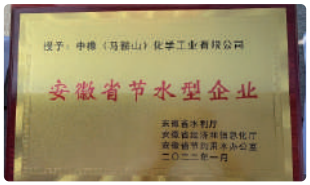
Water saving measures

- Customer's steam condensate recovery and reuse
- Optimizing water treatment systems for reuse by advanced processes

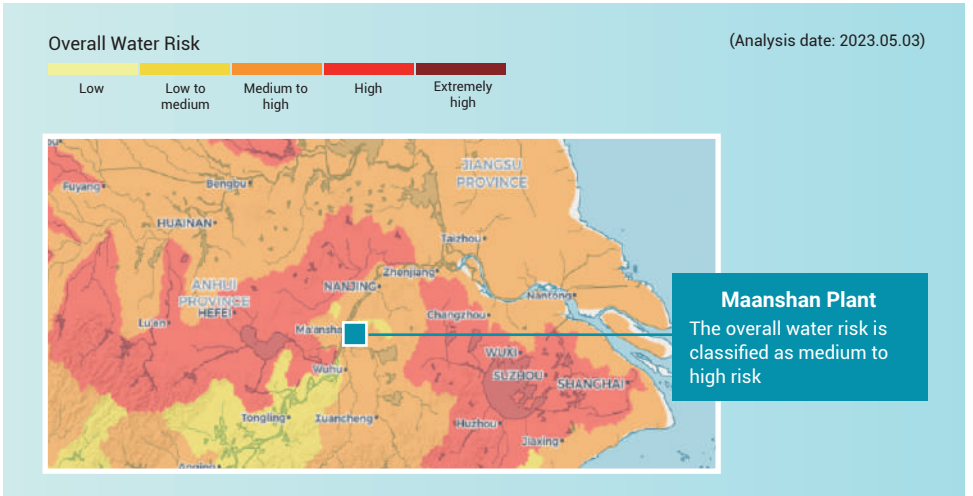
Maanshan Plant

Maanshan Plant is located in Maanshan City, Anhui Province, Mainland China. The overall water risk classification of Maanshan Plant is medium to high risk. Although the Plant is in a water stressed area, there was no water shortage or flooding event in 2022. The water source for Maanshan Plant is tap water from the municipal pipe network rather than natural water. This also helps to prevent the impact of water withdrawal on the local water environment. Maanshan and Cihu High-tech Zone Wastewater Plant have signed an external discharge agreement. After the wastewater is treated in the plant, the wastewater must fully meet the discharge requirements before it can be discharged to the Cihu High-tech Zone Wastewater Plant and eventually into the Yangtze River.

From the overall analysis of the flow of water withdrawal, the amount of water withdrawn in 2022 from Maanshan Plant was 564,941 m^3, which was reduced by 34% compared to 2021. Maanshan Plant's water consumption was 467,692 m^3 in 2022, which was significantly reduced compared to 2021, indicated a progress of water-saving measures implemented in 2022.

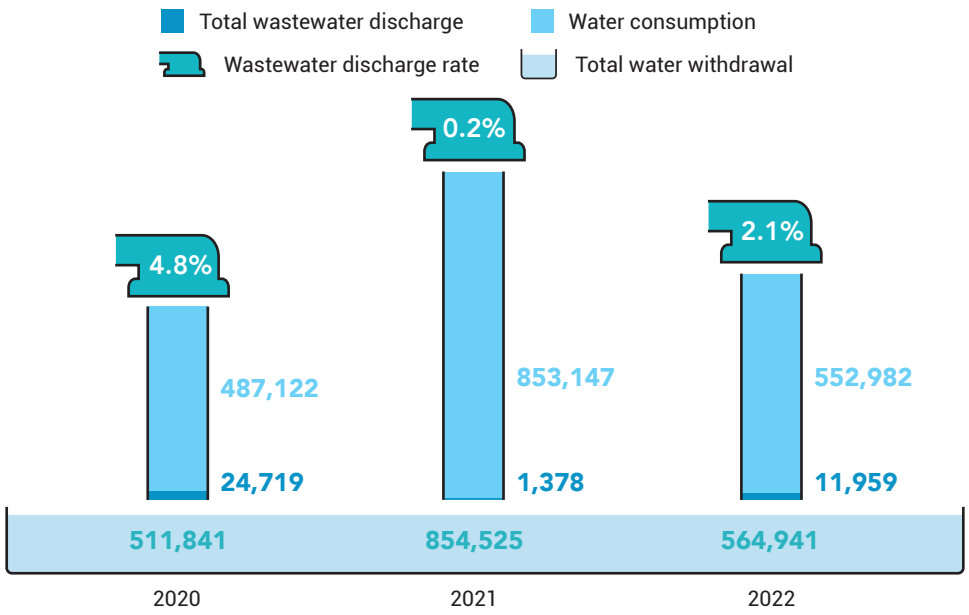


Maanshan Plant has actively applied various water conservation measures to improve water use. The performance of covering process wastewater continued to improve in 2022. After the wastewater treatment plant purification, over 90% of the water was recovered, and the remainder were used for ground surface sanitation in lieu of tap water and preserve water resources. In 2022, Maanshan Plant was awarded as a water-conserving enterprise in Anhui Province, Mainland China.



Note: This is the result of using the World Resources Institute (WRI) Aqueduct Water Risk Atlas to conduct an overall water risk assessment for Maanshan Plant

Water Resources Flow Analysis for Maanshan Plant in Last 3 Years



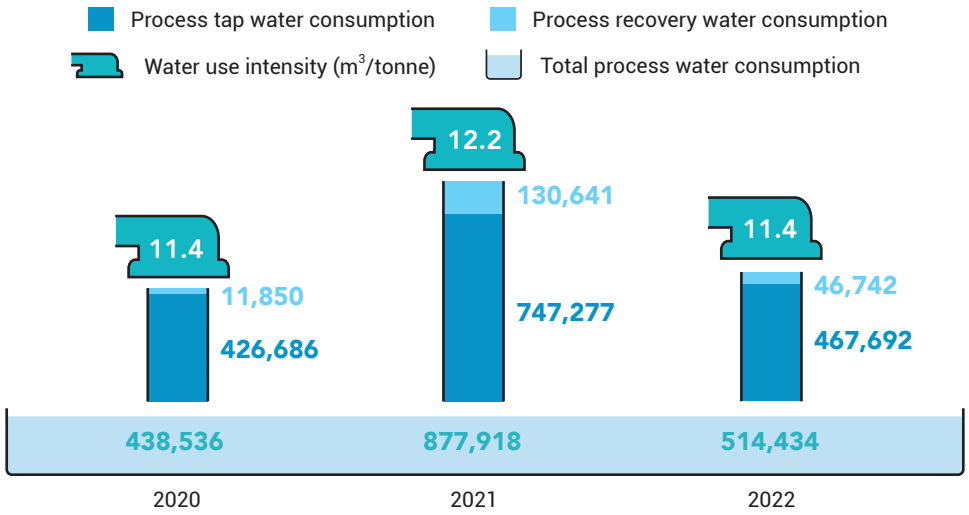
Water Resources Flow Analysis for Maanshan Plant in Last 3 Years

Unit: m^3

Item		2020	2021	2022
Total water withdrawal		511,841	854,525	564,941
Water source	Third-party water	511,841	854,525	564,941
	Rainwater	N/A	N/A	N/A
	Groundwater	0	0	0
	Condensate water	0	0	0
Total wastewater discharge		24,719	1,378	11,959
Water consumption		487,122	853,147	552,982
Wastewater discharge rate		4.8%	0.2%	2.1%

Note 1: Water withdrawal purpose includes process water use, packaging water use, and office administration water use.
Note 2: Water consumption = water withdrawal - wastewater discharge
Note 3: Wastewater discharge rate = wastewater discharge ÷ water withdrawal
Note 4: In addition to third-party water, Maanshan Plant also uses rainwater. Currently, no water flow meter is installed, so data is not available.

Maanshan Plant Process Water Consumption in Last 3 Years



Maanshan Plant Process Water Consumption in Last 3 Years

Unit: m^3

Item	2020	2021	2022
Process tap water consumption	426,686	747,277	467,692
Process recovery water consumption	11,850	130,641	46,742
Total process water consumption	438,536	877,918	514,434
Process water recovering rate	2.9%	17.5%	10.0%
Water use intensity (m^3/tonne)	11.4	12.2	11.4

Note 1: The statistical source is from water meters.
Note 2: Total process water consumption = process tap water consumption + process recovery water consumption
Note 3: Process recovery rate (%) = the amount of water recovered in the process (m^3) / Processing tap water consumption (m^3)
Note 4: Water use intensity = total process water consumption (m^3) / annual carbon black production (tonne)

Maanshan Plant Water: Resource Management Implementation Plan

Management System Protection

- The overall Maanshan Plant management results complied with the water quota requirements.
- Continually conducting an internal water cycle project, water balance inspection, and optimizing water reuse rate
- Continual expansion of the recovering system
- Build a CEMS system to conduct water treatment quality control
- Abnormal incident in the pipe network to be detected and fixed in real-time by inspecting the water balance. Some concealed pipes are difficult to maintain and replaced with open conduit.

Reinforced water conservation goals

- Water saving goal: 98% reuse rate of industrial water
- Continue to obtain provincial water conservation enterprise certification
- The discharge of water pollutants such as chemical oxygen demand and ammonia nitrogen is lower than the screening discharge limit set by the municipal ecological environment authority,
- Excluded from the key water pollutant discharge unit restrictions.

Comprehensive Equipment

- Strengthen inspection work to eliminate water leakage or air leakage in equipment pipelines.
- Utilize modern technology and equipment to improve water recycling and recovery and industrial water reuse rates.
- The water management system for production and domestic water use in each region can be strictly controlled. It can be repaired immediately to avoid water resource waste if damage is found.
- Strengthen overflow control, strictly check the water level of each pool, and prevent high-level overflow.
- Improve the management of shared water-using departments such as canteens, dormitories, and office buildings, and use water-saving methods and appliances.

Management Optimization

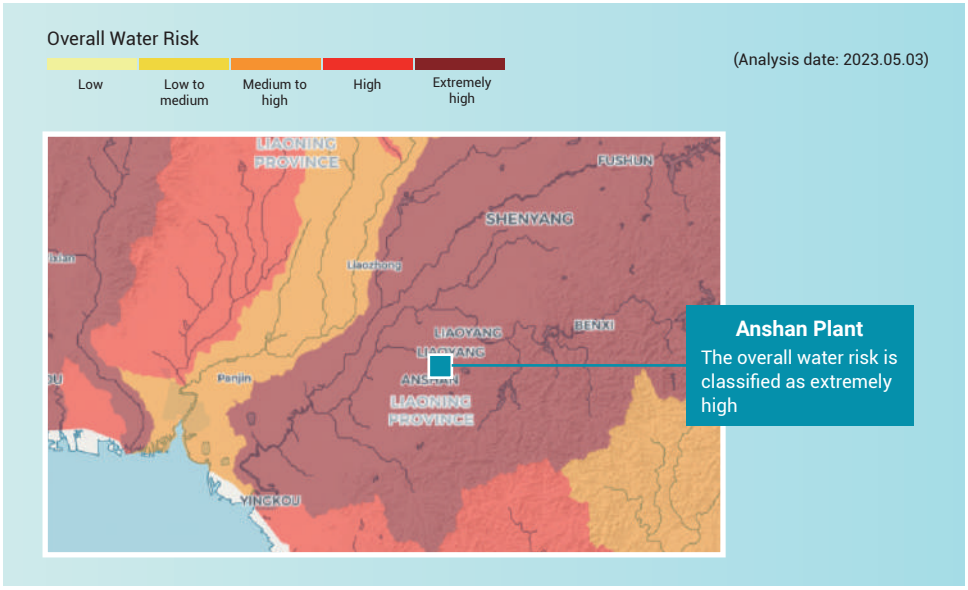
- Strengthen water quota management, conserve water, and prevent water waste.
- Improve water withdrawal and discharge monitoring, conduct regular water level checks, document changes in water consumption quotas, and establish a scientific foundation for water management.
- Improve the monitoring of input and drainage water quality, the degree of water management, personnel education, and training to conserve and protect water resources. Instill employee knowledge and obligation to conserve and protect water quality sources.
- Set clear water management contents, including water withdrawal, water use, and drainage management in accordance with the supervision and management of the competent department of water resources. Strengthen equipment management, improve operating efficiency, and strictly implement the water management system and job responsibilities. Improve the water supply site management, inspect the water supply system regularly, and deal with water waste in a timely manner.
- Strengthen the water conservation system, improve employees' water conservation awareness, and formulate practical and feasible water-saving and conservation measures.

Anshan Plant

Anshan Plant is located in Anshan City, Liaoning Province, Mainland China. Constrained by time and space, the annual rainfall distribution is uneven. The overall water risk classification of Anshan Plant is extremely high. Although the plant is in a water stress area, there was no water shortage or flooding in 2022. The source of water withdrawal for Anshan Plant is tap water from the municipal pipe network. The Dongtai Wastewater Treatment Plant treats the discharged water and then releases to the Nansha River. The water intake source does not come from natural water bodies in water resource stress areas, which helps to mitigate the water withdrawal impact on the local water environment. To mitigate the impact of abrupt drought or water shortages, 3,000 m^3 of emergency backup water is kept in the manufacturing area to ensure that the operation is not adversely affected by water shortage restrictions. In 2022, the water withdrawal of Anshan Plant was 673,427 m^3 , which is 32% lower than in 2021.

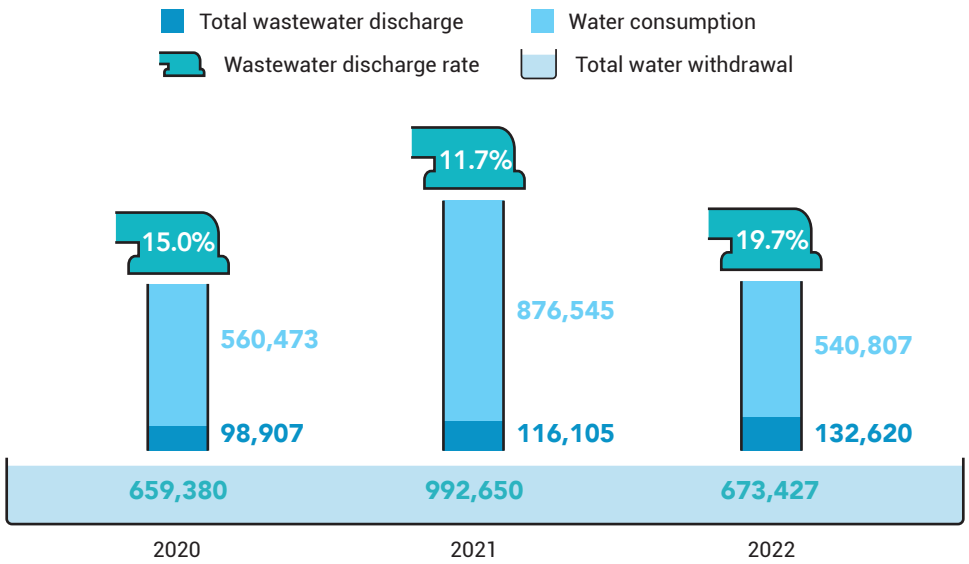
Anshan Plant's process water includes water from boilers, steam power, desulfurization, and production processes. The total process water consumption in 2022 was 622,177 m^3, and the total water consumption dropped significantly due to changes in production and sales schedules. However, beginning in 2022, the usage of boiler desulfurization will consume more water resources and result in an increased water use intensity. At present, the processing unit has not yet introduced wastewater reuse, and it is expected to start in 2023.

In 2022, Anshan Plant awarded as a water-saving enterprise in Lishan District, Anshan City, Mainland China



Note: This is the result of using the World Resources Institute (WRI) Aqueduct Water Risk Atlas to conduct an overall water risk assessment for Anshan Plant

Water Resources Flow Analysis for Anshan Plant in Recent 3 Years



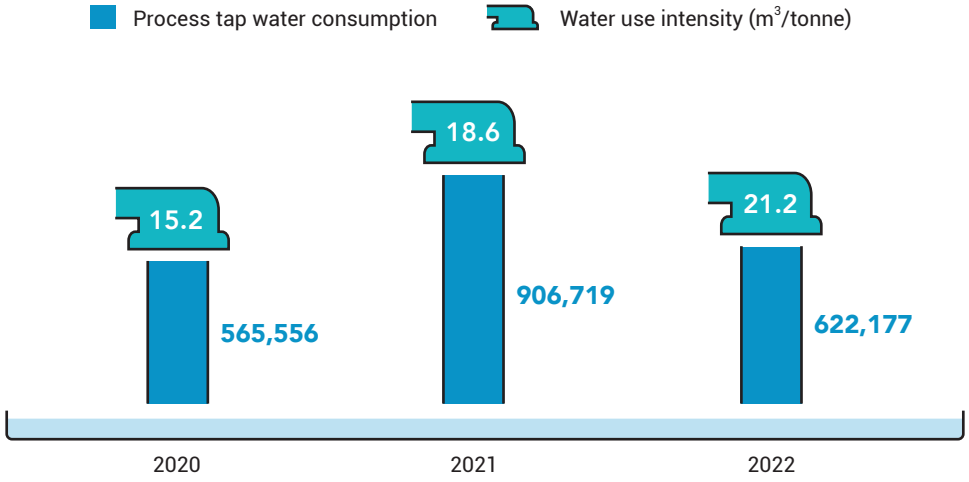
Water Resources Flow Analysis for Anshan Plant in Recent 3 Years

Unit: m^3

Item		2020	2021	2022
Total water withdrawal		659,380	992,650	673,427
Water source	Third-party water	659,380	992,650	673,427
	Rainwater	0	0	0
	Groundwater	0	0	0
	Condensate water	0	0	0
Total wastewater discharge		98,907	116,105	132,620
Water consumption		560,473	876,545	540,807
Wastewater discharge rate		15.0%	11.7%	19.7%

Note 1: Water withdrawal purpose includes processing, packaging, and office administration use.
Note 2: Water consumption = water withdrawal - wastewater discharge
Note 3: Wastewater discharge rate = wastewater discharge ÷ water withdrawal

Anshan Plant Process Water Consumption in the Past 3 Years



Anshan Plant Process Water Consumption in the Past 3 Years

Unit: m^3

Item	2020	2021	2022
Process tap water consumption (m^3)	565,556	906,719	622,177
Water use intensity (m^3/tonne)	15.2	18.6	21.2

Note 1: The statistical source is from water meters.
Note 2: Water use intensity = total process water consumption (m^3) / annual carbon black production (tonne)

Anshan Plant Water Resource Management Implementation Plan

Water recovery measures

- Planning for future granulation and quenching using recycled water through equipment transformation
- Continue to promote the wastewater reuse plan

Water saving measures

- Use qualified wastewater treated by the wastewater station for surface sanitation use.
- Replace cast iron valves in the factory and adopt stainless steel fast valves.

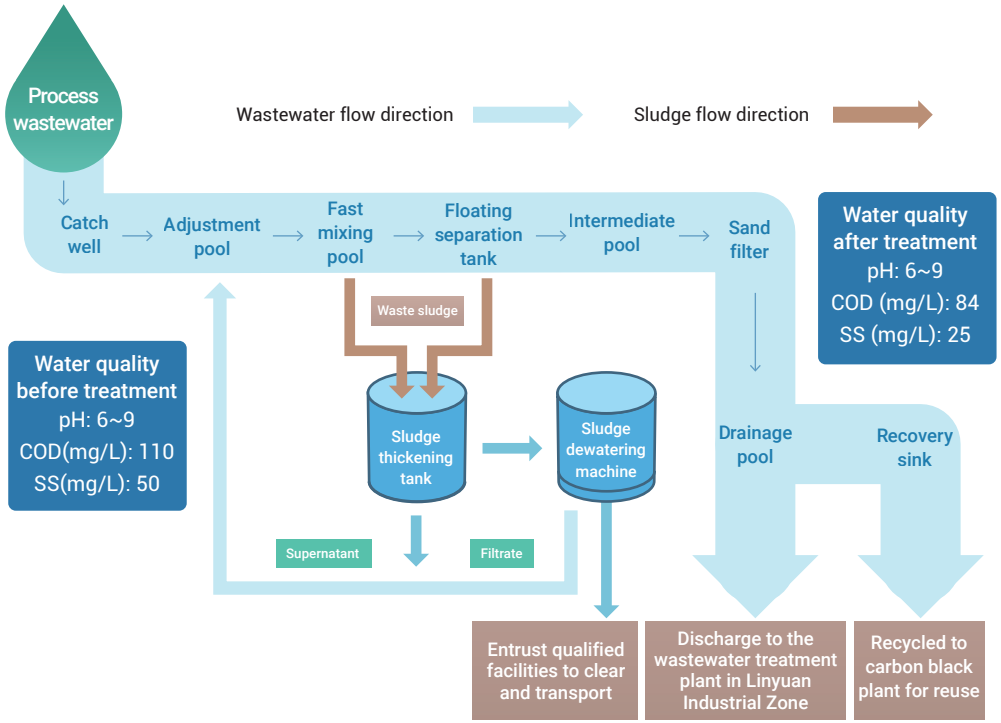
3.1.2 Wastewater management

The plants have set up wastewater treatment facilities according to laws and regulations. This is done to treat pollutants in process wastewater to meet the management standards of the industrial zones, or so they can be used as process water after purification. In this way, we try our best to achieve the resource utilization mode of the circular economy. Maanshan and Anshan Plants have formulated internal wastewater treatment regulations to regulate wastewater treatment equipment operations, abnormal accident handling procedures, occupational safety requirements, etc., to ensure wastewater plants to be managed efficiently and achieve water purification purpose.

Linyuan Advanced Plant

The wastewater discharged by Linyuan Advanced Plant are mainly from human use, process-washing, desulfurization tower wastewater, and pure water system. Among them, wastewater from human use and process-washing wastewater were coagulated and used to remove SS by pressurized floatation, filtered, and returned to the process for repeated use. However, the wastewater from the desulfurization tower and the pure water process cannot be recycled, therefore the pH value is adjusted to neutral in the factory and the SS and COD are strictly controlled. After ensuring the water quality complies with the regulations, the waste water is discharged to the wastewater treatment plant in Linyuan Industrial Zone for subsequent treatment. In 2022, the wastewater and CEMS maintenance-related costs reached NTD 2.39 million. Linyuan Advanced Plant has commissioned facilities qualified by the Taiwan Environmental Inspection Institute to conduct sampling and testing. The water quality standard is aligned with the wastewater water quality standard of Linyuan Industrial Zone (Petrochemical Specialized Zone). In 2022, the quality of the released water met the legal standards.

Linyuan Advanced Plant Wastewater Treatment Process



Linyuan Advanced Plant's Water Release Quality in the Past 3 Years

Water quality parameters	2020	2021	2022	Drainage water discharge standard
pH	7.9	8.4	8	6~9
COD (mg/L)	ND	26.7	14.3	90
SS (mg/L)	6.4	5.8	3.2	25
Water temperature (°C)	25.1	26.9	31.4	42
Oils (mg/L)	ND	ND	1.6	10
Phenols (mg/L)	ND	ND	0.0054	1
True color	<50	<50	<25	550
Ammonia (mg/L)	33.6	34.3	0.59	60
Nitrate nitrogen (mg/L)	8.58	ND	6.55	50
Chloroform (mg/L)	0.0019	0.00129	0.0251	0.6

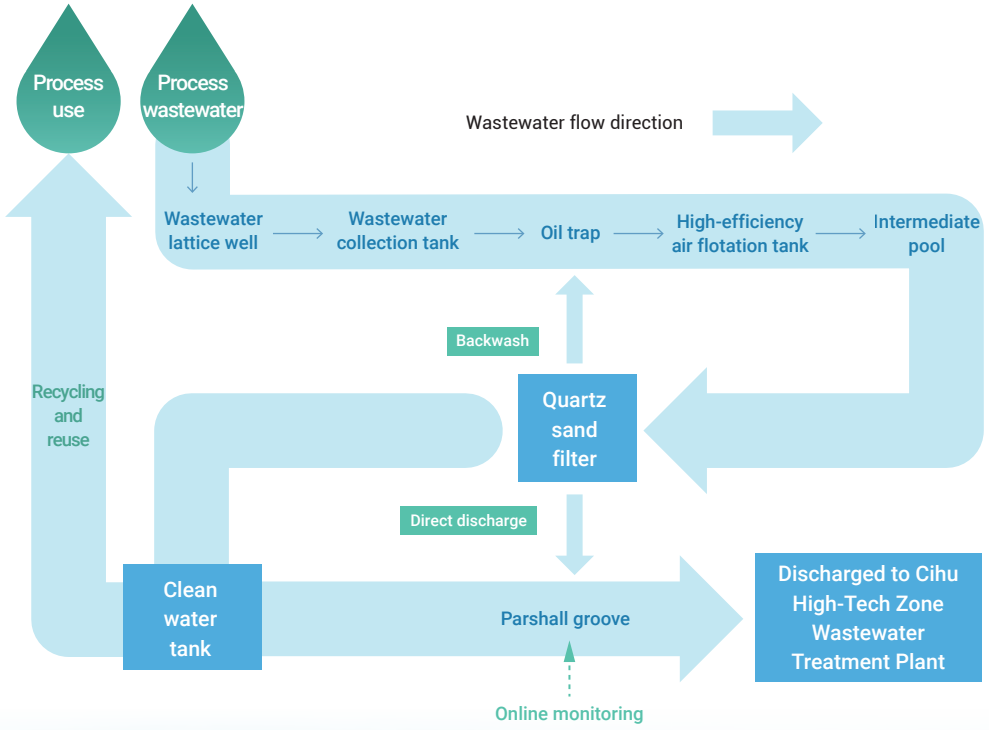
Up to standard

Note: If the sample analysis result is lower than the method detection limit, it is indicated as not detected (ND).

Maanshan Plant

Maanshan Plant follows the "IATF 16949-2016 Automotive Industry Quality Management System", "ISO 9001-2015 Setting Quality Management System," and "GB/T 19022-2003 Measurement Management System Requirements for Measurement Process and Measurement Equipment" in formulating its internal "Wastewater Treatment Plant Operating Procedures" for internal management purposes to standardize the wastewater treatment process and ensure compliance with drainage quality. Due to the industry's characteristics, the discharged wastewater contains black carbon particles and a small amount of oil. Maanshan factory's wastewater treatment process includes oil separation and sand settling, air flotation equipment, and quartz sand filters to minimize the concentration of pollutants to meet discharge regulations before entering the wastewater pipe network. In 2022, the wastewater-related costs and CEMS maintenance costs will reach RMB 1.07 million. Wastewater from Maanshan Plant is piped to the wastewater plant in the Cihu High-tech Zone, and its wastewater treatment plant is also equipped with an automatic monitoring system connected to the monitor platform of Maanshan Environmental Protection Bureau. In 2022, the water quality test results of the discharged water met the standards.

Maanshan Plant's Wastewater Treatment Process



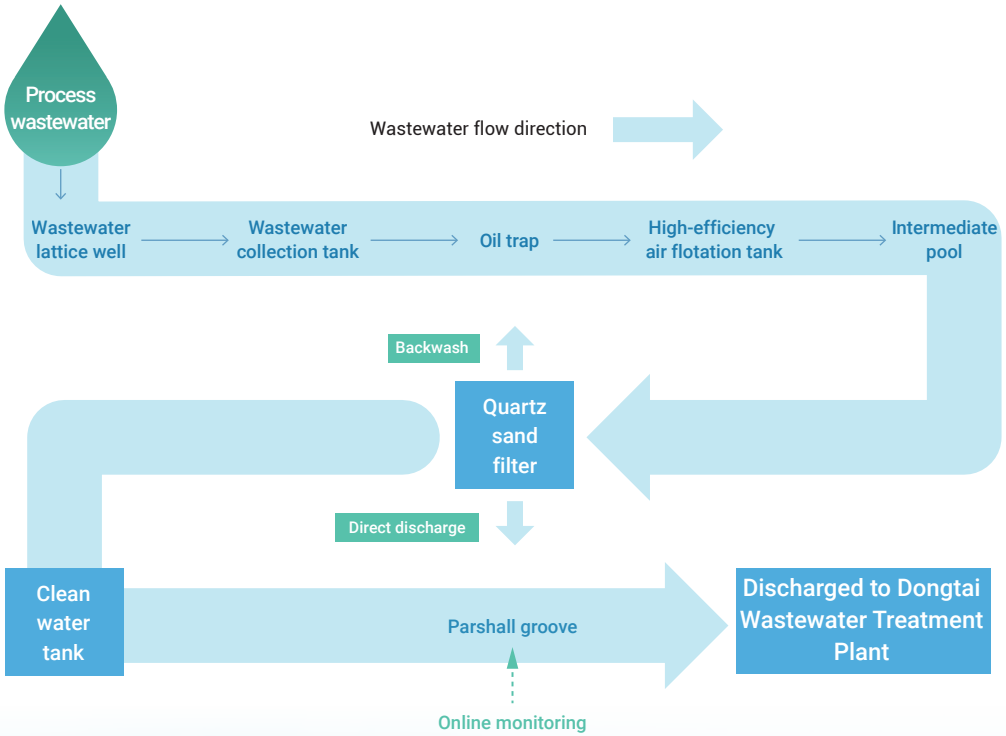
Maanshan Plant's Effluent Quality in the Past 3 Years

Water quality parameters	2020	2021	2022	Drainage water discharge standard	
Ammonia (mg/L)	0.549	0.186	0.079	25	Up to standard
COD (mg/L)	40	39	14	150	
SS (mg/L)	32	7	32	150	
Petroleum (mg/L)	0.47	0.12	0.39	10	
Volatile phenols (mg/L)	0.013	<0.01	<0.01	0.5	
pH	7.7	8.3	6.9	6~9	

Anshan Plant

The water quality discharge standard of Anshan Plant complies with the "Liaoning Province Comprehensive Wastewater Discharge Standard." It has also formulated the "Wastewater Treatment Work Guidelines" to standardize the wastewater treatment process in the plant. Impurities are removed through the regulating tank, grease trap, aeration tank, sedimentation tank, and air flotation tank; after the process, wastewater enters the wastewater plant through the factory pipeline and is then discharged after being filtered using quartz sand and activated carbon. When the wastewater is discharged, the water quality is automatically tested and connected to the Environmental Protection Bureau for monitoring. The water quality test results all met the standards in 2022.

Anshan Plant's Wastewater Treatment Process



Anshan Plant's Effluent Quality in the Past 3 Years

Water quality parameters	2020	2021	2022	Drainage water discharge standard	
Ammonia (mg/L)	0.956	4.49	3.69	30	Up to standard
COD (mg/L)	20	12	37	300	
SS (mg/L)	22	15	16	300	
Petroleum (mg/L)	0.06	0.06	0.06	20	
Volatile phenols (mg/L)	-	-	-	0.5	
pH	7.2	7.2	7.4	6~9	

3.2 Waste management

3.2.1 Waste disposal

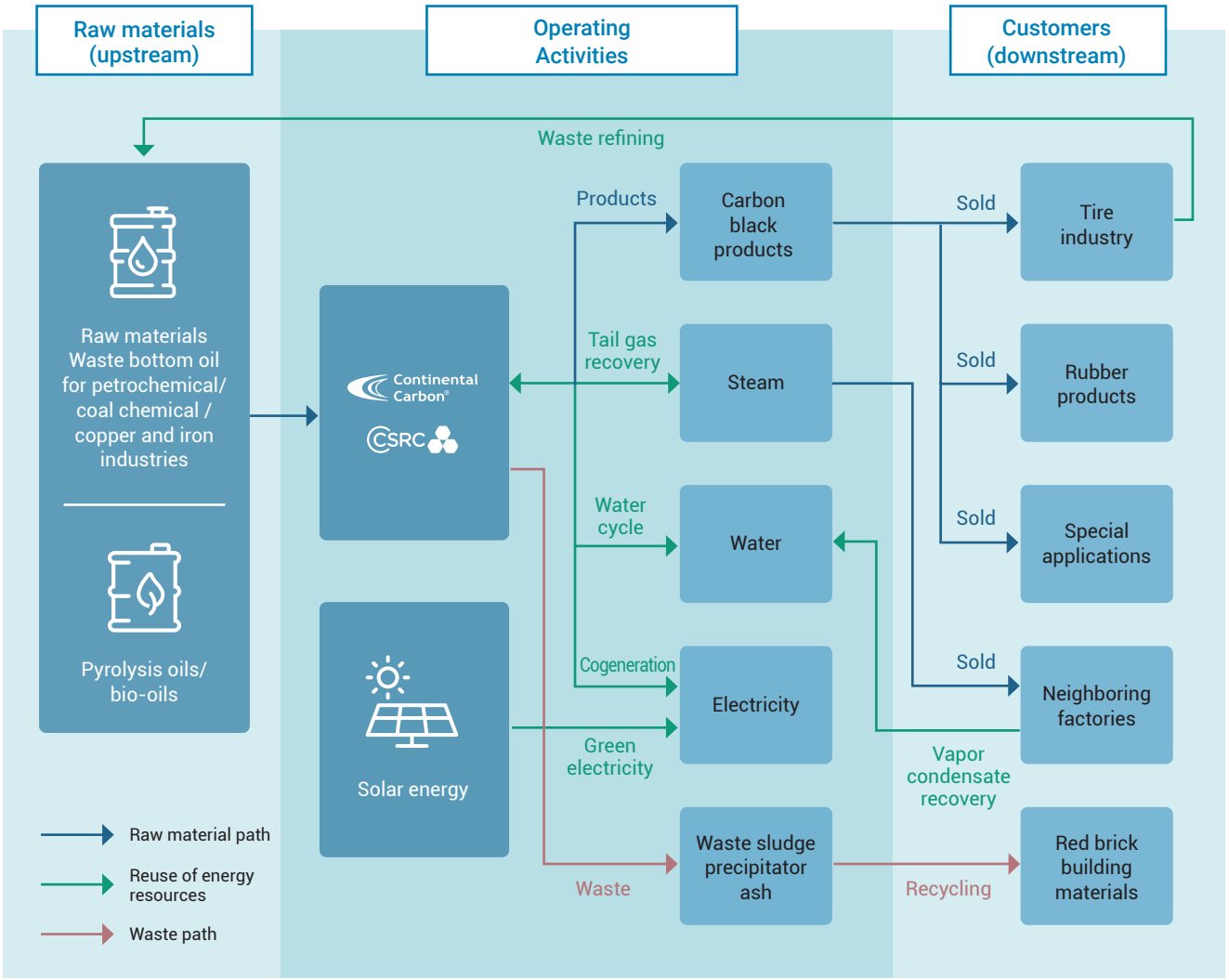
Regarding waste management, CSRC strictly complies with various waste disposal and transportation regulations, ensuring all waste generated is properly disposed of. To fully practice the spirit of responsible production and circular economy, each plant of the Company fully grasps the sources, types, and quantities of various wastes and ensures that their treatment methods and stages comply with all environmental protection laws and regulations. We further promote cleaner production, resource regeneration, and industrial waste reduction to achieve the goals of pollution reduction, waste reduction, and environmental protection. In 2022, Linyuan Advanced Plant achieved a waste recycling rate of 88.1%, Maanshan Plant achieved 81.5%, and Anshan Plant achieved 70.4%. All short-term goals are expected to be achieved ahead of schedule.

CSRC's total waste generation [note] in 2022 was 5,745 tonnes, including 1,494 tonnes from Linyuan Advanced Plant, 2,091 tonnes from Maanshan Plant, 2,159 tonnes from Anshan Plant, and 1 tonnes from the Taipei Headquarters Building. The total weight of non-hazardous waste was 4,831 tonnes, and the total weight of hazardous waste was 914 tonnes. Due to the change of disclosure boundary, the waste generated by Anshan Plant and the Taipei headquarters building is included in 2022, and Linyuan Advanced Plant underwent annual oil take repairs and cleaning, resulting in a large amount of dust accumulation and cleaning waste. As a result, waste generation in 2022 increased compared to 2021.

CSRC has taken material inventory from raw material intake to product delivery to clients, tracked the flow of waste and raw materials flow, and developed waste reduction or reuse measures for each phase.

Note: Total waste generation = non-hazardous waste + hazardous waste.

CSRC material input & waste output flow chart



CSRC's waste management process in each plant area

Waste sorting in the factory

Implement waste sorting operations and separate industrial, recyclable, and hazardous waste.

Storage

The waste generated is stored and managed by each plant area. The factory will arrange waste removal after it accumulates to the appropriate waste removal volume.

Waste removal

- Only Qualified waste treatment companies are prioritized for bidding (for example, inspection in waste treatment and process permit license, or verify the past violation records)
- Entrust hazardous waste disposal to a qualified disposal provider and follow the hazardous waste transfer plan.
- The Plant's staff supervises the entire process (till weighing waste volume).
- Conduct aperiodically follow-up inspections and use GPS-equipped vehicles to clearance and transport waste to ensure proper disposal.

Handling

- Perform aperiodically on-site audits (treatment plant audits) to ensure waste is handled properly.
- Safekeeping the processing record files

Linyuan Advanced Plant

The waste types generated by Linyuan Advanced Plant are all properly disposed of by landfill, incineration, heat treatment, and physical treatment according to laws and regulations. In 2022, the waste disposal costs reached NTD 10.3 million. In 2022, the total waste production volume was 1,494 tonnes, of which the total waste recycling rate reached 88.1%, and the recycling volume of waste bricks increased significantly. In addition, due to the industry's characteristics, hazardous wastes will be generated during the processing stage, including waste sludge, residues, and flammable waste in the cleaning oil tanks. Some of this waste has been sent back to the recycling process. They will continue to be used as oil raw material replacements, thus reducing the generate of hazardous industrial waste.

Maanshan Plant

The waste generated by Maanshan Plant is disposed by landfilled, incinerated, and recycled according to the laws and regulations of mainland China. All waste is collected off-site for disposal. The entire plant strictly implements waste classification operations, separating industrial, recyclable, and hazardous waste. After the classification, a qualified removal company is commissioned for disposal. In 2022, the total waste was 2,090 tonnes, and a total of RMB 1.6 million was spent on waste disposal. In 2022, the waste recycling rate was 81.5%, of which a large amount of desulfurized gypsum was recycled and made into cement.

Anshan Plant

Anshan Plant complies with the laws and regulations in mainland China for landfill, incineration and recycling treatment, also complies with the solid waste management method to reduce the amount of waste from the source, harmlessly dispose of the waste, and meet the environmental regulations requirements. In 2022, a total of RMB 1.54 million was invested in waste disposal. The total volume of waste was 2,159 tonnes in 2022, including 346 tonnes of hazardous wastes, mainly containing mineral oil. Wastes are properly packed (to protect against infiltration or leakage). Anti-spilling measures were taken before entering and exiting the warehouse, and the disposal techniques complied with the regulatory requirements to minimize environmental burdens during hazardous waste disposal. The waste recycling rate in 2022 was 70.4%, mostly due to cement production from desulfurized gypsum and the recycling and sale of some scrap steel, PP bags, and pallets.

Linyuan Advanced Plant's Waste Statistics for the Last 3 Years

Unit: tonne

Type of waste	Disposal location	Disposal method	2020	2021	2022
Non-hazardous waste	Off-site	Incineration (with energy recovery)	646.7	592.1	577.6
		Incineration (without energy recovery)	0	0	0
		Landfill	0	17.2	177.5
		Thermal treatment	109.1	144.9	144.4
		Physical treatment	155.5	502.0	310.0
		Recycling treatment	0	6	103.1
	On-site	Incineration (with energy recovery)	0	0	0
		Incineration (without energy recovery)	0	0	0
		Landfill	0	0	0
		Thermal treatment	0	0	0
		Physical handling	0	0	0
		Recycling treatment	0	0	0
		Subtotal	911.3	1,262.2	1,312.7
Hazardous waste	Off-site	Incineration (with energy recovery)	0	0	178.1
		Incineration (without energy recovery)	0	0	0
		Landfill	0	0	0
		Thermal treatment	0	0	0
		Physical handling	0	0	0
		Recycling treatment	0	0	0
	On-site	Incineration (with energy recovery)	0	0	0
		Incineration (without energy recovery)	0	0	0
		Landfill	0	0	0
		Thermal treatment	0	0	0
		Physical handling	0	0	0
		Recycling treatment	0	0	3.4
		Subtotal	0	0	181.5
		Total	911.3	1,262.2	1,494.2

Maanshan Plant Waste Statistics for the Past 3 Years

Unit: tonne

Type of waste	Disposal location	Disposal method	2020	2021	2022
Non-hazardous waste	Off-site	Incineration (with energy recovery)	0	0	0
		Incineration (without energy recovery)	0	0	0
		Landfill	121.18	0	0
		Thermal treatment	0	0	0
		Physical handling	0	0	0
		Recycling treatment	692.38	2823.3	1704.5
	On-site	Incineration (with energy recovery)	0	0	0
		Incineration (without energy recovery)	0	0	0
		Landfill	0	0	0
		Thermal treatment	0	0	0
		Physical handling	0	0	0
		Recycling treatment	0	0	0
		Subtotal	813.6	2,823.3	1,704.5
Hazardous waste	Off-site	Incineration (with energy recovery)	79.42	0	0
		Incineration (without energy recovery)	0	495.6	386.3
		Landfill	99.78	65.5	0
		Thermal treatment	0	0	0
		Physical handling	0	0	0
		Recycling treatment	0	0	0
	On-site	Incineration (with energy recovery)	0	0	0
		Incineration (without energy recovery)	0	0	0
		Landfill	0	0	0
		Thermal treatment	0	0	0
		Physical handling	0	0	0
		Recycling treatment	0	0	0
		Subtotal	179.2	561.1	386.3
		Total	992.8	3,384.4	2,090.8

Anshan Plant Waste Statistics for the Past 3 Years

Unit: tonne

Type of waste	Disposal location	Disposal method	2020	2021	2022
Non-hazardous waste	Off-site	Incineration (with energy recovery)	0	0	0
		Incineration (without energy recovery)	56.0	50.3	44.4
		Landfill	245.0	681.8	249.0
		Thermal treatment	0	0	0
		Physical handling	0	0	0
		Recycling treatment	0	0	1,374.3
		Recovered and sold	0	0	145.5
	On-site	Incineration (with energy recovery)	0	0	0
		Incineration (without energy recovery)	0	0	0
		Landfill	0	0	0
		Thermal treatment	0	0	0
		Physical handling	0	0	0
		Recycling treatment	0	0	0
		Subtotal	301.0	732.1	1,813.1
Hazardous waste	Off-site	Incineration (with energy recovery)	0	0	0
		Incineration (without energy recovery)	19.4	23.1	346.1
		Landfill	0	0	0
		Thermal treatment	0	0	0
		Physical handling	0	0	0
		Recycling treatment	0	0	0
	On-site	Incineration (with energy recovery)	0	0	0
		Incineration (without energy recovery)	0	0	0
		Landfill	0	0	0
		Thermal treatment	0	0	0
		Physical handling	0	0	0
		Recycling treatment	0	0	0
		Subtotal	19.4	23.1	346.1
		Total	320.4	755.2	2,159.2

Note 1: Waste recycling rate = [amount of recycled waste (including heat treatment, physical treatment, recycling, and recycling sales) + incineration waste with energy recovery] ÷ total waste generation

Note 2: The waste recycling rate in 2021 is different from the data disclosed in the previous annual sustainability report. CSRC has commissioned third parties to manage waste disposal and tried to screen and select incineration contractors with gas-electric co-generation capacity. Therefore, the waste recycling rate calculation method was revised in 2022, and incineration (with energy recovery) was included in the calculation. The calculation data for 2020-2021 were revised retrospectively.

Post signs on waste storage locations and related required areas

3.2.2 Waste Reduction

In addition to recycling waste generated internally (see 3.2.1 Waste Disposal), CSRC also implements the following actions:

	Action Plans	Description	Linyuan Advanced Plant	Maanshan Plant	Anshan Plant
Reduce	Promote environmentally friendly pallets	Replacing wooden pallets with reusable plastic pallets or using shared pallets to reduce the output of waste wooden pallets	The proportion of environmentally friendly pallets used is 3.12%	The proportion of environmentally friendly pallets used is 36.87%	The proportion of environmentally friendly pallets used is 8.1%
	Reduce oil consumption per unit of carbon black production	Improve the process technology, increase the production capacity of carbon black per unit of raw material oil, and reduce the amount of oil required for carbon black production.	Reduce the use of raw material oil by 3,194 tonnes/year	Reduce the use of raw material oil by 1,353 tonnes/year	Reduce the use of raw material oil by 430 tonnes/year
	Replace paper bags using PE packaging	Use PE film packaging, to replace paper packaging, taking advantage of PE's soluble characteristic in rubber and put it together with the packaging bag when feeding to reduce labor and time for waste handling.	Used a total of 251,077 bags Estimated to reduce 90.4 tonnes of paper waste	Used a total of 157,294 bags Estimated to reduce 56.6 tonnes of paper waste	Used a total of 116,178 bags and was estimated to reduce 41.8 tonnes of paper waste
Reuse	Raw Oil Reuse	After quality inspection, the raw material oil is reprocessed for recycling.	Recycled 3.4 tonnes/year	None	Recycled 3 tonnes/year
	Waste carbon black recycling	-	Recycled and reused 12 tonnes/year	None	None
	Waste space-bag recycling	Recycle the waste space-bags used by clients for reuse instead of incineration.	6 tonnes in 2021, no related disposal record in 2022, has been re-contracted in 2023	48 tonnes of waste PP bags were sold in 2022	24 tonnes of waste PP bags were sold in 2022
Recycle	In-plant waste solvents reuse	The waste solvent recovery process produced in the laboratory is used for recycling and reuse	3.4 tonnes/year Hazardous waste recycling project	None	None
	Lubricating oil recycling	Recycle the lubricating oil used by the engineering department for equipment maintenance and reuse it on the dryer roller.	Recycled but not measured	The recycling and reuse amount is 0.5 tonnes/year	Scheduled to deliver in 2023 and will seek for recycling manufacturers

Office waste reduction measures

In addition to reducing the waste generated in the carbon black process, certain plants also actively promote the following office waste reduction measures:

Implement waste classification

- Non-recyclable waste: General waste, such as plastic bags.
- Recyclable waste: Metal, paper, bottles, etc.

Set up resource reuse zones

Set up "resource reuse zones" for a centralized organization to avoid disarray placement and maintain a tidy environment.

Reduce paper use

- Regularly review the amount of paper used by each plant and review abnormal usage.
- Encourage the use of e-mail to send information
- Encourage double-sided printing to save paper use.
- A "wastepaper recycling area" is placed next to each photocopier for recycling and printing.
- Paper signoffs are replaced with electronic signoffs, reducing the use of paper.
- Recycling of old envelopes
- Maanshan Plant recycled 11,061 kg of paper in 2022.

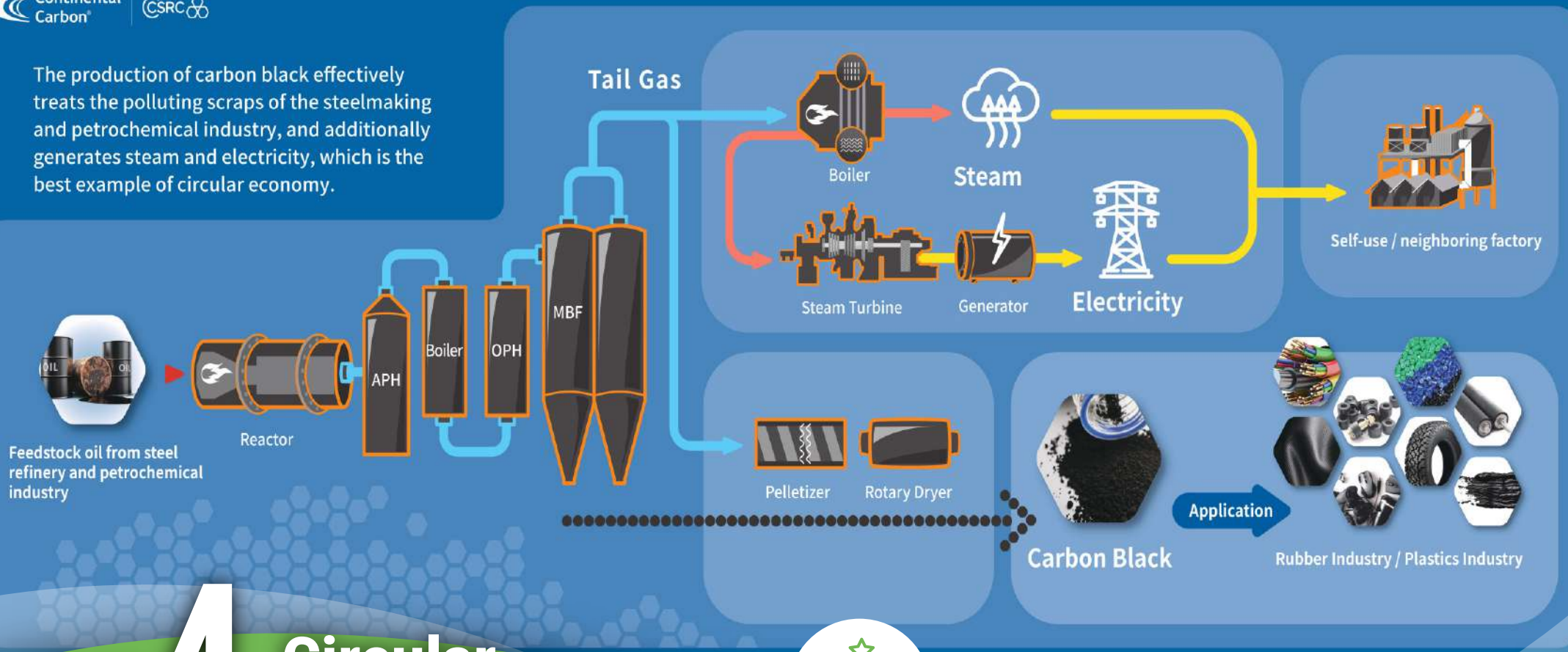
Reduce the use of disposable tableware

- Reduce the use of paper cups in meetings.
- Encourage colleagues to bring their own cups, reusable chopsticks, etc.

Enabling Smart Storage

In 2022, Linyuan Advanced Plant plans to introduce a smart storage system, through the combination of the storage management system and the SAP database, to improve the efficiency of storing materials, spare parts, and spare parts supply. The user scans the barcode through the PDA to control the inbound and outbound management of storing, acceptance, shelving, picking, and outbound. The real-time access to storage data can control the correctness of the inventory quantity, so as to reduce the cost of the storage and improve the maximum efficiency of the storage. At the same time, the digitization of storage control will reduce the use of incoming paper.

The production of carbon black effectively treats the polluting scraps of the steelmaking and petrochemical industry, and additionally generates steam and electricity, which is the best example of circular economy.



CH4 Circular Economy

Performance highlights

- CSRC continue to proceed with the **new circular economy model** in 2022.
- In 2022, **310,008 tonnes** of residues at the end of steelmaking and oil refining were used as the raw material of process during the carbon black cycle.
- In 2022, we used **2,923 tonnes** of recycled waste and produced raw construction material for downstream use.
- In 2022, **6,469 m^3** of external recycled condensed water was reused.
- In 2022, the use of renewable fuel oil reached **25%**.

Material Topics: Circular Economy

GRI Standards: GRI 3-3、GRI 301-2、GRI 301-3、GRI 302-5、GRI 416-1

Description of Impact

Circular economy helps businesses reduce consumption of energy and resources and is currently one of the key strategies toward achieving carbon neutrality. Given the market's growing attention for circular economy, it is inevitable that renewable resources become scarce in the future. All major customers of CSRC are looking for solutions on circular economy, and the Company's carbon black business meets the needs of the market and customers as it is by nature the ideal solution to circular economy.

Policies and Commitments

The essence of CSRC is a circular economy model, as CSRC uses residues such as bottom oil from the petrochemical and steelmaking industries as raw materials. This produces carbon black and steam and yields new value. We further extend the circular economy to downstream processes by using the recycled carbon black and pyrolysis oil generated from cracking of waste tire to produce carbon black with low carbon emissions to meet the requirements from major international tire manufacturers, and do our part to contribute to carbon reduction of industry value-chain.

Goals

Goals	Base year	2022 performance	Short-term (2023 ～ 2025)	Medium and long-term (2025 ～ 2030)
Build a green supply chain	-	Usage rate of recycled fuel oil (Note 1) ■ Linyuan Advanced Plant: 25% (oil for production) ■ Maanshan Plant: None ■ Anshan Plant: None Usage rate of eco-pallet ■ Linyuan Advanced Plant: 3.12% ■ Maanshan Plant: 36.87% ■ Anshan Plant: 8.1 % Waste recycling rate ■ Linyuan Advanced Plant: 88.1% ■ Maanshan Plant: 81.52% ■ Anshan Plant: 70.4%	Usage rate of recycled fuel oil ■ Linyuan Advanced Plant: 30% (oil for production) ■ Maanshan Plant: Plan for using alternative oil ■ Anshan Plant: 30% of diesel has been replaced with pyrolysis oil from boilers (oil for boiler use) Usage rate of eco-pallet ■ Linyuan Advanced Plant: 5% ■ Maanshan Plant: 40% ■ Anshan Plant: 15% Waste recycling rate ■ Linyuan Advanced Plant: 85% ■ Maanshan Plant: 85% ■ Anshan Plant: 85%	Usage rate of recycled fuel oil ■ Linyuan Advanced Plant: 33% (oil for production) ■ Maanshan Plant: 10% ■ Anshan Plant: 50% of diesel has been replaced with pyrolysis Oil from boilers (oil for boiler use) Usage rate of eco-pallet ■ Linyuan Advanced Plant: 10% ■ Maanshan Plant: 50% ■ Anshan Plant: 20% Waste recycling rate ■ Linyuan Advanced Plant: 100% (zero-landfill) ■ Maanshan Plant: > 95% ■ Anshan Plant: > 95%
Build circular manufacturing model	2019	Electricity by self-generation out of total electricity consumption (Note 2) ■ Linyuan Advanced Plant: 27.87% ■ Maanshan Plant: 124% ■ Anshan Plant: 63% Wastewater recycling rate ■ Linyuan Advanced Plant: 14% ■ Maanshan Plant: 10% ■ Anshan Plant: Introduced since 2023	Electricity by self-generation out of total electricity consumption ■ Linyuan Advanced Plant: 30% ■ Maanshan Plant: 130% ■ Anshan Plant: 70% Wastewater recycling rate ■ Linyuan Advanced Plant: Reach 16% ■ Maanshan Plant: Reach10 -12% ■ Anshan Plant: Planned to enable wastewater recycling in 2023, and reach to 5% of wastewater recycling rate in 2025	Electricity by self-generation out of total electricity consumption ■ Linyuan Advanced Plant: 35% ■ Maanshan Plant: 135% ■ Anshan Plant: 75% Wastewater recycling rate ■ Linyuan Advanced Plant: Reach18% ■ Maanshan Plant: Reach 13 -15% ■ Anshan Plant: Reach 10%

Note 1: Applies when the price of recycled fuel oil trends is equivalent to oil price.
Note 2: Electricity by self-generation out of total electricity consumption is calculated based on current steam power production and sales transaction model.

Responsible Units

All departments of the Company

Resources

- 58 employees in the R&D centers and technical service centers around the world.
- In 2022, over NTD 340 million has been invested in purchasing resources such as recycled oil and plastic pallets, including NTD 220 million for Linyuan Advanced Plant, RMB 15.66 million for Maanshan Plant and RMB 13.05 million for Anshan Plant.

Grievance Mechanisms	E-mail: csrcir@csrcgroup.com
Action plans	**Negative Impact Management** ■ Continually enhance circular economy practices to adapt to policy changes. ■ Develop diverse sources of recycled oil. **Positive Impact Management** ■ Use recycled oil in the carbon black process. ■ Promote electricity generation from recovered steam, and collect excess steam as an energy source in the plant ■ Promote water cycle management, recover process wastewater and reuse it in the plant. ■ Recycling of the waste in the process as raw building materials for downstream use ■ Implement waste disposal and transfer controls in the plants ■ Actively develop green, low carbon products to adapt to market demand.
Evaluation of Assessments	Review the achievement of goal setting in internal operation meetings on a monthly and yearly basis and formulate a target plan for the following year.

4.1 Innovation and Circular Economy

The CSRC Group is the only carbon black company in Taiwan and ranks sixth in the world in terms of production capacity. The Company's long-term development and operating performance will affect shareholders' equity, capital markets, suppliers, and customers. In the changing trends of the market, industries in different fields are constantly pursuing upgrading and transformation. Circular economy is the essence of business operations at the CSRC. The core corporate concept is realized in energy recovery and natural symbiosis. We actively invest in product development and innovation. Through the exchange of technical information with our customers, we expect to develop innovative products with high added value to improve product benefits and reduce the impact on the environment.

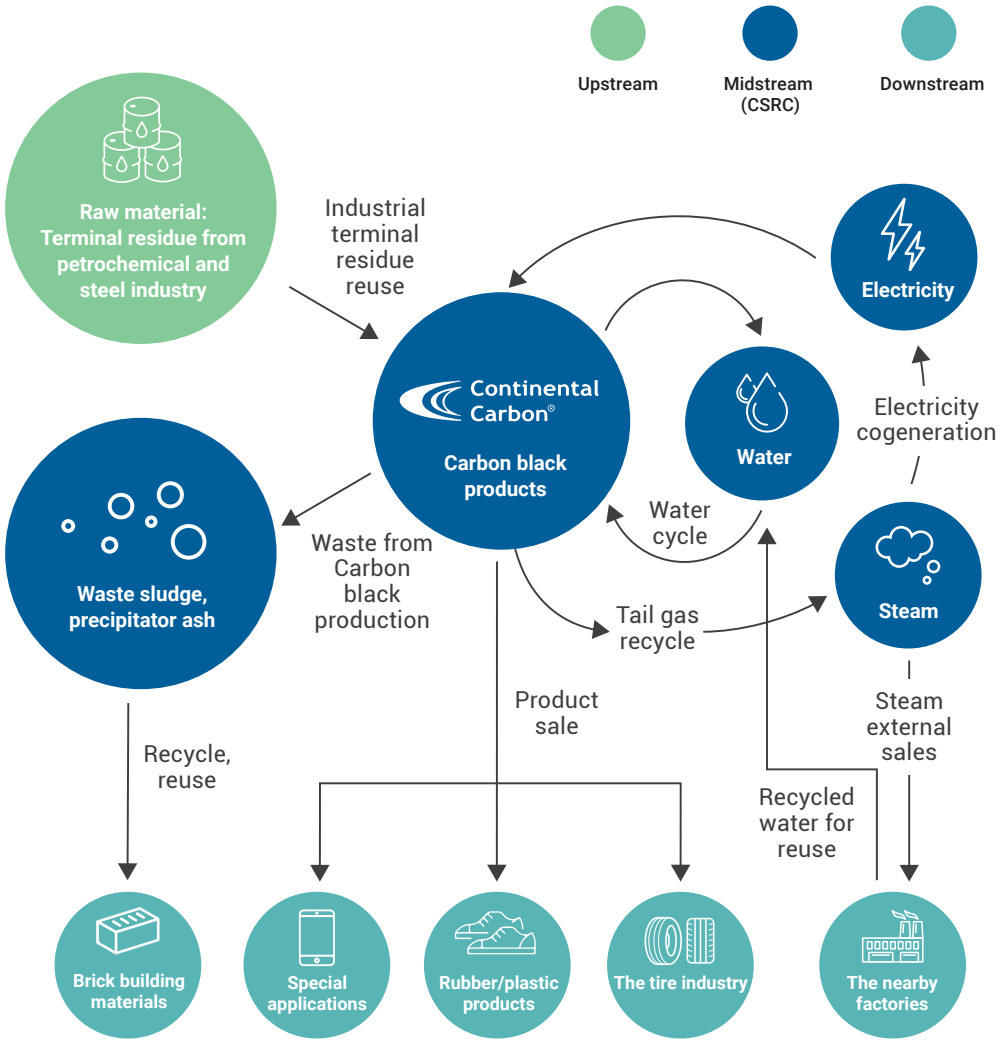
4.1.1 CSRC 5R concepts

Unlike the depletion of resources in the linear economic value chain, the concept of circular economy revolves around the sustainable use of resources if possible. Make the most use of resources that originally reached the end of life cycle such as waste or scraped products to construct a circular value chain model, to minimize the waste generated while getting the most value during production. CSRC aware the importance of sustainable management and actively introduces the spirit of circular economy in operations, anticipating to become the leading company in the field of sustainable development. We thus advance the 5R concept, encompassing Reuse, Redefine, Redesign, Reduce, and Recycle, define the sustainable conducts and actions in each stage of company operation, from raw material selection, manufacturing stage to product use, and continue to develop and seek innovative circular economy solutions actively.

Circular Economy Management Principle

5R concept	Description	Implementation phase	Relevant sustainable action
Recycle	Resource recovery for original use.	Manufacturing	▪ Water recycling. ▪ rCB return and reproduce. ▪ Packaging material and pallet reuse. ▪ Exhaust gas burning and reuse.
Reuse	Resource recovery for other use.	End of product life cycle	▪ Reused and reproduce sludge and precipitator ash as the construction material.
Reduce	Reduce hazard and cost generated from the production process.	Raw material Manufacturing End of product life cycle	▪ Reduce VOC emissions. ▪ Reduce SOx, NOx, PM emissions during the production process. ▪ Remove toxic components in the raw material. ▪ Reduce water consumption of production.
Redefine	Change the operating parameter. Energy saving and carbon reduction are achieved during the process.	Manufacturing	▪ Reduce greenhouse gas emissions. ▪ Increase energy efficiency. ▪ Reduce raw material use. ▪ Enhance product quality. ▪ Reduce solid waste.
Redesign	Product development - Green products	Use stage	▪ Green product development. ▪ Reduce greenhouse gas emissions for customers.

Besides considering our own operations, CSRC extends the circular economy to downstream processes and external partners, and formulates corresponding actions and strategies by examining potential risks and opportunities for all kinds of energy and resource use.



Circular Economy Management Structure

	Raw Materials	Manufacturing	Sales	Product Final Stages
Resources	Residues of steelmaking and oil refining industries	Reactor and boiler	Carbon Black, Steam	Carbon Black Packaging, Condensate
Potential Risks	Environmental pollution will occur if the residues of steelmaking and oil refining industries has not been treated properly.	Generate air pollution substances (SOx, NOx, PM, TSP, VOC), greenhouse gases, precipitator ash, fuel consumption.	Insufficient carbon product diversity and surplus steam cause a waste of resources	The cost for paper bags disposal and unrecovered condensate result in a waste of water resources.
Opportunity and Value Creation	▪ Reuse the residues of steelmaking and oil refining industries as raw material, generate carbon black for diverse applications ▶ create a new industry value chain.	▪ Install air pollution control equipment, reduce emissions of air pollution substances ▶ improve health and environmental quality ▪ Collect precipitator ash, process it with the brick raw material and convert them into building materials ▶ create a new industry value chain ▪ Optimize the processing practice, reduce fuel consumption of unit product ▶ increase resource use efficiency ▪ High temperature combustion occurs in the reaction furnace, remove dioxin in the oil ▶ improve health and environmental quality	▪ Develop green carbon black products ▶ improve health and environmental quality ▪ Develop high-end, multi-application carbon black ▶ improve market competitiveness ▪ Sufficient steam is reused for electricity generation ▶ improve resource usage efficiency	▪ Switching to environmentally friendly PE material ▶ improves customer productivity and reduces waste ▪ Partnering to recycle condensate ▶ creates a new industry value chain

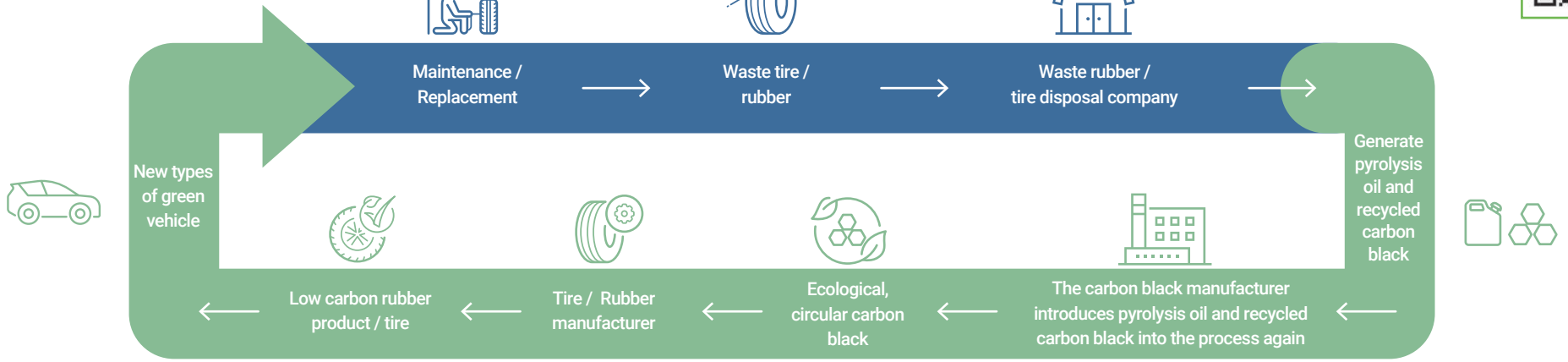
4.2 New Circular Economy Model in Practice

CSRC expects itself as pioneer in practicing circular economy. We are no longer satisfied with the past circular economy model. To respond to the global trend of net zero carbon emissions and fulfill our mission of environmental sustainability, CSRC will integrate circular economy into business operations and launch the "New Circular Economy Model." Starting from the raw material aspect, we collaborate with scrap tires recycling companies, where recovered carbon black and recovered oil is generated. New carbon black is then reproduced using the previous recovered materials. The technology exclusive to CSRC is used to adjust the formula of carbon black and reproduce carbon black into new carbon-reduced carbon black. This aims to achieve closed-loop system of raw material and meet the sustainable material use requirements from tire manufacturer.

Over 130 countries pledge to reach net-zero carbon emissions by 2050. Numerous countries proposed plans and schedules for banning fossil fuel vehicles or adopting electric vehicles to reduce carbon emissions and mitigate environmental impact. Motorization of wheel transportation is already inevitable. On top of that, multinational vehicle manufacturers are planning to include the use of sustainable/ recycled material and energy. Carbon black is used as an important raw material of tire. Carbon black recycling means to realize net zero carbon emissions from the source in the production value chain.

New Circular Economy Ecosphere

New Circular Economy Ecosphere

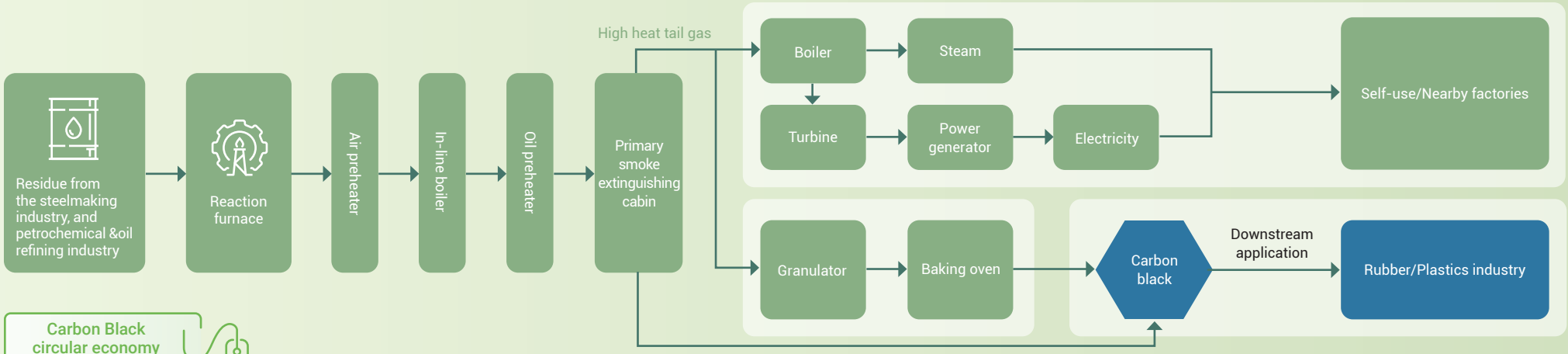


Carbon Black circular economy

Continental Carbon®

CSRC

The production of carbon black effectively processes the polluting final product in the steel processing industry chain and petrochemical and oil refining industry chain, where steam and electricity are additionally generated. This sets an example of circular economy.



Carbon Black circular economy

4.2.1 Waste Circulation and Reproduction

Carbon black circulation: Conversion of bottom oil into carbon black feedstock oil

The value chain of carbon black is a model of the circular economy. Its raw material is sourcing from residues such as bottom oil from the oil refining process in upstream petrochemical and steel processing industry. After going through chemical treatment and reuse, the terminal residues with low utilization value are instead transformed into high-value carbon black, as well as producing additional steam and electricity for clean and green energy. The temperature of an average incinerator generally reaches to 600-800° C. After incineration of industrial waste, air pollutant will still be discharged. In comparison, the reactor furnace of the carbon black process can reach up to 1,800° C. Many toxic substances, such as dioxins that damage the environment, can be completely removed from bottom oil under high temperature combustion, when CSRC burns residues (bottom oil) from petrochemical and steel industry. The carbon black circulation process not only reduces the amount of waste and lowers the risk of environmental pollution, but it also drives new industries and technology, creating an economic model for resource circulation.

In 2022, CSRC purchased 310,008 tonnes of bottom oil, fuel oil and lubricant form the upstream supplier, including 183,894 tonnes used by Linyuan Advanced Plant, 72,256 tonnes used by Maanshan Plant and 53,858 tonnes used by Anshan Plant.

Circulation and recycled raw construction material: Waste is recycled and reproduced as the downstream raw construction material

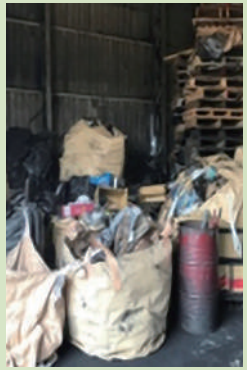
Certain solid wastes generated from the manufacturing process in CSRC were made into recycled material. For instance, precipitator ash can be removed by physical treatment. Sludge and refractory material were made into raw construction material after heating and physical treatment. Waste thermal insulation wool were recycled into building materials after physical treatment. Desulfurization gypsum were made into raw material of cement manufacturing after treated by air pollution prevention equipment. Recycled material circulation reduces the buried or processed waste from CSRC and effectively reduces environmental impact and energy and resource consumption.

For example, Linyuan Advanced Plant In 2022, a total of 557 tonnes of waste were made into raw construction material after heating and physical treatment. 310 tonnes of them were made into CLSM (Control Low-Strength Material) after physical treatment.

Both Maanshan Plant and Anshan Plant use desulfurization and denitrification systems in their production lines. The desulfurization gypsum, a type of desulfurized waste, was then generated during the process stage. It is confirmed that desulfurization gypsum meets the raw material standard for cement process after third-party verification. We build a partnership of circular and recycling with local cement plants and transported 2,365 tonnes of desulfurization gypsum to our cement plant partner in 2022 as raw material for cement production.

CLSM (Control Low-Strength Material)

30-100 mm CLSM

Name of waste	Waste refractory material	Waste thermal insulation wool	Waste fiber	Inorganic sludge (process/ditch)	Non-hazardous precipitator ash	General waste	Waste active carbon
Waste code	D-0501	D-0403	D-0801	D-0902	D-1099	D-1801	D-2403
Photo							
Source	Reactor, baking oven	Reactor, baking oven	Bag dust collector	Wastewater treatment plant	Bag dust collector/Spoiled production material	Daily basis	Sand filter tower

4.2.2 Waste Heat Recovery and Steam Power Generation

In recovering waste heat, steam is generated for use in the process. The remaining steam is also used for electricity generation in the area around the plant or sold to neighboring partners

As for energy recycling, each plant area is equipped with electricity cogeneration boilers, which use process tail gas as fuel. The use of cogeneration boilers can achieve circular economy not only by effectively improve utilization rate of energy, but also make full use of the waste gas generated by the process, recover heat while treating waste gas. Due to the low combustible content of carbon black tail gas, it is difficult to ignite, and it also contains a large amount of water, especially because its own gas pressure is low and the fluctuation rate is large, the furnace temperature and pressure required for combustion are relatively high, difficult to burn fuel and blow-off easily.

To ensure safety in the use of carbon black tail gas combustion and the improvement of efficiency, CSRC uses this special "in-line waste heat boiler" to exchange heat with the flue gas and reduce the temperature of the flue gas before entering the flue gas filter bag. The required amount of water that must be injected for cooling is reduced, while heat recovering happens at the same time, to reduce energy consumption in the plant. The boiler can also produce steam for heating oil tanks or carbon black production lines. The excess steam can be reused for power generation. In addition to being used for its own operation, it is also sold for use in neighboring factories, reducing air pollution caused using fuel oil in neighboring factories, achieving the positive benefits of improving energy resource reuse and reducing environmental impact.

Unit: GJ

Steam generated from in-line waste heat boiler heat recovery per hour	Linyuan Advanced Plant	Maanshan Plant	Anshan Plant
2022	3.67	1.45	-
2021	2.67	1.71	1.23
2020	1.63	1.75	1.2

Note 1: 1 tonne of steam = 2.7 GJ

Note 2: Linyuan Advanced Plant cleaned the boiler tube and replaced APH during overhaul in May 2022, the data is therefore enhanced.

Note 3: Percentage of low wind special carbon produced in 2022 at Maanshan Plant is increased, affecting steam production capacity per hour.

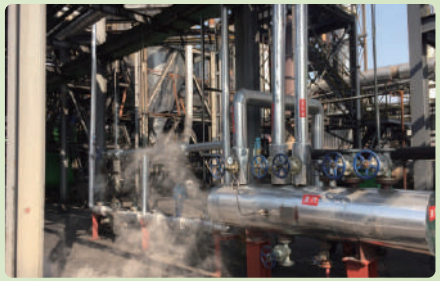
Note 4: U1 was not launched in 2022 at Anshan Plant, hence there's no relevant data.

In-line waste heat recovery boiler from Linyuan Advanced Plant

In-line waste heat recovery boiler from Maanshan Plant

Overall heat transfer section

Steam drum



Sub-cylinder

In-line waste heat recovery boiler from Anshan Plant

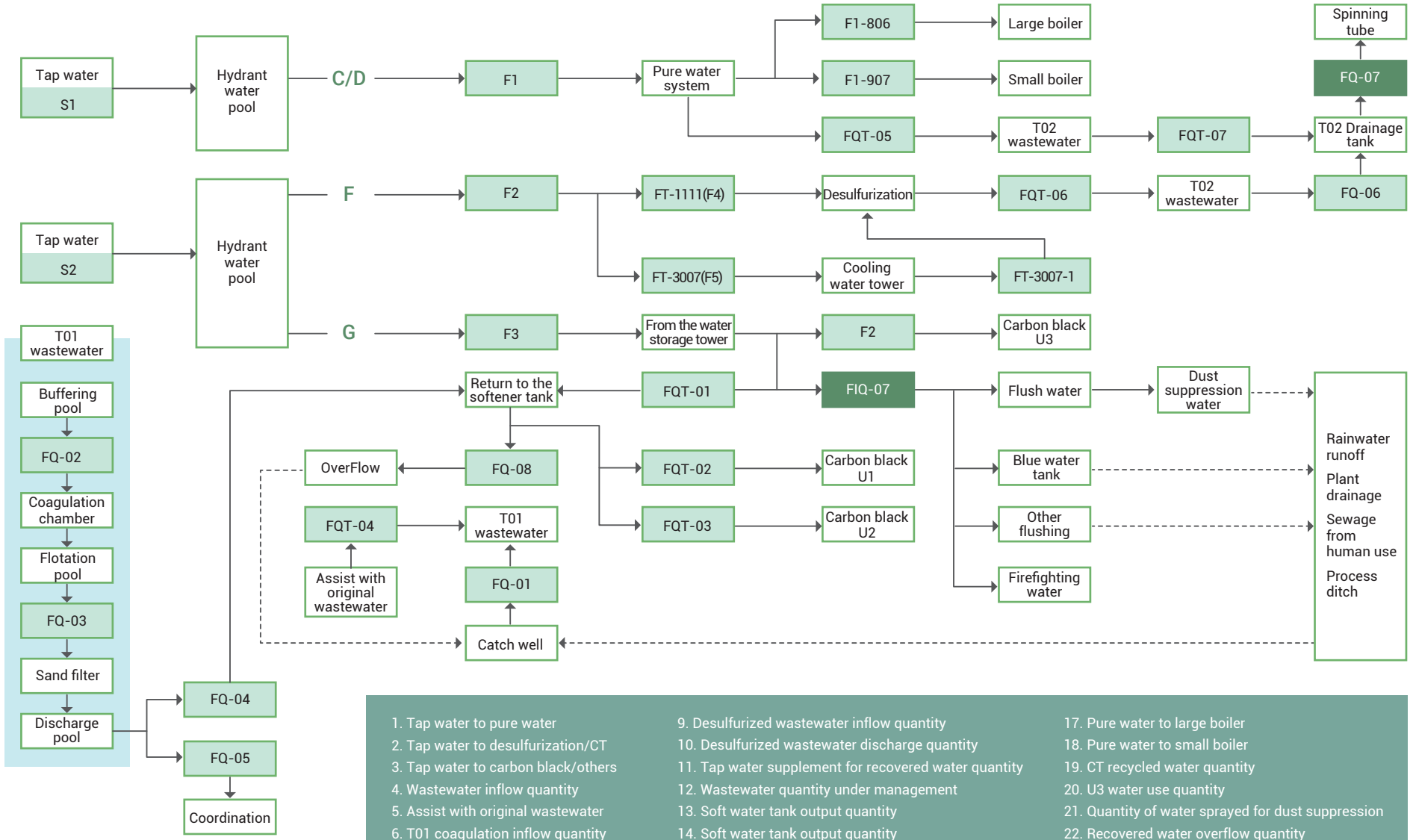
4.2.3 Cooling Water Reuse

Water balance project and condensate recycling

Since 2020, CSRC Linyuan Advanced Plant began to implement the water balance project. Flow meters were added to Linyuan Advanced Plant's process equipment to record actual water use in the plant area. Our goal is zero discharge of wastewater. We reduce risks related to water use under the threat of climate change. We supply steam to neighboring partners, the partner then sends the condensate produced by its process back to Linyuan Advanced Plant for reuse. This achieves the economic benefits of recycling water resources. 6,469 m^3 of condensate was used in 2022 (0.5% of total water withdrawal from Linyuan Advanced Plant). It is estimated that partners to provide approximately 2 tonnes of condensate per hour (The maximum amount is 20 tonnes).

Condensate recovered from the cooling water tower and sent back to environmental system for water reuse

Illustration for flow meter in water balance pipeline



1. Tap water to pure water
2. Tap water to desulfurization/CT
3. Tap water to carbon black/others
4. Wastewater inflow quantity
5. Assist with original wastewater
6. T01 coagulation inflow quantity
7. T01 Sand filter inflow quantity
8. T01 wastewater output quantity
9. Desulfurized wastewater inflow quantity
10. Desulfurized wastewater discharge quantity
11. Tap water supplement for recovered water quantity
12. Wastewater quantity under management
13. Soft water tank output quantity
14. Soft water tank output quantity
15. Desulfurized water inflow quantity
16. CT water inflow quantity
17. Pure water to large boiler
18. Pure water to small boiler
19. CT recycled water quantity
20. U3 water use quantity
21. Quantity of water sprayed for dust suppression
22. Recovered water overflow quantity

Note: Certain installed flowmeter (FQ-05) was not used in 2022

CH 5 Product R&D and Innovation

Performance highlights

- **12 products** were developed successfully in 2022.
- NTD **190 million** was invested in research in 2022.
- An accumulation of **63 patent** applications were submitted by 2022 and an accumulation of **50 patents** has been obtained.
- Hazardous chemical substance testing for **20 products** was completed in 2022, and the pass rate reached **100%**.
- Overall customer satisfaction for all plants was graded over **9.1** in 2022, a high score.
- Linyuan Advanced Plant obtained carbon **black carbon footprint certifications** in 2022.
- The carbon black laboratory of Linyuan Advanced Plant passed the assessment and was announced as a **TAF accredited laboratory** in 2022.

Material Topics: Product and Service Innovation

GRI Standards: GRI 3-3、GRI 301-2、GRI 301-3、GRI 302-5、GRI 416-1

Description of Impacts

The sustainable development of an enterprise requires constant innovation and surpassing oneself. To maintain market competitiveness, we must continue to invest in research and development. Through product innovation and circular economy, CSRC looks forward to growing and developing competitiveness with its customers.

Policies and Commitments

CSRC is an industry leader. Our carbon black business group development plan uses the most advanced process and technology for innovative carbon black production and applications, taking circular economy as the main axis of product innovation and development.

Goals

Goals	Base year	2022 Performance	Short-term (2023 ～ 2025)	Medium and long-term (2025 ～ 2030)
Expand rubber and plastic product markets	2019	■ Completed development of carbon black used in the shield plastics at the interior and exterior of wire and cable ■ Completed development of carbon black for rubber products with ultra-cleanliness demand ■ Completed development of powdery special carbon (medium-high black and normal black special carbon), which further be used in production of colorant and color paste. ■ Developed and introduced high-performance carbon black ED101 with key tire production customer.	■ Develop products with low impurity, ash, and sulfur. The products are further used in numerous products. ■ High oil absorption special carbon is developed to meet market demand. The same surface resistance is attained with lower added amount.	■ Develop cavitated carbon black with the oil furnace method thus help plastics attain the same surface resistance requirement with lower added amount of conductive carbon black. ■ Develop carbon black with larger particle size used for rubber products and rubber hose filling with its ultra-low impurity and well-scatters portrait will help create a smooth surface of rubber product.
Expand non-rubber and plastics product markets	2020	■ Conducted trial production of ultra-clean carbon black with low PAHs used in textile fiber market.	■ Improve the production technology of ultra-clean carbon black and set the goal for lowering the impurity. ■ Develop special carbon products with stable, low washing impurity. Introduced polyester long fiber application (e.g. polypropylene, nylon and polyester).	■ Create long fiber grade special carbon and produce ultra-clean special carbon stably.
Increase the number of green products	2019	■ Completed development of application formula technology for low rolling resistance tire tread, buffer layer and sidewall. ■ Carbon black with large particle size and low oil absorption were used for the process of rubber products ■ Developed microwave heat treatment technology. In average, 99.8% of PAHs in carbon black were reduced. ■ Three Ouroboros Series products with lower dependence to petrochemical raw material were launched. ■ Completed development of 14 EREBOS Series products with low PAHs ink coatings.	■ Carry out the road test plan for the carbon black product used for low rolling resistance tire. ■ Create microwave heat treatment production database, evaluate the capability for introducing microwave cavitated carbon material with large particle size, and applied in electronic material field. ■ Increase the quantity of Ouroboros Series products and promote them to customer group of rubber products. ■ Develop new products integrating EREBOS and Ouroboros series.	■ Build up the low rolling resistance carbon black in the tire customer introduction model. This helps customer to accelerate the time needs from introducing low rolling resistance carbon black to mass production. ■ Evaluate the capability of introducing microwave heat treatment process. ■ Extend the application field of Ouroboros Series products. ■ Continue to roll out new EREBOS Series products.
Increase revenue from green product series	2019	■ Low PAH plastic product revenue grew 3% compared to 2021	■ Low PAH plastic product revenue to grow 50% ■ Revenue of EREBOS Series products increases	■ Revenue of low-resistance/microwave heat treatment/Ouroboros Series products increases significantly
Developed conductive agent of lithium battery (purified superconducting carbon black and CNT suspension)	2021	■ Developed conductive carbon black used for lithium battery and conductive carbon black used for hydrogen fuel cell. ■ Developed CNT [Note 1] suspension technology and designed CVD [Note 2] continuous feeding device	■ Amplify CVD reactor, carbon tube purification process, and suspension trial production line	■ Achieve mass production of carbon nanotube process, including CVD reactor, purification reaction process, and CNT suspension process

Note 1: CNT refers to carbon nanotube.
Note 2: CVD refers to chemical vapor deposition.

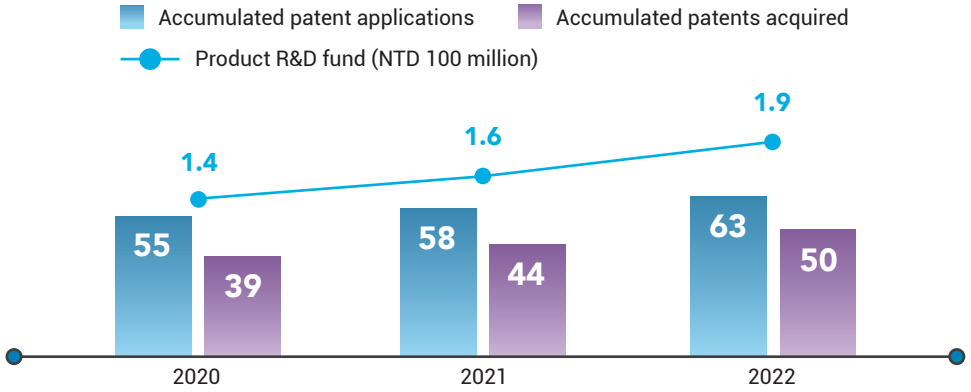
Responsible Units	Continental Carbon: R&D Department, Quality Assurance Department, Production Department, Safety and Environment Department, and Safety and Environment Center in all factories
Resources	▪ There are 58 employees in the R&D centers and technical service centers around the world. ▪ NTD 190 million have been invested into innovative technology development.
Grievance Mechanisms	The Company's website has a communication mailbox for stakeholders that can be used for complaints: Email: csrcir@csrcgroup.com
Action Plans	**Negative impact management** ▪ Improvement and adjustment of process equipment to improve product quality and increase oil efficiency. ▪ Improve the quality of carbon black. Reduce the defect rate and increase the operating range of the client processing. ▪ Reduce the number of carbon black impurities and improving carbon black coloring. ▪ Introduce the atomization system and carry out data analysis of carbon black impurities. ▪ Evaluate the raw oil pretreatment system and the new granulating binder to improve the process stability and product yield. ▪ Evaluate and improve the reactor combustion mode to improve the efficiency of carbon black oil. **Positive impact management** ▪ Adapt strategy to fulfill international customers' requirement in both environment and carbon reduction issues, to develop low-carbon, eco-friendly new carbon black grade products, and to ensure durability over terminal products and help customer increasing their processing efficiency as well. ▪ Introduce ISO 9001:2015 Quality management system in Linyuan Advanced Plant. ▪ Linyuan Advanced Plant obtained ISO 14067:2018 product carbon footprint certifications.
Evaluation of Assessments	▪ Must meet various environmentally friendly, low-carbon, and high-quality development specifications to meet customer needs. ▪ Ensure the normal operation of the product quality management system and pass external audit evaluations. ▪ Review the achievement of goal setting in internal operation meetings on a monthly and yearly basis and formulate a target plan for the following year. ▪ Possess IATF16949:2016 Quality management system for the automotive industry.

5.1 Innovation and Development

5.1.1 R&D Team and Results

The R&D team of CSRC is dedicated to grasping global trends. Through technical excellence and continuous improvement of equipment and manufacturing processes, we have repeatedly demonstrated outstanding performance with our customers internationally. Furthermore, we owned eight carbon black production plants, three R&D centers and one technical service center located in North America, China, India. We are committed to developing a wider range of carbon black applications and researching various new carbon black products and end applications to become a world-class carbon black manufacturing and integrated service leader. We will remain focused on continuous innovation and strengthening of our positioning and competitive advantage. R&D expenses in 2022 by CSRC Continental Carbon attained NTD 190 million, 19% higher than in 2021. An accumulation of 50 patents [note] has been obtained by CSRC.

Note: Number of patents accumulated include patents in biotechnology business.



Item	2020	2021	2022
Accumulated patent applications	55	58	63
Accumulated patents acquired	39	44	50
Product R&D fund (NTD 100 million)	1.4	1.6	1.9

Development of carbon black product in 2022

R&D item	2022 R&D results
Related to energy saving and carbon reduction	▪ Gradually increased the air preheat temperature of production line. ▪ Began to introduce the recycled pyrolysis oil from the tire. ▪ Installed and used high temperature air preheater and reduce fuel consumption. ▪ Introduced soft carbon black production reactor with low fuel consumption. Completed the design of low reaction furnace temperature control system. Carried out production at low furnace temperature.
Carbon black for green tires (low rolling resistance, high wear resistance tires)	▪ Optimized high wear-resistant carbon black N134. ▪ Developed and introduced high-performance carbon black ED101 with key tire production customer. ▪ Rolled out Ouroboros Series products to lower reliability to petrochemical raw material.
Low PAH series	▪ The utility patent for PAHs quick analysis method has been approved in Taiwan and the patent certificate has been acquired. ▪ Developed microwave heat treatment technology to reduce PAHs in carbon black significantly.
Carbon black for rubber products with ultra-clean demand	▪ Developed rubber product carbon black JE9750. ▪ Developed low chloride soft carbon black JE88W0.
Carried out post-modification of EREBOS series products.	▪ Conducted trial mass production of modified carbon black C121 used for colorant. ▪ Conducted trial mass production of modified carbon black C023 used for coatings.
Conductive carbon black series	▪ Developed conductive carbon black SP01 used for lithium battery and conductive carbon black SP54 used for hydrogen fuel cell. ▪ Completed appraisal of verification application regarding blending and extrusion features of conductive plastics for development of special carbon medium-high conductive JE3900 and medium conductive JE6900 plastics.
Carbon black for fiber grade plastic products	▪ Developed special carbon JE5770 in application of food contact grade containers.
Mid-high dyed carbon black	▪ Developed mid-high black powdery special carbon JE1205 and JE2105, and normal black powdery special carbon JE4250.

A patent proposal and reward system has been established to encourage the employees of CSRC to actively innovate, implementing research and development results while improving product quality and functions. In 2022, one patent certificate was obtained and a bonus was awarded to two employees.

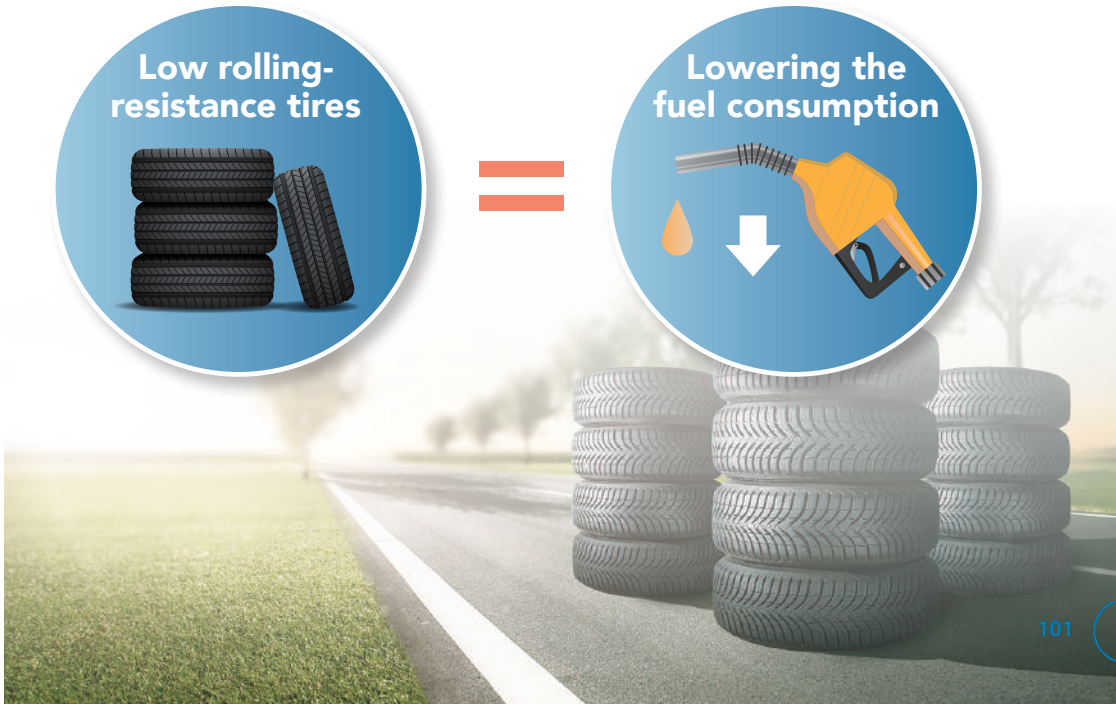
5.2 Green Product

Based on our specialized carbon black technology, CSRC is constantly pursuing product innovation. Based on our core concepts and principles, our most important green products are “new LH series carbon black”, “non-toxic carbon black series” and “ecological, circular carbon black.”

5.2.1 "New LH Carbon Black Series"

Since 2009, the European Union has established “Tyre Labelling Rules" to improve vehicle energy efficiency. Following this policy of safety and environmental quality, CSRC has actively developed its "New LH Carbon Black Series" with high rigidity, low rolling resistance, and good resistance to thermal aging and buckling. The series are used for general passenger cars and trucks, giving tires higher energy efficiency, and extending the service life of tire.

The road test plan for the carbon black product used for low rolling resistance tires has been planned. By providing carbon black and testing fund, we help relevant stakeholders use low rolling resistance carbon black to make tires. We introduce the truck tire test plan. The customer's tire company executes regular tracking and checks the performance of low rolling resistance carbon black.



The LH series carbon black's characteristics

Excellent tear resistance

- Effectively resolve the flat ratio tires' prone to circular fracturing issue
- Excel in the resource utilization ratio

Good in dispersion, and lesser mixing process required

- Flexible for downstream compounders to schedule process, and excel the production efficiency
- Reduce energy consumption

Low rotation resistance

- Effectively reduce the energy loss when the vehicles are moving due to tire deformation
- Lowering the fuel consumption

Excellent wear resistance

- Extend the lifespan of tire
- Reducing the generation of waste tires

5.2.2 "Non-toxic Carbon Black Series"

Rubber and plastic (such as ABS and PP) and transparent paints, coatings on natural materials may contain high-risk materials such as polycyclic aromatic hydrocarbons (PAHs). In addition, studies have shown that PAHs are most harmful to the human skin and respiratory tract. As persistent organic pollutants, they have been listed as carcinogens by the International Cancer Research Center. In view of this, we are committed to reducing the content of PAHs in carbon black and complying with second-category requirements of German Safety (GS) standards as issued by the German Product Safety Commission (AfPS), thereby allowing customers to use our products with peace of mind. Every year we make sure that customers can purchase and use the carbon black at ease via carbon black PAHs limit and content testing. In 2022, 20 products were tested, one of them was inspected by ourselves and the rest 19 items were entrusted to a third party for inspection. The qualification rate of tested product attained 100%.

Non-toxic Carbon Black Series Product Application

Comply with German Federal Institute for Risk Assessment (BfR)

Polycyclic aromatic hydrocarbon limits and verification in carbon black

PAH content	Product test result		Unit	Maximum
	CSRC internal testing	Third-party testing		
Benzo[a]pyrene	0.08	<0.2	ppm	0.5
Total amount of phenanthrene, pyrene, anthracene, fluoranthene	0.79	0.3	ppm	10
Total amount of 15 types of polycyclic aromatic hydrocarbon (listed in AfPS GS 2019:01 PAK)	3.8	1.4	ppm	20

Note 1: CSRC uses the internally developed PAH quick screening method, which obtain 15 or 18 PAH content, and apply to screening during the manufacturing process, after packaging, and before shipment. It will also be sent to third-party inspection agencies to obtain reports from time to time.

Note 2: Hazardous substance (specific chemical substance) testing during carbon black production is monitored by Photro. The frequency of testing is every four or eight hours.

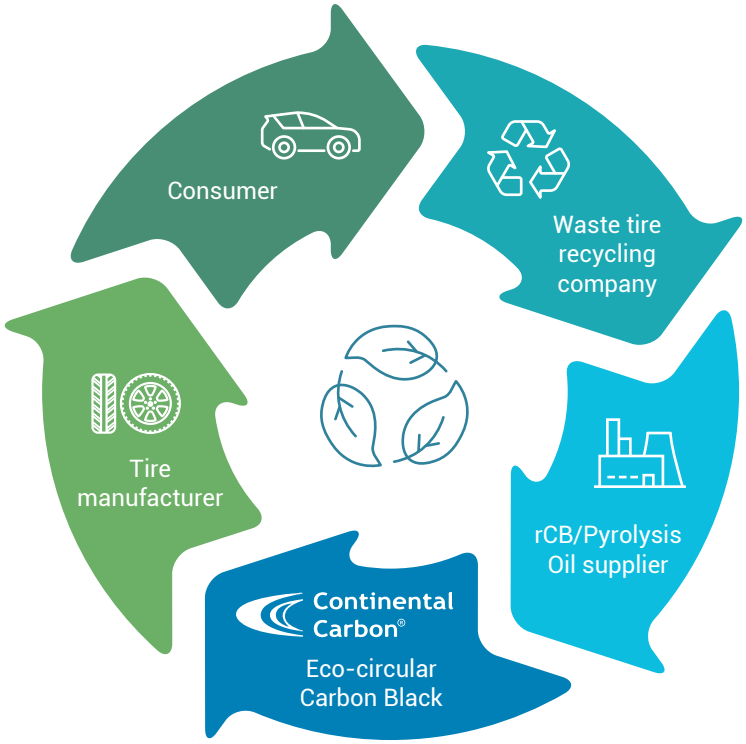
PAHs testing analysis report

Linyuan Advanced Plant

Maanshan Plant

Anshan Plant

5.2.3 Eco-circular Carbon Black



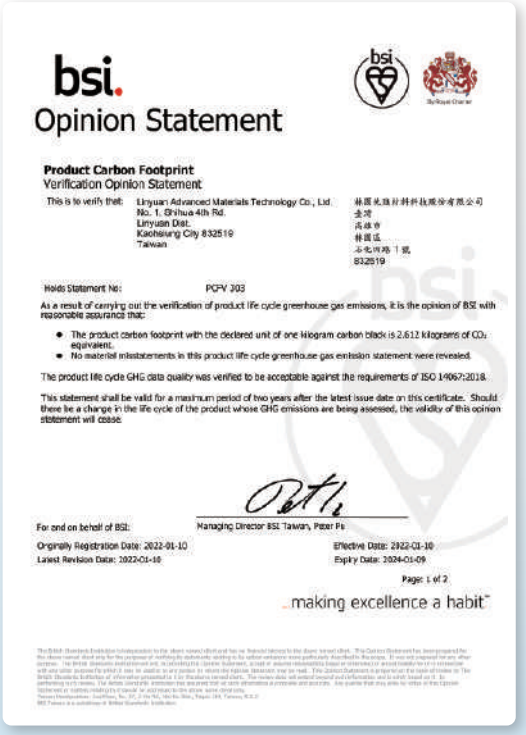
To correspond to the global trend of net zero carbon emissions, we further launch the "New Circular Economy Model." Starting from raw materials, CSRC cooperates with waste tire recycling and pyrolysis manufacturers, by using the recycled carbon black (rCB) and pyrolysis oil produced by them and thru adjusting the carbon black formula and process through R&D technology, we produce the new "Eco-circular carbon black". Through the closed-loop system of carbon black, the material that is used in large quantities and with key reinforcing functions in tires, this closed-loop system can meet the tire and rubber industry's requirements for sustainable materials and achieve carbon reduction goals.

Through continuous investment in technology research and development, we try to use different sustainable/renewable raw materials and energy sources, optimize the production process, and improve energy efficiency to develop "environmentally friendly recycled carbon black" that is stable in quality and meets the needs of different applications. Using sustainable/recycled raw materials to achieve low-carbon emission results, "Eco-circular Carbon Black" can meet the tire and rubber industry's requirements for sustainable raw materials and achieve carbon reduction goals.

We offer carbon black with stable quality via specialized quality control. We ensure that the tire quality is not degraded by using low-carbon product. In addition, physical properties of Eco-circular Carbon Black are similar to native carbon black with specialized production and blending technologies, and minimized adjustment in tire rubber formula. To accomplish the carbon reduction goal together, we adapt to development products that achieves downstream tire customer's demand and accomplishes the carbon reduction goal.

Products with Carbon Reduction Target

In response to the trend of international customers' care over environmental and carbon reduction issues, CSRC actively develops low-carbon, eco-friendly new carbon black products. Linyuan Advanced Plant obtained carbon black carbon footprint verification in 2022, ensuring that customer's green requirement can be achieved.



bsi.

Opinion Statement

Product Carbon Footprint
Verification Opinion Statement

This is to verify that: Linyuan Advanced Materials Technology Co., Ltd.
No. 1, Shihua 4th Rd.
Linyuan Dist.
Kaohsiung City 832519
Taiwan

Holds Statement No: PCFV 303

As a result of carrying out the verification of product life cycle greenhouse gas emissions, it is the opinion of BSI with reasonable assurance that:

- The product carbon footprint with the declared unit of one kilogram carbon black is 2.612 kilograms of CO_2 equivalent.
- No material misstatements in this product life cycle greenhouse gas emission statement were revealed.

The product life cycle GHG data quality was verified to be acceptable against the requirements of ISO 14067:2018.

This statement shall be valid for a maximum period of two years after the latest issue date on this certificate. Should there be a change in the life cycle of the product whose GHG emissions are being assessed, the validity of this opinion statement will cease.

For and on behalf of BSI: Managing Director BSI Taiwan, Peter Fu

Originally Registration Date: 2022-01-10 Effective Date: 2022-01-10
Latest Revision Date: 2022-01-10 Expiry Date: 2024-01-09

Page: 1 of 2

making excellence a habit.

Linyuan Advanced Plant ISO 14067：2018

5.2.4 Sustainability Benefits of Green Product

Category	Product	Production Plant	Sustainability Benefits of Product
New LH	LH series Carbon Black	Linyuan Advanced Plant Anshan Plant	■ Reduce rolling resistance of tires by at least 10%. Strengthen wear resistance. Reduce vehicle fuel consumption and carbon emissions.
Non-toxic carbon black	Low PAHs series	Linyuan Advanced Plant Maanshan Plant Anshan Plant	■ Replace conventional carbon black with low PAHs carbon black to reduce PAHs hazard risk of product.
	Post-modification of EREBOS	Linyuan Advanced Plant	■ Adopt green production. Execute post-modification for native carbon black. Adjust various condition parameters of post-modification reaction anytime. Effectively enhance quality and production efficiency of modified carbon black product. ■ Comparing to traditional strong acid modification, no waste gas or liquid is generated from this new modification technology, significantly mitigating environmental impact. ■ This is suitable for customer's environmental water-based application formula.
Eco- circular Carbon Black	Ouroboros series	Linyuan Advanced Plant	■ Collaborate with carbon black recycler and mix carbon black, and reduce reliability on petrochemical raw material.

2022 Industry-Academy Cooperation Case

◀ Developed lithium battery measurement technology with National Sun Yat-sen University in 2022.

R&D highlights in 2022 Ecological, circular carbon black - Ouroboros series

We have chosen Ouroboros (Greek: οὐροβόρος), a symbol passed down from ancient times as Continental Carbon's "Eco-circular Carbon Black" logo. The imagery of "a snake swallowing its own tail" implies self-feeding, forming an endless ring that symbolizes the cycle of life, death, and rebirth.

Now, if the Ouroboros logo appears on Continental Carbon's products, it means "Eco-circular Carbon Black," a sustainable/recycled raw material, is used to achieve low carbon emission results.

Global iconic vehicle manufacturers have brought up corresponding plans in respond to carbon neutrality trend. Volvo and Hyundai make a claim to require suppliers to accomplish the net zero emissions goal by 2040 and 2045, respectively. Challenges for the tire industry will also follow, the supply chain of raw materials are included in the management of carbon emission, raw materials with low carbon emissions will be prioritized in carbon emissions management. Carbon black, which provides critical reinforcement function and a major ingredient, will be of great help for realizing carbon neutrality in tire industry If its carbon dioxide equivalent per unit are reduced.

CSRC carefully examines carbon production of carbon black and develops carbon black products with low carbon emissions based on its research core, which is to carry out environmental protection from the source. First, we introduced waste tire pyrolysis oil and recycled carbon black (rCB), recycled materials, into the process to reduce carbon emissions. Through internal experiment and evaluation, comparing to equivalent ASTM carbon black, carbon emissions per unit of this Eco-circular Carbon Black expected to reduce by at least 5% (depending on different formula proportion). We conduct evaluation testing for low carbon emissions carbon black products comparing with ASTM N660. The physical property of Eco-circular Carbon Black is very close to those of native carbon black.

Eco-circular Carbon Black is low carbon. Its carbon emissions coefficient shall further be reduced by using other low carbon production process. With advanced process technology from CSRC, the physical properties of modified carbon black are close to that of native carbon black. The formula hardly needs adjusting. We carry out environmental protection from the source of supply chain, and achieve the goal of circular supply chain and carbon reduction.

5.3 Product Quality and Safety

"Full Participation and Customers First" is our quality policy strategy, establishing a quality management system based on international environmental standards to ensure the good quality of our products. In addition, we also encourage colleagues to actively participate in international seminars every year. Content including, but not limited to, the latest foreign production technology, pollution prevention technology, and equipment development. In this way, colleagues shall obtain domestic and foreign market information as well as insights into industry development directions and bring them back to their plants to share with colleagues. Furthermore, technical exchanges among the eight global quality assurance laboratories facilitate the integration of relevant resources and maximization of resource utilization.

5.3.1 Product Quality and Management Process

CSRC prioritize customer needs. Through a systematic quality management process, we ensure the consistency of product quality control operations. We use a 5-stage quality control model, by following the detailed contents listed in each stage, we effectively ensure product quality and improve the quality management system. All products are managed via the quality management system, including planning, and executing internal audit to ensure that all departments implement quality management and aligned with packaging regulations. To deliver products with special specifications, we examine the products manually. The products may only be provided to customers with confirmation and approval of quality assurance supervisor, factory manager, Technology Department manager and Business Department staff in order. To reinforce product control and enhance customer trust, some manufacturers conduct an annually second-party audits. Refer to 5.4 Customer Relationship Management in detail. External third-party testing result related to product quality management is obtained from all plants, such as the verification of the IATF 16949:2016 International Standard for Automotive Quality Management Systems, and ISO 9001:2015 quality management system. We have won the EcoVadis Silver Credit by the third-party CSR assessment service provider.

The 5-stage quality control mode

1 Incoming material control
- Supplier management
- Random sampling inspection
- In-process fuel analysis

2 In-process control
- DCS monitoring
- SPC control
- In-process capability analysis
- In-process inspection

3 Complete product control
- Specification control
- Complete product inspection
- Measurement instrumentation's calibration management
- Substandard product control

4 Delivery control
- Quality certificate for delivery
- Product protection
- Verification of transport and after-sale services and related processes

5 Market feedback
- Client complaints' handling
- Technique exchange

Quality management related verification certificate

Linyuan Advanced Plant

IATF 16949：2016

ISO 9001：2015

Maanshan Plant

IATF 16949：2016

ISO 9001：2015

Anshan Plant

IATF 16949：2016

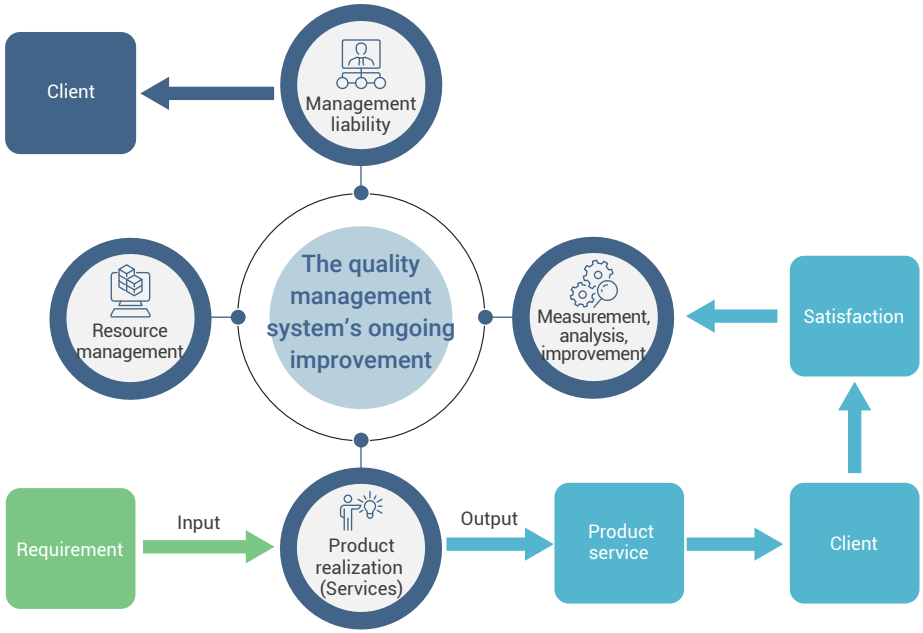
ISO 9001：2015

Linyuan Advanced Plant

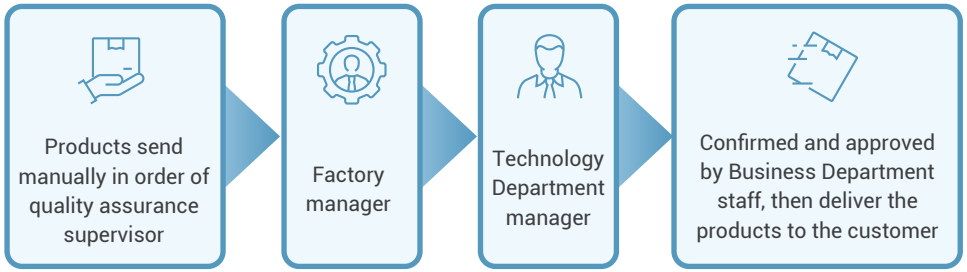
EcoVadis Silver Rating

Quality management system process

Standard Delivery



Special specifications delivery



In addition, we also use the PDCA mechanism (plan, do, check, act) to examine the quality management process in a dynamic looping way, and adjust and optimize at any time to pursue higher product quality. If there's a substandard product, it is handled with internal Defect Management Process.

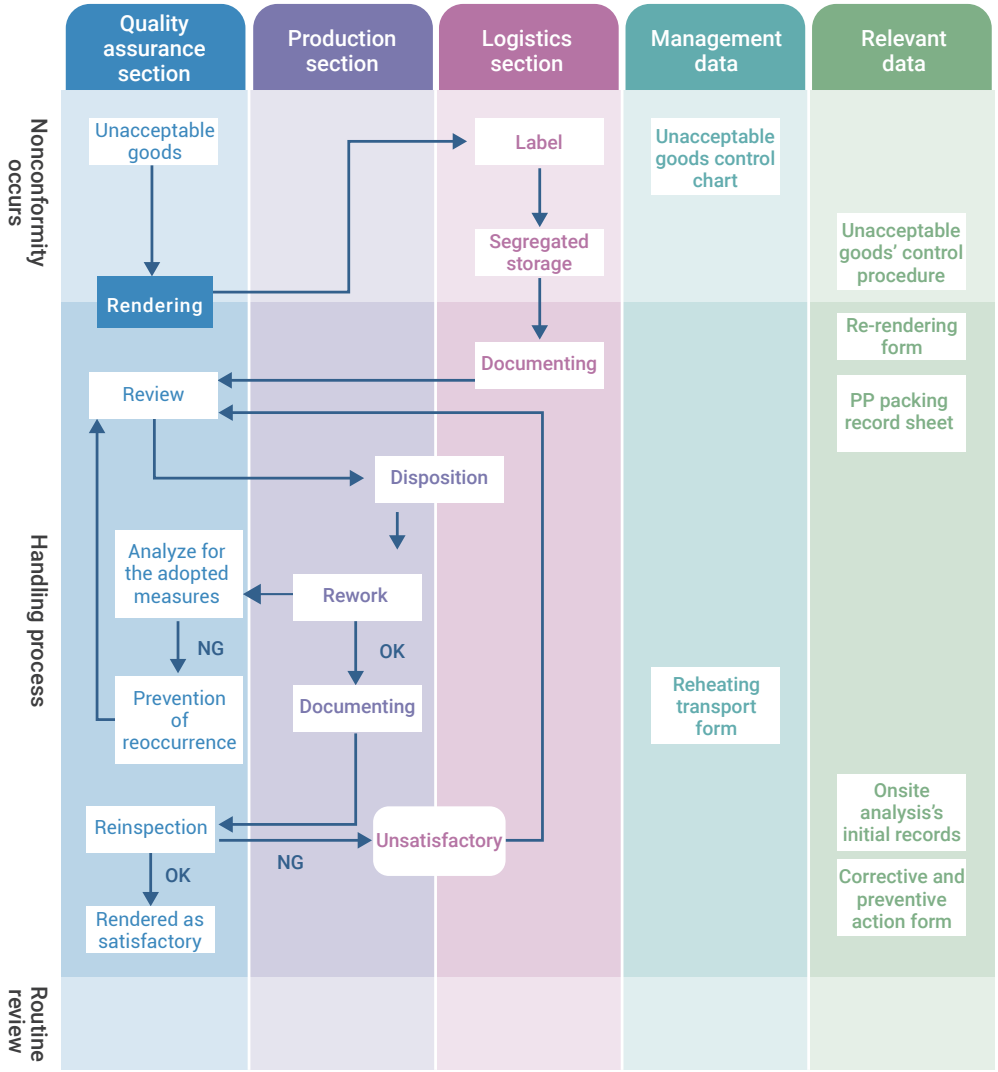
CSRC examines quality of all aspects of products to enhance product safety. The carbon black laboratory of Linyuan Advanced Plant is a TAF-certified laboratory evaluated by Taiwan Accreditation Foundation (TAF) . Details of product examination by CSRC Group are shown below:

Test Item

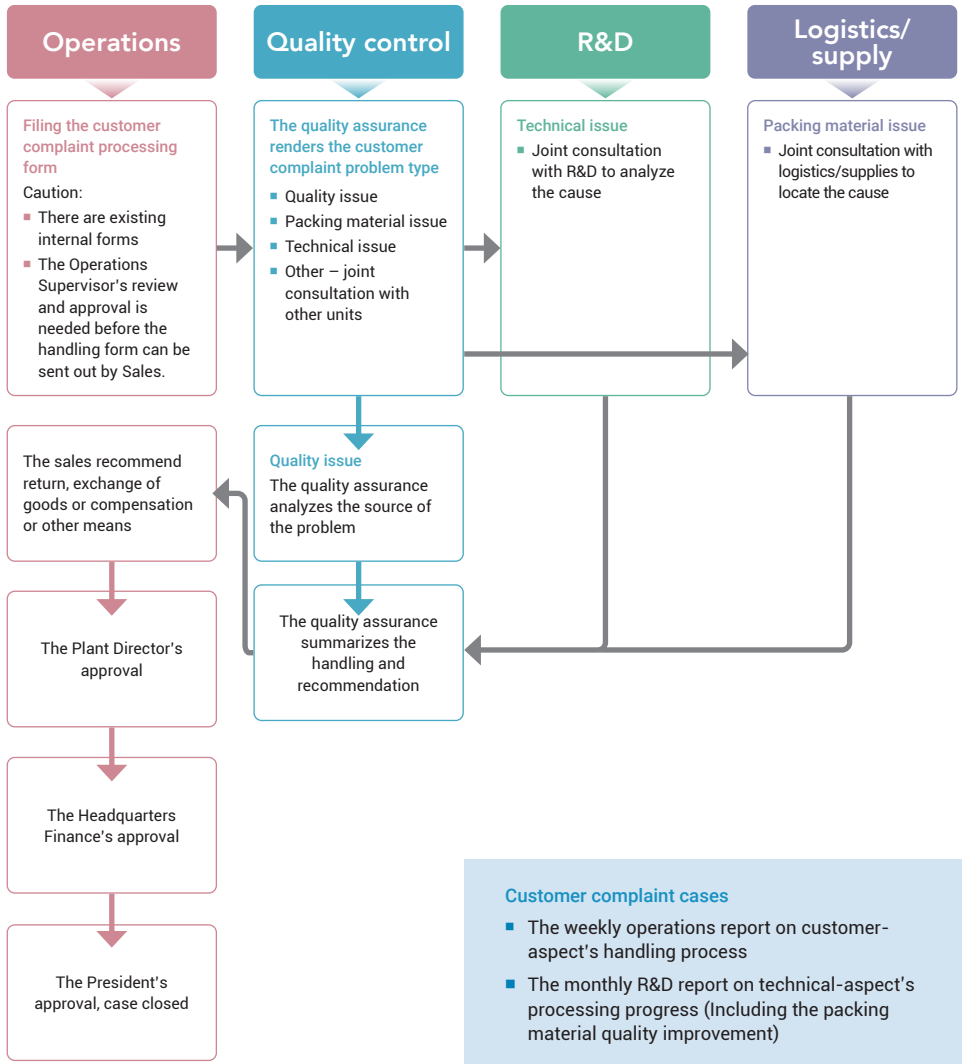
- Moisture content in feedstock fuel
- Feedstock fuel distillation and BMCI
- Feedstock fuel pitch content
- Sulfur and chlorine content of feedstock fuel
- Feedstock fuel proportion and PAI
- Carbon black color strength
- Carbon black NSA total surface area/ STSA external surface area
- Heating loss
- Carbon black ash
- Carbon black washing sieve residue
- Carbon black PH value
- Carbon black volatile matter
- Carbon black particle hardness
- Carbon black fine powder content/ carbon black size distribution
- Carbon black toluene decolorization
- 300% fixed elongation stress

TAF Certificate

Substandard product control flow chart



Product Complaint Incident Handling Process



To continue to ensure that all products meet customer needs and standards, CSRC offers a complaint channel of product quality to customers. Product complaint is handled based on the Product Complaint Incident Handling Process.

5.3.2 Product Safety Labels

All production processes of CSRC comply with international environmental standards to achieve an optimal balance in corporate development, ESG responsibility, and environmental protection. Furthermore, we regularly update the Material Safety Data Sheets (MSDS) of products. We proactively provide product safety information such as product safety features, disposal methods, etc., for reference to increase product information transparency.

Items included in the material safety data sheet

- Chemical and manufacturer information
- Disposal methods
- Stability and reactivity
- Safe handling and storage methods
- First aid
- Other information
- Fire safety measures
- Hazard identification data
- Shipping information
- Toxicity data
- Exposure precautions
- Physical and chemical properties
- Leak handling methods
- Component identification data
- Regulatory information
- Ecological information


安全資料表 Safety Data Sheet

Example for product safety labels

At the same time, we comply with national transportation regulations, to carefully handle all types of transportation permit qualifications before shipping products. We also meet the legal requirements of the country where the product is to be imported, pasting required label contents on the packaging to indicate batch, production date, product name, place of origin, safety, etc. and provide safe and environmentally friendly product information to avoid client and consumer misuse. In 2022, CSRC did not have any violations related to product safety labeling.

5.4 Customer Relationship Management

CSRC strives to offer the best service to customers and believes that customer service is the key to consolidating customer satisfaction and loyalty. All customer opinions are properly recorded and managed. We care about customer privacy. Only the sales department is aware of consultation, procurement, and business behavior information. This information is not disclosed to other business departments. At the same time, the concept of confidentiality of customer information is regularly promoted to business colleagues. No complaints about customer privacy disclosures were received by any factory of CSRC in 2022.

CSRC regularly conducts customer satisfaction surveys every year, covering Linyuan Advanced Plant, Maanshan Plant and Anshan Plant. The full score for each evaluation is 10 points and the target value is 8.5 points. Five aspects are evaluated as bases for improvement and supervision: including technical services, product quality, delivery arrangements, sales staff service, and overall satisfaction. By understanding market trends and customer needs, we adjust various trading conditions in due course and improve the Company's overall profitability. In CSRC's 2022 customer satisfaction questionnaire, the total number of customers who replied attained 100%. The average satisfaction for Linyuan Advanced Plant is 9.7 points, for Maanshan Plant is 9.2 points, and for Anshan Plant is 9.1 points. Since 2021, all evaluated aspects are above the set target value, clearly indicate customer affirmation of the products and services of CSRC.

Linyuan Advanced Plant

Item	2020	2021	2022
Technical services	9.6	9.5	9.6
Product quality	9.5	9.5	9.9
Delivery arrangements	9.6	9.6	9.6
Sales staff service	9.5	9.5	9.6
Overall satisfaction	9.5	9.5	9.7

Maanshan Plant

Item	2020	2021	2022
Technical services	9.6	9.1	9.0
Product quality	9.5	9.2	9.1
Delivery arrangements	9.6	9.2	9.2
Sales staff service	9.5	9.1	9.5
Overall satisfaction	9.5	9.2	9.2

Anshan Plant

Item	2020	2021	2022
Technical services	8.7	8.5	8.9
Product quality	8.3	8.7	9.1
Delivery arrangements	9.3	9.0	9.3
Sales staff service	9.3	8.9	9.2
Overall satisfaction	8.6	8.6	9.1

As a raw material supplier for downstream customers, CSRC strictly maintains product quality and plays the role of a good supplier. We also attach great importance to the health and safety of customers, and set goals related to customer health and safety. In 2022, one international tire customer visited Linyuan Advanced Plant, one visited Maanshan Plant, and four visited Anshan Plant for audits. All audits were passed by actively improving the audit items proposed by customers through adequate preparation in advance.

Customers conduct onsite audits at the plants in 2022

Linyuan Advanced Plant

Maanshan Plant

CH 6 Sustainable Supply Chain Management

Performance highlights

- In 2022, **100%** percent of suppliers who signed suppliers' contracts also signed an Integrity Clause and a Corporate Social Responsibility Commitment.
- In 2022, Linyuan Advanced Plant, Maanshan Plant, and Anshan Plant achieved **100%** utilization of recycled materials for their carbon black raw materials sourced from suppliers.
- In 2022, the percentage of purchasers who received sustainable procurement training attained **100%**.
- In 2022, nearly **100%** of the raw material procurement was sourced from local suppliers.
- The total amount of green procurement in 2022 was approximately NTD **4,626,321**.

Material topics: Sustainable Supply Chain Management

GRI Standards: GRI 3-3、GRI 204-1、GRI 301-1、GRI 308-1~2、GRI 414-1~2

Description of impact	CSRC attaches great importance to supplier partnerships, and we look forward to coexisting with suppliers to create long-term stable, mutually beneficial, and cooperative relationships.				
Policies and commitments	■ In supply chain management, we adhere to mutually agreed-upon rules and regulations regarding work safety, health, and environmental protection. We also sign safety and health responsibility commitments to enhance the standards of our suppliers. ■ The procurement policy and philosophy are based on fundamental procurement management, which includes comprehensive management tasks such as understanding, selecting, developing, utilizing, and controlling. This is done to achieve the business objectives of CSRC.				
Goals	Goals	Baseline year	2022 Performance	Short-term (2023 ~ 2025)	Medium and long-term (2025 ~ 2030)
	Supplier Corporate Social Responsibility Code of Conduct	2021	The signing percentage reached 100%	■ The signing percentage of suppliers for Linyuan Advanced Plant, Maanshan Plant and Anshan Plant remains 100%	■ The signing percentage of suppliers for Linyuan Advanced Plant, Maanshan Plant and Anshan plant remains 100%
	Integrity Clause	2021	The signing percentage reached 100%	■ The signing percentage of suppliers remains 100%	
	Strengthen supplier evaluations	2021	Supplier evaluation percentage reached 100%	■ For the top 10 suppliers with purchase amounts contributing to the total purchase amount, the on-site evaluation content must include ESG aspects, and the on-site evaluation pass rate reach 100%	■ For the top 15 suppliers with purchase amounts contributing to the total purchase amount, the on-site evaluation content must include ESG aspects, and the on-site evaluation pass rate reach 100%
	Providing sustainable procurement training for purchasers	2021	The percentage of purchasers who receive sustainable procurement training reached 100%	■ The percentage of purchasers who receive sustainable procurement training remains 100%	■ The percentage of purchasers who receive sustainable procurement training remains 100%
	Supplier improvement percentage	2021	The percentage of suppliers that needs to be improved ■ Linyuan Advanced Plant : 0% ■ Maanshan Plant : 4.71% ■ Anshan Plant : 0%	■ The percentage of suppliers that needs to be improved remains 0%	■ The percentage of suppliers that needs to be improved remains 0%
Responsible unit	Procurement Department				
Resources	■ Supplier grading evaluation system has been established and is optimized continuously. ■ The Company allocates funds every year to carry out sustainable procurement training for purchasers, and purchasers conduct supplier-related ESG evaluations for their respective areas of responsibility.				
Grievance mechanisms	Contact Email: ebidding.kc@csrcgroup.com				
Action plans	Negative Impact Management ■ Formulate supplier management policies, strengthen the ESG management of the supply chain's environment, labor human rights, health and safety, ethics, and management systems, and incorporate "Integrity Clause" and "Corporate Social Responsibility Commitment" into supplier contracts. ■ An audit assessment of suppliers of upstream and raw materials is carried out once a year. ■ Suppliers are classified into one of four tiers according to their evaluation score. If a supplier is rated as C-tier for two consecutive years, the purchasing or outsourcing unit must cooperate with the relevant units to visit or invite the supplier to the factory for interviews.			Positive Impact Management ■ Increasing the percentage of green procurement. ■ Providing sustainable procurement training for purchasers.	
Evaluation of effectiveness	■ Establishing supplier grading evaluation system. ■ Audit assessments of suppliers of upstream and raw materials once a year are carried out. ■ Regularly review the progress of relevant objectives during internal management meetings on an annual basis.				

6.1 Supplier Management

CSRC's suppliers is classified into upstream and downstream categories. Upstream suppliers provide raw materials, equipment spare parts, and packaging materials. Downstream suppliers are responsible for raw material transportation, finished product transportation, and waste transportation. Other suppliers include contractors involved in construction and turnkey projects.

CSRC adheres to the concept that "ESG is the responsibility of the enterprise, not a cost to the enterprise." We do so in order to ensure that the work of all suppliers and employees in the supply chain (including contract workers) is properly understood and managed. In 2020, we will incorporate issues related to environmental responsibility in the manufacturing process, compliance with labor safety and health, and ethics into our Supplier Corporate Social Responsibility Code of Conduct. In 2021, our suppliers were required to comply with the CSRC's procurement principles. Moving forward, there will be a continuous effort to optimize the current sustainable supply chain management system processes. Starting in 2019, CSRC has incorporated an Integrity Clause and a Corporate Social Responsibility Commitment into supplier contracts. Furthermore, we emphasize the importance of occupational safety and health, ensuring that all suppliers are free of environmental, human rights, and safety violations, thereby maintaining sustainable partnerships. CSRC promises to continue to implement the new version of the contract signed by suppliers and related management documents.

Supplier Corporate Social Responsibility Code of Conduct

Labor

- Respecting labor freedom
- Prohibition of child labor
- Reasonable working hours, wages and benefits
- Compliance with international human rights regulations
- Prohibition of any discrimination
- Free association

Occupational Health and Safety

- Providing a safe and hygienic working environment and appropriate protective measures
- Emergency response
- Paying attention to manual work
- Providing safety machinery and equipment
- Public health and accommodation

Environment

- Environmental permit assessment
- Preventing pollution and saving resources
- Management measures such as those concerning hazardous substances, exhaust emissions, sewage, solid waste, energy consumption, and greenhouse gas emissions
- Products comply with EU REACH requirements

Integrity and Ethical Standards

- Ethical management
- Anti-corruption and prohibition of bribery
- No illegitimate gains
- Compliance with the law
- Information disclosure
- Fair trade
- Identity protection and retaliation
- Responsible sourcing and avoidance of conflict minerals
- Privacy and information security
- Whistleblower and reporting system

Management System

- Proper management system
- Development of responsible procurement policies
- Supervision and management
- Development of an internal training plan
- Regular target review, improvement, and optimization

Supplier Corporate Social Responsibility Commitment

For the sustainable operation of the enterprise, the supplier shall undertake to comply with the following terms:

1. Continuously pay attention to environmental protection, energy saving and carbon reduction, prioritize local procurement, improve energy resource use efficiency, comply with environmental protection laws and regulations, and create a sustainable environment together.
2. Comply with relevant waste, waste gas and wastewater management standards. Disposal and treatment of waste, pollutants and other environmental hazards should comply with statutory or international convention requirements.
3. Do not use child labor and protect basic human rights when hiring employees (including but not limited to labor rights, freedom of association, International Labour Organization conventions, etc.). Give reasonable remuneration and provide legal working conditions.
4. Uphold business ethics and comply with anti-money laundering and anti-monopoly as well as non-disruptive business competition when running a business.
5. Should develop a sustainable procurement policy for its suppliers, and the content of the policy should at least cover the supplier policy issued by the group.

Signing of Supplier Contracts and Related Management Documents of CSRC in 2022

Plant	Linyuan Advanced Plant	Maanshan Plant	Anshan Plant
Total number of suppliers with actual transactions	337	255	174
Number of companies that have signed Supplier Contracts	337	255	174
Number of companies that have signed the Integrity Clause	337	255	174
Number of companies that have signed Corporate Social Responsibility Commitment	337	255	174

REACH Compliance

Regarding the management of suppliers' compliance with REACH regulations, Linyuan Advanced Plant uses the supplier management mechanism through the headquarters of CSRC in Taipei. From 2021, we have formulated the Supplier Corporate Social Responsibility Code of Conduct and there are provisions for REACH compliance. Suppliers are required to sign this code of conduct before they can trade with CSRC and Linyuan Advanced Plant. In addition, supplier evaluation will also be conducted for suppliers with transactions every year, with , the signed code of conduct included as one of the scoring standards as an evaluation item to confirm that the supplier meets the requirements of REACH regulations.

6.1.1 Supplier Selection

CSRC selects high-quality suppliers through a supplier selection mechanism. Before the assessment, suppliers will first be required to complete a self-assessment report that reports items including the company profile, Ministry of Economic Affairs company business registration information, environmental photos of the company's plants, equipment list, R&D technology quality assurance environment, proof of performance (purchase orders, input invoices), entity finances (balance sheet, income statement) ,etc. Afterwards, we conduct on-site investigations and visits to the suppliers selected according to the self-assessment reports. We assess financial soundness, and social and environmental performance are considered criteria in the selection of new suppliers. If a potential supplier has a negative record or has been involved in significant non-compliance incidents (such as violating environmental and social regulations or engaging in corrupt practices related to corporate governance), we will not engage in business cooperation, ensuring the effectiveness of sustainable supplier management. Only after passing the inspection can they be listed as a qualified supplier. In 2022, CSRC added 118 new suppliers (Linyuan Advanced Plant: 48 suppliers; Maanshan Plant: 38 suppliers; Anshan Plant: 32 suppliers). All these suppliers are100% passed the social and environmental assessment criteria.

Number of new suppliers and screening percentage for 2022

Category	Linyuan Advanced Plant			Maanshan Plant			Anshan Plant		
	Number of new suppliers	Number of new suppliers that were screened using environmental and social criteria	Percentage of new suppliers that were screened using environmental and social criteria	Number of new suppliers	Number of new suppliers that were screened using environmental and social criteria	Percentage of new suppliers that were screened using environmental and social criteria	Number of new suppliers	Number of new suppliers that were screened using environmental and social criteria	Percentage of new suppliers that were screened using environmental and social criteria
Supplies	23	23	100%	11	11	100%	10	10	100%
Spare parts	11	11		15	15		14	14	
Engineering	14	14		12	12		8	8	
Total	48	48		38	38		32	32	

6.1.2 Supplier Evaluation

CSRC aims to establish sustainable supply chain management. Each year, a grading audit assessment is conducted on suppliers with transactions. Based on the evaluation scores, suppliers are classified into four tiers: A, B, C, and D. If a supplier receives a C-tier rating for two consecutive years, a site visit or an on-site interview with the supplier coming to the plant will be arranged, and the findings will be documented in writing. We will assist in improving any non-compliant areas. Suppliers rated as D-tier will be considered for elimination and will have their bidding rights suspended.

CSRC has been conducting on-site audits of its top ten suppliers with the largest purchase amounts on a quarterly basis since 2021. This includes whether they have signed our Supplier Code of Conduct, whether they have obtained relevant certification systems, whether they are concerned about the environment or society, whether they undertake practices regarding the environment or social corporate responsibility, and so on. Starting from the second half of 2021, we have included the evaluation of whether new suppliers sign the ESG clauses as part of the performance assessment for purchasers. If the purchaser fails to obtain a completed ESG clause confirmation from a new supplier, it will be considered as incomplete research and will result in a deduction of performance points for that evaluation category. In 2022, the percentage of ESG clause confirmation from new suppliers reached 100%.

Audit evaluation criteria and scoring tiers

Product requirements

- Product compliance
- Quality performance
- Delivery performance
- Continuous supply capability
- Quality management system evaluation
- Process capability

Transportation and service

- Type of Transportation
- Customer Service
- Construction contact
- Machines and equipment
- Environmental sanitation
- Client satisfaction management

Management system

- Signing the supplier code of conduct
- Certifications
- Environment and social corporate responsibility
- Financial stability
- Business continuity
- Legal compliance

Evaluation score tier

A-tier 90 points or more	A good supplier, shall prioritize its bargain opportunities.	C-tier 60-79 points	Strengthen supplier's improvement and training, and reduce bidding rights. If there is improvement in the next evaluation, the right to bid will be renewed.
B-tier 80-89 points	Reliable supplier, shall maintain general price comparison or bargaining opportunities.	D-tier Below 59 points	Listed as a supplier to be eliminated and stop the bidding rights.

Starting in 2019, CSRC has incorporated an Integrity Clause and a Corporate Social Responsibility Commitment into supplier contracts. To strengthen supplier management and ensure that cooperating suppliers do not commit violations related to environmental and social aspects, CSRC gradually increases the number of suppliers undergoing audit evaluations each year. In 2022, Linyuan Advanced Plant, Maanshan Plant and Anshan Plant included all the suppliers with actual transactions in the audit evaluation. The percentage of A-tier suppliers in Linyuan Advanced Plant was 95.55%. The number of C-tier and D-tier suppliers was 0, which could be attributed to the strengthened supplier management system implemented in 2022. This stricter enforcement will continue to encourage suppliers to make continuous improvements. In the case of Maanshan Plant, the quantity of A-level suppliers decreased compared with 2021, and B-level suppliers increased compared with 2021. The main reason is that due to the impact of the pandemic, some deliveries had been delayed. To disperse possible supply chain risks, new suppliers have been included. As the impact of the pandemic slows down in the future and the familiarity of new suppliers increase, it is hoped that the proportion of A-level will gradually increase. For C-tier suppliers, improvement plans were initially required, and a second-party on-site audits were scheduled with demand units. However, due to the impact of the pandemic, on-site audits were temporarily suspended. Additionally, cooperation with D-tier suppliers has already been terminated. In 2022, Anshan Plant had 59 suppliers included in the audit evaluation, accounting for 34 % of the total number of suppliers with actual transactions. A-tier and B-tier suppliers accounted for 100% of the evaluated suppliers. Moving forward, there will be continuous efforts to increase the percentage of suppliers undergoing audit evaluations.

Linyuan Advanced Plant		A-tier	B-tier	C-tier	D-tier	Total
2022	Number	322	15	0	0	337
	Percentage	95.55%	4.45%	0%	0%	
2021	Number	289	6	0	0	295
	Percentage	97.07%	2.03%	0%	0%	
2020	Number	14	261	38	6	319
	Percentage	4.39%	81.82%	11.91%	1.88%	

Maanshan Plant		A-tier	B-tier	C-tier	D-tier	Total
2022	Number	88	155	9	3	255
	Percentage	34.51%	60.78%	3.53%	1.18%	
2021	Number	97	59	1	1	158
	Percentage	61.39%	37.34%	0.63%	0.63%	
2020	Number	99	62	4	2	167
	Percentage	59.28%	37.13%	2.40%	1.20%	

Anshan Plant		A-tier	B-tier	C-tier	D-tier	Total
2022	Number	54	5	0	0	59
	Percentage	91.53%	8.47%	0%	0%	
2021	Number	54	3	2	1	60
	Percentage	90%	5%	3.33%	1.67%	
2020	Number	50	2	0	0	52
	Percentage	96.15%	3.85%	0%	0%	

6.1.3 Contractor Management

◆ Occupational Safety and Health Management Measures for Contractors

To protect the work safety of contractors or suppliers, CSRC clearly define various occupational safety regulations and comply with government labor safety and health regulations in the project contract. Maanshan Plant and Anshan Plant complies with the current laws and regulations in China specifying "Construction and Operation Safety, Health and Environmental Management Operating Procedures" for contractors engaged in on-site construction. The purpose is to strengthen construction safety and environmental protection operation management, reducing injuries during construction or operation. During the construction process, factory auditors will randomly check the contents of the operation from time to time. If a violation of industrial safety regulations is found, the contractor shall directly be requested to stop work. The construction task shall suspend and continued after the relevant situation improves.

◆ Environmental Management Measures for Contractors

CSRC has agreements in place with contractors regarding environmental pollution-related issues, requiring contractors to comply with our environmental policy, strengthening environmental cleaning and power washing of vehicle tires during engineering or work construction, complying with environmental protection regulations, and avoiding any environmental pollution behavior. CSRC supervisors will also responsible of inspecting whether the contractor actually complies with the regulations. In 2022, no instances of non-compliance were found among contractors during the construction period (Linyuan Advanced Plant: 0 cases; Maanshan Plant: 0 cases; Anshan Plant: 0 cases). In addition, when the contractor generates general industrial waste, hazardous industrial waste, and resource waste during construction, the supervisor of the project or work organizing department must be contacted and the relevant storage and removal forms filled out. Afterward, the contractor must go to the storage management department that manages various types of waste to handle storage or removal operations; they cannot be thrown away at will.

◆ Contractor education and training

We regularly hold contractor education and training to ensure that the contractor understand the construction specifications and safety protections. Training content includes the contractor's entry process description, limited space operation rules, hot work rules, hanging work rules, information on waste disposal, on-site code violations, information on workplace accidents, etc.

6.2 Raw Materials Management

The main raw materials for carbon black production in the process are residual end-of-life residues (product) from the upstream petrochemical and steel industries during the refining process. Through a special carbon black manufacturing process, residual bottom oils are transformed into a high-value product, carbon black, effectively implementing a circular economy. The raw materials used for carbon black production at Linyuan Advanced Plant, Maanshan Plant, and Anshan Plant are 100% recycled materials. At Linyuan Advanced Plant, the main raw materials are sourced from CPC Corporation, Kaohsiung Ethylene Coking Plant, and CSC Carbon (phenol oil, anthracene oil, or carbon black oil). At Maanshan Plant, the primary raw materials are obtained from China Baowu Steel Group, OCI, and other direct suppliers within Anhui Province. At Anshan Plant, the main raw materials are sourced from Ansteel Group and other direct suppliers within Liaoning Province. On the other hand, in order to maintain a flexible procurement strategy and respond to storage needs for imported oil, we have leased two oil tanks at the Port of Kaohsiung with capacities of 5,000 kiloliters and 3,000 kiloliters. This provides convenient scheduling and helps us maintain a stable supply of production.

Since 2021, Maanshan Plant reduced the usage of feedstock oil and fuel oil through the substitution of coal tar with ethylene tar, which will be beneficial in reducing cost.

CSRC raw material acquisitions for each operational plant in 2022

Unit: Tonne

Type	Material name	Plant	2020	2021	2022
Non-renewable materials [Note 1]	Feedstock oil + Fuel oil	Linyuan Advanced Plant	178,903	199,594	178,400
		Maanshan Plant	77,490	47,931	37,330
		Anshan Plant	-	-	53,808
	Plastic pallets	Linyuan Advanced Plant	262	324	283
		Maanshan Plant	83	72	20
		Anshan Plant	-	-	67
	FIBC (Flexible Freight Bags)	Linyuan Advanced Plant	394	-	536
		Maanshan Plant	151	358	147
		Anshan Plant	126	247	147
	Total		257,409	248,526	270,738
Renewable materials [Note 2]	Wood pallets	Linyuan Advanced Plant	999	1,500	635
		Maanshan Plant	407	601	547
		Anshan Plant	300	578	413
	Total		1,706	2,679	1,595

Note 1: Non-renewable materials are defined as resources that cannot be replenished in the short term. For example, minerals, metals, oil, natural gas, coal, etc.

Note 2: Renewable materials are defined as those that can be quickly restored through ecological recycling or agricultural procedures and can be used continuously for future generations. For example, wood, water.

6.3 Sustainable Procurement

6.3.1 Local Procurement

Adhering to the principle of local development and local supply, CSRC actively develops local suppliers and implements local procurement to achieve timely and appropriate procurement, reducing management and operation costs and lowering indirect greenhouse gas emissions from international transportation. Furthermore, this creates local jobs and economic prosperity. It is also easier to grasp the supply status of raw materials and reduce operational risks, and this makes production operations more stable. The raw material procurement of Linyuan Advanced Plant, Maanshan Plant, and Anshan Plant is nearly 100% sourced from local suppliers.

Local procurement amounts and percentages for each plant in 2022

Unit: NTD million

Operation site Region [(Note)]	Year	Local procurement amount	Total procurement amount	Percentage of local procurement (%)
Linyuan Advanced Plant (Taiwan)	2022	4,019.00	4,070.98	98.72%
	2021	3,035.86	3,039.25	99.89%
	2020	1,780.14	1,780.14	100.00%
Maanshan Plant (China)	2022	1,782.17	1,787.71	99.72%
	2021	2,085.32	2,085.54	99.99%
	2020	855.80	855.89	99.99%
Anshan Plant (China)	2022	1,289.05	1,289.05	100.00%
	2021	1,486.72	1,487.35	99.96%
	2020	802.16	802.16	100.00%

Note: The local suppliers of Linyuan Advanced Plant are defined as suppliers registered in Taiwan; local suppliers of Maanshan Plant and Anshan Plant are defined as suppliers registered in China.

6.3.2 Green Procurement

CSRC actively promotes its Green Procurement Program, prioritizing the purchase of three categories of environmentally friendly products(Note) specified in the "Regulations for Priority Procurement of Eco-Products" by the Environmental Protection Administration of the Executive Yuan. This initiative aims to reduce environmental impact, minimize resource consumption, and promote the production of green products. The main procurement items include LED lights and energy-saving appliances. In 2022, the total amount of green procurement was NTD 1,349,872 and RMB 760,197, equivalent to approximately NTD 4,626,321.

Green procurement items	Total procurement amount in 2022
Linyuan Advanced Plant	
LED lights	1,293,992
Energy-saving appliances	55,880
Total amount (NTD)	1,349,872

Green procurement items	Total procurement amount in 2022
Maanshan Plant	
LED lights	44,675
Energy-saving appliances	150,781
Total amount (RMB)	195,456

Green procurement items	Total procurement amount in 2022
Anshan Plant	
LED lights	14,853
Energy-saving electrical machinery	549,888
Total amount (RMB)	564,741

Note: Environmental protection products are classified into the following three categories:

Category I products: Having obtained permission to use an Eco-label from the Environmental Protection Administration of Executive Yuan and permission from a foreign country that has mutual recognition agreement with this nation.

Category II products: A product that is not one of the Eco-label products announced by the EPA but is identified by one that conforms to recycled material, returnable product, low pollution, or energy-saving requirement and has been issued with a certificate.

Category III products: Products which increase social benefit or reduce social cost that have been approved by the competent entity responsible for such products as satisfying the condition and been issued with a certificate. Products with energy-saving labels are considered category III products. According to this regulation, energy-saving label products are recognized as one of the approved environmental protection products.

CH 7 Occupational Health and Safety

Performance highlights

- Linyuan Advanced Plant, Anshan Plant, and Maanshan Plant all have obtained **ISO 45001** certification.
- CSRC implemented employee occupational health and safety education and training, with a total of **705 participants** and total training hours of **13,664 hours**.
- CSRC implemented health and safety lectures and training for contractors, with a total of **3,385 participants** and total training hours of **27,425 hours**.
- In 2022, Linyuan Advanced Plant began the promotion of **Process Safety Management (PSM)** to strengthen the safety management of process operations.

Material topics: Occupational Safety and Health

GRI Standards: GRI3-3、GRI 403-1、GRI 403-2、GRI 403-3、GRI 403-4、GRI 403-5、GRI 403-6、GRI 403-7、GRI 403-8、GRI 403-9、GRI 403-10

Description of impact	Employees' workplace safety provides an important foundation for the growth of CSRC. By maintaining a safe work environment, improving employees' safety practices, awareness, and skills, and actively preventing safety and health risks in business activities, we maintain a healthy workforce that ensures future growth.			
Policies and commitments	In accordance with ISO 45001 occupational health and safety policies, we abide by laws and regulations and maintain the safety and security of employees and of contractors and the community. We improve efficiency, reduce environmental impact, and undertake optimal emergency response to create a safe environment.			
Goals	Goals	2022 performance	Short-term (2023 ～ 2025)	Medium and long-term (2025 ～ 2030)
	Introduce ISO 45001 Verification	■ Linyuan Advanced Plant, Anshan Plant, and Maanshan Plant all have obtained ISO 45001 certification.	■ Pass ISO 45001 certification every year	■ Pass ISO 45001 certification every year
	Strengthen Emergency Response Plans	■ Linyuan Advanced Plant conducted area joint defense emergency response activity and physical drills for chemical incidents for six times with neighboring businesses and local fire safety teams. ■ Maanshan Plant: Completed the annual emergency drill plan and completed 21 drills for comprehensive emergency drills, special emergency drills, and on-site disposal plans ■ Anshan Plant completed 28 drills including the annual emergency drill plan, comprehensive emergency drills, special emergency drills, and on-site disposal plans. ■ Introduced contingency training evaluations and included them in the performance appraisal of each unit; completed verbal assessment of contingency training of the Linyuan Advanced Plant by the competent authority.	■ Linyuan Advanced Plant: 0 cases of disability injuries, and six contingency training sessions according to plan ■ Maanshan Plant: Conduct more than 15 events for comprehensive emergency drills, special emergency drills, and on-site disposal plans ■ Anshan Plant: Implementation of one comprehensive project and seven special projects, with on-site disposal plan drills (22 sessions). The employee participation rate of relevant departments will be over 80% ■ Introduce contingency training evaluations and included them in the performance appraisal of each department	■ Linyuan Advanced Plant: 0 cases of disability injuries, and contingency training sessions are conducted according to plan; participate in contingency training of neighboring factories ■ Maanshan Plant: Conduct more than 15 drills for comprehensive emergency drills, special emergency drills, and on-site disposal plans ■ Anshan Plant: Implementation of one comprehensive project and seven special projects, with on-site disposal plan drills (22 sessions). The employee participation rate will be over 95%. Furthermore, contingency training evaluations are introduced and incorporated into the performance evaluation of each department
	Complete the AED (Automated external Defibrillator) Site Setup	■ Linyuan Advanced Plant: Maintained validity of the AED Site Certification. ■ Maanshan Plant: Planned to reapply for AED. ■ Anshan Plant: Completed AED setup.	■ Linyuan Advanced Plant: Maintain certification effectiveness and regularly strengthen internal personnel education and training for AED ■ Maanshan Plant: Re-apply for certification (certificate valid for three years) ■ Anshan Plant: Maintain certification effectiveness of AED, set up AED administrators, and plan for 70% of employees to accept "AED+CPR" first aid education and training	■ Linyuan Advanced Plant: Maintain certification effectiveness of AED and regularly strengthen AED education and training for all personnel and the participation rate attain 85% ■ Maanshan Plant: Maintain certification effectiveness (certificate valid for three years) ■ Anshan Plant: Maintain certification effectiveness, set up AED administrators, and plan for 100% of employees to accept "AED+CPR" first aid education and training, and add one AED site depending on circumstances
Responsible units	Environmental Health and Safety Center, Environmental Health and Safety Office of each Plant			
Resources	Linyuan Advanced Plant invested NTD 207 million into production safety; Maanshan Plant invested RMB 2.939 million into production safety; Anshan Plant invested RMB 4.15 million into production safety.			
Grievance mechanisms	csrcir@csrcgroup.com			

Action plans	**Negative Impact Management** ■ Continue to improve the labor safety related management methods and comply with the labor safety management standard procedures. ■ Strengthen emergency response execution capacity and conduct drills for each department. ■ Strengthen management work inspections.	**Positive Impact Management** ■ Establish risk assessment E-management and control: After identifying risk factors, each risk management unit must formulate an appropriate measurement method as the basis for risk management. ■ Provide employees with occupational health and safety services; introduce relevant health and safety mechanisms; carry out occupational hazard site detection and establish an occupational hazard management system; implement, track, and improve related programs. ■ Formulate annual training plans for each department of the Company. Through training and effect evaluation, we ensure that all employees who are engaged in activities that affect occupational health and safety performance have the required capabilities (including environmental factors and the ability to identify hazards). ■ Strengthen the handling of contractor health and safety education and training and advocacy activities.
Evaluation of effectiveness	■ After identifying the laws and regulations related to the management system, the demands and expectations of stakeholders, this information is distributed to the relevant units for compliance assessment. ■ The impact of risks on the Company is used as a reference for subsequent formulation of risk control priorities and selection of response measures. ■ For quantifiable risks, rigorous statistical analysis methods and techniques must be adopted for analysis and management. ■ Other risks that are currently difficult to quantify are to be measured qualitatively. Qualitative risk measurement refers to the expression of the possibility of risks occurring and their degree of impact through textual description. ■ Formulate standardized production safety guidelines and management by objectives systems and safety and health organizations, as well as monitoring responsibilities. ■ Implement internal audit regularly to provide necessary information to meet the requirements of the management system. ■ Regularly review the management system to ensure the appropriateness, adequacy, and effectiveness of its continuous improvement.	

7.1 Safety and Health Policy

7.1.1 Safety and health policies and concepts

CSRC is strongly focused on the safety and health of all employees in the working environment. We take "Safety First, Prevention as Priority, Comprehensive Management, People-Oriented; Safe Development, All Employees Participation, Pursuit of Excellence and Continuous Improvement" as the policies of occupational health and safety, and specifically we prevent accident as the highest guiding principle. The Environmental Health and Safety Center of the CSRC Group is responsible for coordinating the safety and health regulations of the Carbon Black Business Group, formulating strategies, hazard assessment and risk identification, participating in the planning of safety and health family activities, and monitoring the environmental health and safety performance of various operating units under management. We have set up the Safety and Health Committees in all operating offices in Taiwan and China operation sites, with the director of each plant serving as the chair. Among them, there are 23 people in Safety and Health Committee of Linyuan Advanced Plant, 12 of whom are employee representatives and 0 are non-employee workers whose work or workplace is controlled by the CSRC Group. The proportion of all workers is 52%. The Occupational Safety and Health Committee is convened once every three months in accordance with the law. The meeting mainly engages in communication and discussion on occupational safety and health policies, management and implementation plans, environmental monitoring plans, safety and health training implementation plans, occupational incident investigation reports, on-site safety and health management performance, and other relevant occupational safety and health management matters.

Maanshan Plant has established an environmental protection and production safety management committee in 2022 with 41 members, including 15 management representatives and 26 employees. To better manage safety work in the Plant, Anshan Plant has also established a production safety committee in December 2022 with 43 members, including 18 management representatives and 25 employee representatives.

CSRC Safety and health policies and concepts

1. Comply with all applicable laws, regulations, and other requirements.
2. Provide appropriate protective measures, equipment, or work control to prevent injuries and occupational illness.
3. Strengthen equipment maintenance and continuous improvement to eliminate or reduce any harm arising from equipment.
4. Carry out health and safety education for relevant personnel with employees' awareness of hazards in the workplace; improve independent health and safety management capabilities.
5. Establish good communication channels for participation in consultation, enabling stakeholders and employees to understand health and safety management policies and related requirements. Work together to improve inappropriate matters and create a safe and comfortable working environment.
6. Provide the necessary resources to maintain the effective operation of the occupational health and safety management system, and continuously improve health and safety management and performance.

2022 Occupational Health and Safety Committee communication topics

1. Made recommendations on occupational health and safety policy.
2. Coordinated and recommended occupational health and safety management plans.
3. Reviewed the implementation plan of health and safety education and training.
4. Reviewed the operational environmental monitoring plan, monitoring results, and measures to be taken.
5. Reviewed health management, occupational disease prevention, and health promotion matters.
6. Reviewed various safety and health proposals.
7. Reviewed automatic inspection and safety and health audit matters among business units.
8. Reviewed preventive measures for machinery, equipment or raw materials, and hazards from materials.
9. Reviewed on occupational hazard inquiry review.
10. Assessed on-site health and safety management performance.
11. Reviewed health and safety management matters among contracting businesses.

7.1.2 Safety and health management system

CSRC maintains a responsible unit in each plant, continues to promote the operation of ISO 45001 and GBT management systems, and strengthens contingency training to mitigate incidents and eliminate losses. During the overhaul period, we have implemented contractor management to mitigate incidents, provided health services and advanced health promotions, and used the management system to continuously reduce occupational health and safety-related risks to achieve our established goals. We have integrated the occupational health and safety system to formulate occupational safety, health and environmental policies in accordance with the laws and regulations that must be complied with each location. These include Taiwan's "Occupational Safety and Health Act", "Process Safety Management", and "Labor Health Protection Act"; mainland China regulations such as "New Safe Production Law", "the Basic Law on Labor Protection", "the Prevention and Control of Occupational Diseases Law".

Linyuan Advanced Plant's safety and health management system is established in accordance with ISO 45001, CNS 45001 national standards, and the Taiwan Occupational Safety and Health Management System (TOSHMS), and regularly accepts internal and external audits. The scope of application of the system covers 196 employees in the plant (100% of the total number of employees in Linyuan Advanced Plant) and 43 workers (excluding employees)[Note], with 100% of employees subject to external audit. Maanshan Plant has passed ISO 45001 certification. The total number of people covered by the system specifications is 192 (accounting for 100% of the total number of employees in Maanshan Plant) and 74 workers (excluding employees) [Note], and the number of employees subject to external audits similarly attain 100%. Anshan Plant has passed ISO 45001 certification. The total number of people covered by the system specification is 227 (100% of Anshan Plant employees) and 85 workers (excluding employees) [Note].

Note: For numbers of workers (excluding employees), Linyuan Advanced Plant has 43 non-employee workers, including 11 cleaning staff, 26 outsourced manufacturers, and 6 security guards. Maanshan Plant has 74 employees, including 12 security guards, 16 cleaning personnel, 13 engineering coordinators, and 33 outsourced laborers for storage, transportation, and packaging. Anshan Plant has 85 employees, including 14 cleaning personnel, 59 outsourced manufacturers, and 12 security guards.

Passed the certification

Occupational Health and Safety Management System

ISO 45001：2018

Linyuan Advanced Plant - ISO 45001

Maanshan Plant - ISO 45001

Anshan Plant ISO 45001

7.1.3 Management objectives and performance

CSRC attaches great importance to the safety and health of employees and is committed to providing a safe working environment and maintaining the physical and mental health of employees which is the direction of our long-term practice. It is also convinced that only healthy employees can create the company's success. In order to implement occupational safety policies, the CSRC Group sets various safety and health management goals every year based on annual goals and follows the safety and health management system to promote continuous improvements in operations. This is done to achieve the goals of reducing hazardous factors that endanger safety and health, preventing accidents, and promoting the safety and health of employees.

Management Objectives

	Key result areas (KRA)	Annual goals	2022 Implementation results
Industrial safety and environmental protection	Disability injuries (times)	0 occurrences throughout the year	▪ Linyuan Advanced Plant: 2 occurrences ▪ Maanshan Plant: 2 occurrences ▪ Anshan Plant: 1 occurrence
	Employees who violated the work safety discipline and underwent probation (number of persons)	Less than or equal to 2 individuals/ department	▪ Linyuan Advanced Plant: 0 individual violations ▪ Maanshan Plant: 0 individual violations ▪ Anshan Plant: 0 individual violations
	Number of violations of work safety discipline by employees/contractors	From the third quarter onwards, every quarter reduced by 10%	▪ Number of employee violations: 0 violations by employees of Anshan Plant and Maanshan Plant ▪ There were 45 fines for contractors in Anshan Plant and nine fines for contractors in Maanshan Plant

	Key result areas (KRA)	Annual goals	2022 Implementation results
Industrial safety and environmental protection	False alarms	1. Less than 2 incidents per year per department (production units) 2. Less than 0 incidents per year per department (non-production units)	▪ Number of submissions by production unit: Linyuan Advanced Plant reported 3 cases; Maanshan Plant and Anshan Plant reported 0 cases ▪ Number of submissions by non-production unit: the Linyuan Advanced Plant, Maanshan Plant, and Anshan Plant reported 0 cases
	Work safety improvement rate (completed/total number of proposals)	Above 50%	▪ Linyuan Advanced Plant industrial safety improvement rate: 100% (322/322) ▪ Maanshan Plant: industrial safety improvement rate: 100% (466/466) ▪ Anshan Plant industrial safety improvement rate: 99% (185/187)
	On-site 6S - sorted, tidy	Implementation by each department	▪ Linyuan Advanced Plant, Maanshan Plant, and Anshan Plant industrial safety implementation rate: 100%
Education and training	Training after revision of standard operating procedures	Implementation by each department	▪ Linyuan Advanced Plant: A total of 3 trainings ▪ Maanshan Plant: 1 training ▪ Anshan Plant: A total of 2 trainings
	Work safety topic training (advocacy) and tests	Training at least 3 times a year	▪ Linyuan Advanced Plant: A total of 24 trainings ▪ Maanshan Plant: A total of 41 trainings ▪ Anshan Plant: A total of 17 trainings
	Emergency response drills	At least 2 times a year (Per class)	▪ Linyuan Advanced Plant: A total of 5 drills ▪ Maanshan Plant: A total of 21 drills ▪ Anshan Plant: A total of 11 drills
	Fire training (Including facility use)	Training at least 1 time a year	▪ Linyuan Advanced Plant: A total of 5 fire trainings ▪ Maanshan Plant: A total of 2 fire trainings ▪ Anshan Plant: A total of 4 fire trainings
	Contractor industrial safety theme training (advocacy) and tests	3 times a year (pre-repair education and training)	▪ Linyuan Advanced Plant: A total of 36 trainings ▪ Maanshan Plant: A total of 3 trainings ▪ Anshan Plant: A total of 3 trainings
	Emergency response training for storage and transportation contract operations	Training at least 2 times a year	▪ Linyuan Advanced Plant: A total of 2 trainings ▪ Maanshan Plant: A total of 4 trainings ▪ Anshan Plant: A total of 3 trainings
	Loading operation training for storage and transportation contractors	Training at least 2 times a year	▪ Linyuan Advanced Plant: A total of 4 trainings ▪ Maanshan Plant: A total of 4 trainings ▪ Anshan Plant: A total of 3 trainings
System	Establish CNS 45001 procedure book/ work manual	All departments to implement security inspections in accordance with the "Health and Safety Reward and Disciplinary Management Measures"	▪ Linyuan Advanced Plant implementation rate 100% ▪ Maanshan Plant implementation rate 100% ▪ Anshan Plant implementation rate 100%

Management performance

Linyuan Advanced Plant

Worker category	Total working hours	Number of general occupational injuries	Number of severe occupational injuries	Number of deaths	Total number of recordable occupational injuries	Severe occupational injury rate Note 2	Rate of fatalities caused by occupational injuries Note 3	Disabling injury frequency rate (FR) Note 4	Lost days Note 5	Severity of disability injury (SR) Note 6
Full-time employees	435,860	2 Note 1	0	0	2	0	0	5	103	236
Temporary workers	0	0	0	0	0	0	0	0	0	0
Securities	12,001	0	0	0	0	0	0	0	0	0
Contractors	74,009	0	0	0	0	0	0	0	0	0
Total	521,870	2	0	0	2	0	0	4	103	197

Note 1: In 2022, Linyuan Advanced Plant had a total of 2 occupational injuries. The main types of injuries were high temperature exposure and traffic accidents. Furthermore, in accordance with the Factory's 080-TSH-11 hazard communication and management measures, unacceptable risks were re-examined, and countermeasures and risk treatment had formulated to prevent the occurrence of hazards.

Note 2: Severe occupational injury rate (excluding fatalities) = Number of serious occupational injuries (excluding fatalities) × 1,000,000 working hours / total working hours.

Note 3: Rate of deaths caused by occupational injuries = (The number of deaths caused by occupational injuries × 1,000,000 working hours) / Total working hours.

Note 4: Disability injury frequency rate (FR) (Also known as "Recordable Occupational Injury Rate") = (Recordable number of occupational injuries × 1,000,000 working hours) / Total working hours.

Note 5: Calculated from the date of injury, the total number of days lost after all injuries occurring in a single case. The number of days the injured person is temporarily (or permanently) unable to return to work. The day of injury and the day of return to work must not be included, but the number of days elapsed in between (including Sundays, holidays or business unit off-work days) and any days of inability to work due to the incident after resumption of work must be included.

Note 6: Disabling injury severity rate (SR) = (Number of lost working days × 1,000,000 working hours) / Total working hours.

Maanshan Plant

Worker category	Total working hours	Number of general occupational injuries	Number of severe occupational injuries	Number of deaths	Total number of recordable occupational injuries	Severe occupational injury rate Note 2	Rate of fatalities caused by occupational injuries Note 3	Disabling injury frequency rate (FR) Note 4	Lost days Note 5	Severity of disability injury (SR) Note 6
Full-time employees	419,906	2 Note 1	0	0	2	0	0	5	44	105
Temporary workers	59,288	0	0	0	0	0	0	0	0	0
Securities	35,040	0	0	0	0	0	0	0	0	0
Contractors	148,800	0	0	0	0	0	0	0	0	0
Total	663,034	2	0	0	2	0	0	3	44	66

Note 1: In 2022, Maanshan Plant had a total of 2 occupational injuries. One injury was of the type caused by operating at height and in an unsuitable space, and the other of the type was caused by slippery ground leading to falls and slips. The Plant had reviewed and revised the operating instructions and strengthened personnel safety awareness training.

Note 2: Severe occupational injury rate (excluding fatalities) = Number of serious occupational injuries (excluding fatalities) × 1,000,000 working hours / total working hours.

Note 3: Rate of deaths caused by occupational injuries = (The number of deaths caused by occupational injuries × 1,000,000 working hours) / Total working hours.

Note 4: Disability injury frequency rate (FR) (Also known as "Recordable Occupational Injury Rate") = (Recordable number of occupational injuries × 1,000,000 working hours) / Total working hours.

Note 5: Calculated from the date of injury, the total number of days lost after all injuries occurring in a single case. The number of days the injured person is temporarily (or permanently) unable to return to work. The day of injury and the day of return to work must not be included, but the number of days elapsed in between (including Sundays, holidays, or business unit off-work days) and any days of inability to work due to the incident after resumption of work must be included.

Note 6: Disabling injury severity rate (SR) = (Number of lost working days × 1,000,000 working hours) / Total working hours.

Anshan Plant

Worker category	Total working hours	Number of general occupational injuries	Number of severe occupational injuries	Number of deaths	Total number of recordable occupational injuries	Severe occupational injury rate Note 2	Rate of fatalities caused by occupational injuries Note 3	Disabling injury frequency rate (FR) Note 4	Lost days Note 5	Severity of disability injury (SR) Note 6
Full-time employees	460,464	1 Note 1	0	0	1	0	0	2	145	315
Temporary workers	0	0	0	0	0	0	0	0	0	0
Securities	23,904	0	0	0	0	0	0	0	0	0
Contractors	161,360	0	0	0	0	0	0	0	0	0
Total	645,728	1	0	0	1	0	0	2	145	225

Note 1: In 2022, Anshan Plant had one occupational injury, and the main type of injury was falling. The factory area had reviewed and set up warning notices at the places where people have fallen, and personnel had been trained to improve safety awareness.

Note 2: Severe occupational injury rate (excluding fatalities) = Number of serious occupational injuries (excluding fatalities) × 1,000,000 working hours / total working hours.

Note 3: Rate of deaths caused by occupational injuries = (The number of deaths caused by occupational injuries × 1,000,000 working hours) / Total working hours.

Note 4: Disability injury frequency rate (FR) (Also known as "Recordable Occupational Injury Rate") = (Recordable number of occupational injuries × 1,000,000 working hours) / Total working hours.

Note 5: Calculated from the date of injury, the total number of days lost after all injuries occurring in a single case. The number of days the injured person is temporarily (or permanently) unable to return to work. The day of injury and the day of return to work must not be included, but the number of days elapsed in between (including Sundays, holidays or business unit off-work days) and any days of inability to work due to the incident after resumption of work must be included.

Note 6: Disabling injury severity rate (SR) = (Number of lost working days × 1,000,000 working hours) / Total working hours.

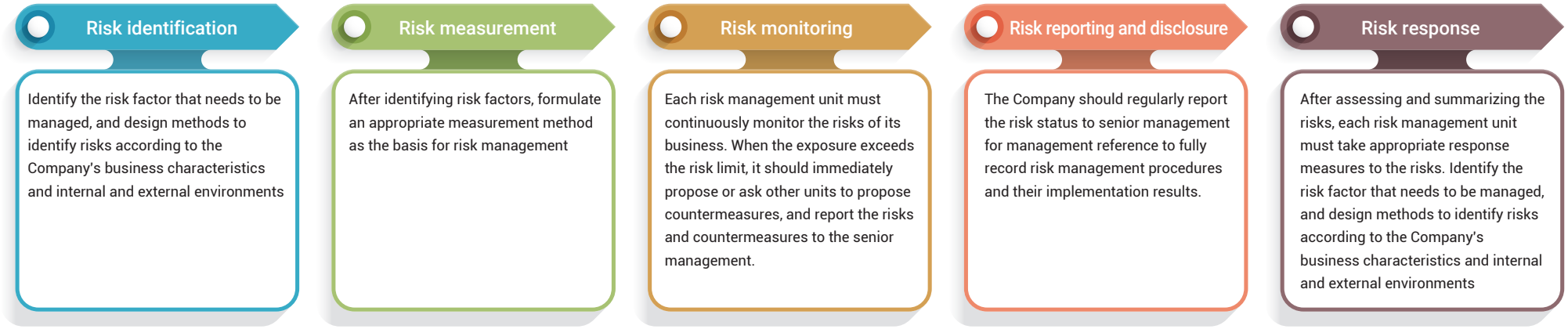
7.2 Occupational Safety Risk Management

7.2.1 Risk management process

In order to avoid damage to the safety and health of plant personnel or company finances due to hazards such as operations, activities or services and facilities, CSRC uses continuous safety and health hazard identification, risk and opportunity assessments to take appropriate preventive measures, implement necessary control methods, and eliminate hazards, and further to improve occupational safety and health performance. This risk management procedure is managed in accordance with the ISO/CNS 45001:2018 management system specifications and guidelines, and through regular internal and external inspections and audits to ensure the execution quality of the process (including the abilities of execution personnel).

CSRC formulated its 080-TSH-16 "Hazard Identification and Risk and Opportunity Evaluation Operations" in 2021. Measures include items such as risk management policies, risk management organization, risk management processes, and risk management categories and mechanism, with the purpose of effectively controlling risks arising from business activities. The measures are aimed to avoid harm to the health and safety of personnel of CSRC due to hazards such as operations, activities, or services and facilities that cause damage to the health and safety of plant personnel or to the Company's finances, and to take early action to address occupational health and safety performance improvement opportunities.

Risk management process diagram



7.2.2 Risk assessment and hazard identification

CSRC has established optimal occupational safety risk assessment procedures. All evaluators have participated in risk assessment training courses to ensure the ability and judgment of evaluators. The evaluation method can be proposed by the colleagues in the factory (including contractors) or the stakeholders of the external units to the supervisor of the unit, and through the implementation of the task force compilation, review, evaluation and tracking of relevant improvement plans. In addition, the establishment of internal and external communication procedures allows employees to participate in incident determination of inquiry and hazard risk assessment and control methods. In this way, all relevant employees, contractors, suppliers, and stakeholders can gain a timely understanding of the Company's occupational safety and environmental policies and the current status of operation of each requirement of the management system. We formulate routine and non-routine occupational hazard identification and risk assessment procedures based on the health and safety management system. We identify potential hazards and health and safety risks in each operating plant area and clarify management strategies through hierarchical control. Linyuan Advanced Plant considers the frequency, occurrence probability, possibility, and consequence score of an operation. After evaluation and calculation, the risks are divided into Levels 1 through 5, from greatest to smallest. Level 1 risks are the most serious and not allowed to happen and need to be strictly controlled.

To avoid harm to the health and safety of personnel of the Company due to hazards such as operations, activities, or services and facilities that cause damage to the health and safety of plant personnel or to the Company's finances, and to take early action to address occupational health and safety performance improvement opportunities, the control methods determined after risk assessment are (a) elimination, (b) replacement, (c) engineering control and work reorganization, (d) use of administrative control including training/signing/warning/administrative control, and (e) personal protection equipment. The control method must be considered according to the priority order of (a) to (e), and the most suitable control method must be determined to reduce the risk to an acceptable level.

Maanshan Plant also considers the possibility of risk and the consequences of an accident, dividing the risk into three grades from largest to smallest, designated as yellow, blue, and none. Every year, the main person in charge of the Plant organizes a leadership task force with members to inspect production systems, equipment and facilities, workplaces, and other parts and links according to their respective responsibilities. They carry out a comprehensive and systematic safety risk identification evaluation and conduct assessments and demonstrations with relevant external experts on sources of possible material hazards. For daily risk assessments, the safety risk management and control leadership task force will identify new risk points arising from changes in the environment and production process based on safety production problems found in the comprehensive inspections and daily inspections. The list of risk points will be supplemented and revised by the safety and environmental protection unit. If an employee of Maanshan Plant finds the work at risk of danger, the related risky work can be refused in accordance with Article 32 of the Labor Contract Law of the People's Republic of China, which is not regarded as a violation of the labor contract. Anshan Plant considers the possibility of risks and accidents in a similar manner to that of Maanshan Plant. The risks are divided into three grades of orange, yellow, and blue going from largest to smallest, and the safety risk identification is evaluated by person in charge and the leadership task force. The daily risk assessment identifies production safety issues found in comprehensive inspections and daily inspections, and the list of risk points will be supplemented and revised by the safety and environmental protection unit. Anshan Plant has established a combination of safety risk classification management and control and hidden danger investigation and management, and has formulated corresponding on-site disposal plans.

In addition, Anshan Plant has formulated the "Three Violations Management System." Employees are encouraged to refuse illegal instructions; employees are encouraged to refuse work or operation of facilities, equipment, and construction sites that do not meet the conditions for safe production; employees are encouraged to refuse violations of labor discipline. Employees are furthermore encouraged to report these three violations and rewards will be given to employees.

Regarding the risk management of contractors, CSRC expects to cooperate with contractors and focuses on quality and schedule. Contractors are requested to sign an agreement to ensure that they understand and follow the Company's risk notification. The implementation content is mainly aimed at labor health and safety, environmental and ethical requirements, labor human rights, etc., to prevent and mitigate negative impacts on occupational safety and health related to company operations. This can ensure that excellent raw material suppliers will supply high-quality and stable raw materials, and engineering contractors will provide professional construction skill, and provide sufficient construction manpower for the Plant.

Contractor Agreement Organization Meeting

Contractor Hazard Communication Course

Risk items and countermeasures of Linyuan Advanced Plant

Risk item	Explanation	Countermeasures
Oil leakage	▪ The pipeline instrument falls off, causing oil leakage, resulting in the risk of fire and explosion.	▪ The instrument equipment is regularly inspected and repaired to ensure the stability and normal function.
Hypoxia poisoning	▪ Personnel inhale harmful gas in the workplace and cause injury or death. ▪ Personnel enter the confined space to perform hypoxic work, causing injury or death.	▪ Install the carbon monoxide detection system in the working environment for environmental monitoring, and request employees to wear personal protective equipment.
Falling	▪ Appropriate protection fence is not installed for overhead operations, and there leads to a risk of falling for the operators.	▪ Install appropriate guardrails in accordance with the relevant facility regulations and request the personnel to wear appropriate protective equipment
Material collapse	▪ The warehouse shelves for material storage do not have a reference of relevant strength structure calculation book.	▪ Request the structural technician to calculate and install the relevant shelves according to the structural plan
Being entangled/ caught	▪ If the power equipment is not equipped with proper protection, there is a risk of being entangled and being caught.	▪ The power equipment is installed with proper protection fence, optical grating, two-hand operation and interlocking device, and have related protection measures.

Risk items and countermeasures of Maanshan Plant and Anshan Plant

Risk item	Explanation	Countermeasures
Poisoning, suffocation (Yellow)	▪ Inefficient combustion of exhaust gas furnace and causes monoxide poisoning, and suffocation.	▪ In the event of a poisoning accident, the on-site guardians quickly use the safety rope to drag the operator out and report the situation to the on-site person in charge, immediately call the police, and take emergency rescue measures on site with cardiopulmonary resuscitation and CPR.

Risk item	Explanation	Countermeasures
Boiler pressure vessel explosion (Yellow)	▪ Mis-operation, malfunctioning, or failure of the boiler self-control adjustment system causes the boiler to overheat or has a lack of water or to be overfilled with water, causing accidents such as furnace explosions.	▪ The boiler room has a dedicated person responsible for management and regular inspections. Regular testing of steam boilers, steam pipes and safety accessories are conducted.
	▪ Steam pipe rupture, exhaust pipe system leakage.	▪ Formulate safe operation procedures for boiler room stations. Employees must operate strictly in accordance with safety operating procedures.
	▪ The boiler workers do not obtain the corresponding special equipment operation qualifications before taking up their posts.	▪ Boiler workers must hold certifications to do their jobs.
	▪ The steam boiler, steam channel, steam drum, safety attachment, and other equipment are not inspected on schedule or have quality problems, causing the pressure vessel to explode.	▪ Regular testing of steam boilers, steam channels, and safety attachments are conducted.
Injury from machines (Blue)	▪ Protection fails for mechanical running parts and personnel touch the running parts.	▪ Dedicated personnel are to be responsible for the management and regular inspection of the mechanical devices. ▪ Protective covers should be installed on mechanical rotating parts; special lighting facilities and emergency stop devices should be installed.
	▪ Carry out debris removal and maintenance when the equipment is running may be dangerous.	▪ Formulate safe operation procedures for each piece of processing equipment. Employees must operate strictly in accordance with safety operating procedures. ▪ Set up safety warning signs at the parts where mechanical injury or electric shock may occur. ▪ It is strictly forbidden to carry out inspection, maintenance and cleaning operations on the equipment when the equipment is running.
	▪ Personnel does not wear labor protection equipment or stand improperly, causing iron filings to fly out and injure people.	▪ Operators need to wear work clothes, work protection shoes, hard hats, masks and other work protection equipment.
Electric shock (Blue)	▪ Electric leakage caused by contact with live equipment or damaged insulation facilities.	▪ The power distribution room is to have a dedicated person responsible for management and regular inspections
	▪ Illegal operation or failure of protective equipment and insulating tools.	▪ Formulate safe operation procedures for supply and distribution systems. Employees must operate strictly in accordance with safety operating procedures. ▪ The operation and maintenance personnel of the power supply and distribution system must hold certifications to do their jobs, and a system of listing and locking is to be implemented. ▪ Emergency lights, insulating rubber pads, leakage protectors, insulating tools, and so on are to be installed in the power distribution room. ▪ Formulate on-site disposal plans for electric shock safety accidents, and conduct drills every six months.

To reduce CSRC's impact on safety and the environment and to effectively reduce process incidents, Linyuan Advanced Plant began the promotion of Process Safety Management (PSM) in 2022. This was furthermore undertaken step by step through planning, execution, inspection and improvement, and so on to strengthen the safety management of process operations. We anticipate that a factory safety culture and system will be constructed and implemented from senior managers to employees and from equipment to personnel. The implementation of the plan is divided into two stages (36 months in total). The first stage is the introduction of the system, and the second stage is the in-depth strengthening of the system and technology.

7.2.3 Hazardous chemical management

Due to the characteristics of the chemical industry, the toxic chemicals that may be harmful to humans are often used. In order to protect the health of employees and prevent the occurrence of industrial safety accidents, each plant area of the CSRC Group complies with the laws and regulations to formulate chemical management guidelines in order to reduce occupational safety risks caused by hazardous chemicals.

Linyuan Advanced Plant adheres to Article 10 of the "Occupational Safety and Health Act" and Article 17 of the "Regulations for the Labeling and Hazard Communication of Hazardous Chemicals" for the EHS Office to be responsible for formulating the "Hazard Communication Plan" and updating it in due course. Maanshan Plant and Anshan Plant comply with the " People's Republic of China on the Prevention and Control of Solid Waste Pollution" to control and manage pollution from the use of oil and chemicals, and have formulated the " Regulations for Chemical Management " in accordance with the law. Both Maanshan Plant and Anshan Plant have built-in fixed alarms and portable alarms to monitor the status of toxic gases in the factory and call the police at any time to ensure personal safety.

Promotion of Process Safety Management (PSM)

First stage: System introduction

- Introduce favorable engineering practices
- Plan PSM 14 management systems
- Develop and revise implementation tools
- Strengthen operation processes
- Implement practical ways or build examples

Second stage: In-depth strengthening of the system and technologies

- Duties and responsibilities of personnel in charge
- Build functional assessment
- In-depth strengthen the technical aspects of PSM: PSM system audit and supervision, PSM index or maintenance performance index, PSM platform and CMMS system planning

Linyuan Advanced Plant Hazard Communication Plan

Items to be managed	Implementation contents
Hazardous chemical inventory management	▪ Make a list of hazardous chemicals and master the use and storage information of each hazardous chemical.
Safety Data Sheet management	▪ Compile the Safety Data Sheet to help employees understand the characteristics and potential dangers of hazardous chemicals. ▪ Relevant units should place the Safety Data Sheets in the workplace where they are easily accessible
Hazardous chemical labeling	▪ Relevant units should confirm that all hazardous chemicals within their jurisdiction have appropriate labels. The label should display the hazard diagram, name, hazardous ingredients, warning language, hazard warning messages and hazard prevention measures, as well as the manufacturer (supplier) name, address and phone number.
Priority management of chemicals	▪ Identify the relatively hazardous chemicals for priority management and handle regular updates and declarations from April to September each year.
Management of precursor chemicals	▪ Industrial raw materials of precursor chemicals refer to raw materials that can be used to manufacture drugs. Therefore, an online declaration is required in January, April, July and October of each year, and all declaration records should be kept for three years.
Management of dangerous plant materials	▪ Due to the characteristics of the industry, the Plant uses dangerous substances above the controlled quantity, therefore, it conducts reports regularly to the competent authorities in January and July of each year.
Hazardous chemicals assessment and hierarchical management	▪ The website approved by the competent authority is used for the assessment and hierarchical management of hazardous chemicals in our Plant. Its records are regularly reassessed every three years and retained.
Hazard general education training	▪ Employees in the plant (site) involved in manufacturing, disposing or using hazardous chemicals, such as working with hazardous chemicals entering the plant and engaging in unloading procedures, will be given the relevant safety and health education and training according to the nature of their work. (In addition, three hours of on-the-job training is required every three years.) The above-mentioned education and training are organized by the Safety and Environmental Office with the cooperation of all units, and records should be kept for three years.
Information management of types of chemicals in factories and warehouses and quantity configuration	▪ Manage the information of the types and quantity allocation of stored chemicals in order to make disaster relief decisions, and protect the safety of disaster relief personnel.

Maanshan and AnshanPlant Chemical Management Measures

Items to be managed	Implementation contents
Purchase management	■ For chemicals purchased and delivered to the plant, the Safety Data Sheet (SDS) should be obtained from the supplier and the safety labels should be placed on the storage containers. ■ The procurement of oil products and chemicals should be requisitioned by the relevant demand unit according to the material purchase requisition management method, and then the material department will purchase products and chemicals from qualified supplier. The supplier is required to provide information on the quality and performance of chemicals and chemical safety data sheets to ensure the quality and safe use of oil and chemicals. ■ When purchasing oil products and chemicals, selection should be made of those enterprises with production qualifications, and they can provide production licenses or business licenses issued by national statutory departments.
Use management	■ Gas leak detectors should be installed in places where Liquefied Natural Gas (LNG) is used. The detector should be tested regularly as required by the regulations to ensure normal functions and records should be available for checking. ■ The unit that uses chemicals shall establish the relevant chemical hazards notification and the personal protection wearing requirements as well as work safety SOP education and training standards for the individuals who will be using or be working in contact with the chemicals (e.g., through transportation/handling). ■ The personal safety protection equipment, emergency eyewash and shower equipment are installed in the chemical sites. The appearance and functionality of the hydrants/fire extinguishers are normal, and inspections are performed in accordance with the specified items and frequency, and inspection records should be available for checking. ■ The units using chemicals (such as laboratories, production units, etc.) should establish a chemical management list to record the storage location, storage capacity, storage methods of all chemicals. ■ A unit that uses chemicals must formulate an emergency response plan for abnormal handling and schedule a planned drill and the drill records must be available for checking. ■ The storage of oil products and chemicals should be classified and stored in different areas and assigned to special personnel for management. The labels should be accurate and mixed storage should not be allowed, and a management system should be established. ■ Special storage oil tanks must comply with relevant safety regulations and fire prevention regulations. Furthermore, corresponding ventilation, explosion proofing, fireproofing, lightning-proofing, alarms, fire-extinguishing to eliminate static electricity, protective fences, and other safety facilities must be installed according to the type and nature of the items. ■ Before entering the warehouse, dangerous chemicals must be inspected and registered, and the receipt form must be filled out. After entering the warehouse, they should be checked regularly by the custodian. ■ Containers containing oil and chemicals must be inspected before use to eliminate hidden dangers and prevent fire, explosion, and poisoning accidents. ■ It is strictly forbidden to wash equipment containing oil and chemicals without sewage treatment facilities, and it is strictly forbidden to directly discharge wastewater containing oil and chemicals. ■ In the production process, it is strictly forbidden to discard or place oil products and chemicals randomly, and they must be dealt with in a timely manner if there is any leakage.
Storage safety	■ Chemicals are not allowed to be stored in the open air and should be stored in an indoor environment and in a designated location with an exhaust ventilation system. ■ It is required that chemical hazardous signs are placed on storage containers, with fire extinguishers set within 2 meters and material safety data sheets (SDS). ■ Access control is implemented at the chemical storage place and non-related personnel are not allowed to access the place at will. ■ Chemical storage area management personnel should enhance fire prevention awareness. There must be fire warning signs at the storage places of oil products and chemicals, and good fire safety supplies should be prepared at the same time and fire safety exits installed. The fire safety facilities used in the warehouse should be in good condition and should be maintained regularly. ■ The distribution of oil products and chemicals must be operated in strict accordance with the relevant operating procedures to prevent leakage from polluting the environment during the distribution, and associated distribution records must be well kept. ■ Used waste oil and chemical barrels and containers must be collected and stored in the hazardous waste temporary storage room, and the relevant units must be entrusted for disposal.

Items to be managed	Implementation contents
Safety controls of inflammable and explosive chemical hazardous materials	▪ There must be product instructions when using flammable and explosive chemicals. The instructions must include information on the flash point, ignition point, self-ignition point, and explosion limit of the article as determined by the statutory inspection agency, as well as precautions for fire prevention, fire extinguishing, and safe storage and transportation. ▪ The storage of flammable and explosive chemicals must meet the following conditions: 1. Special areas, freight yards, or other special storage facilities must be managed by trained and qualified personnel. It should be classified and stored item by item according to the "List of Dangerous Goods." Inflammable and explosive chemicals with conflicting chemical properties or different fire extinguishing methods must not be stored in the same area; and they should not be stored in excess quantities. 2. Warehouses for flammable and explosive chemicals must establish a system for warehousing acceptance, delivery inspection, and warehousing registration. Any packaging and signs that do not meet the national standards, or are damaged, incomplete, leaking, deformed, or deteriorated or decomposed are strictly prohibited from storage. 3. When delivering flammable and explosive chemicals, management personnel must check the user's receipt to prevent misuse and mixed use.

7.3 Management of Emergencies

7.3.1 Emergency management measures

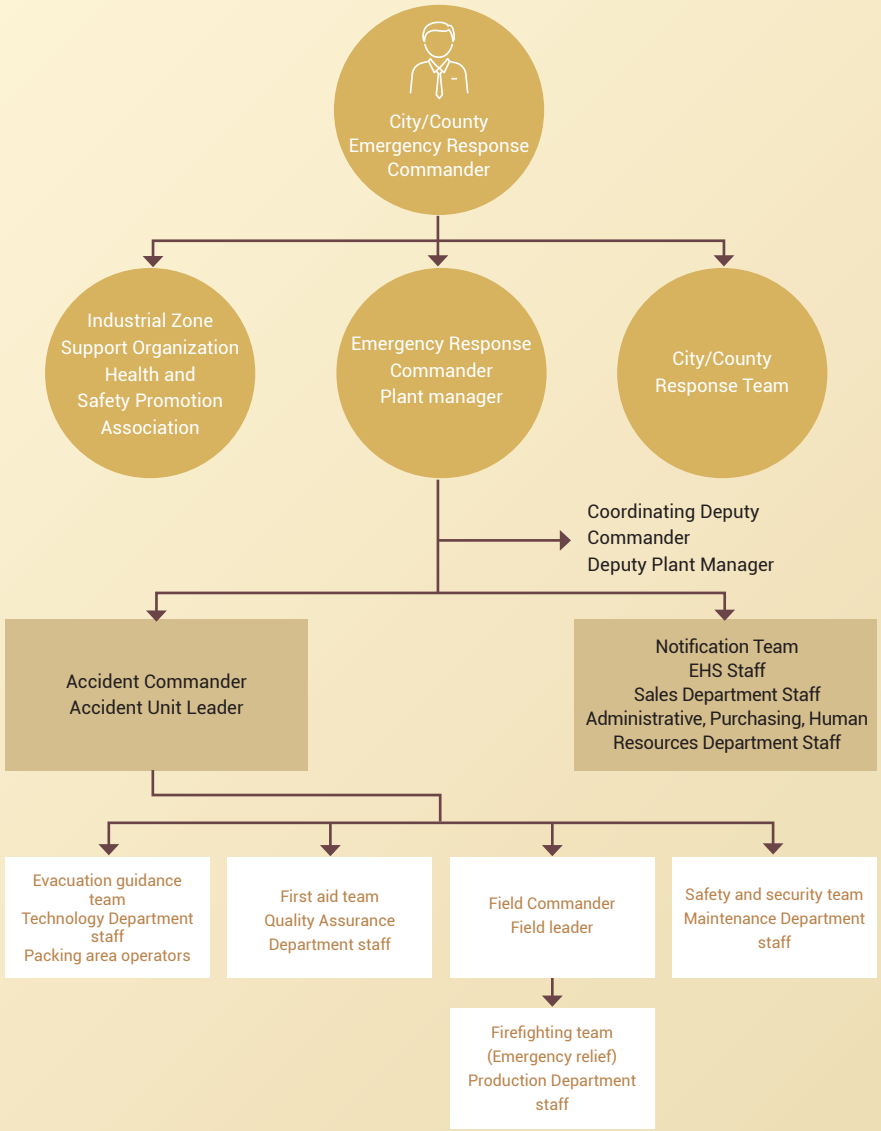
CSRC attaches great importance to the handling and immediate notification procedures of industrial safety accidents, and actively eliminates potential hazards in the workplace through its "Hazard Identification and Environmental Safety and Health Inspection Mechanism." The plant area usually strengthens voluntary inspections, and initiates abnormal notification and emergency response procedures when any accident or abnormal event occurs. Employees need to leave their work position as quickly as possible to report and ensure that the severity of the accident is minimized as soon as possible. Afterwards, the site must be controlled according to the severity of the accident, strictly investigate and issue a review report, and include the results as a reference for the annual review and improvement of the occupational safety system to achieve the goal of creating a healthy and safe working environment for employees.

We also convey the response to an emergency at work in the education and training courses for each recruit. When there is immediate danger in the workplace, the employer or the person in charge of the workplace should immediately stop operations and make workers evacuate to a safe place. When a worker discovers that there is an immediate danger while performing his duties, he may stop the operation and retreat to a safe place on his own without endangering the safety of other workers and immediately report such to the direct supervisor. We also promise not to dismiss, transfer or stop payment for the workers mentioned in the preceding paragraph for their wages during operations, or subject them to other disadvantages.

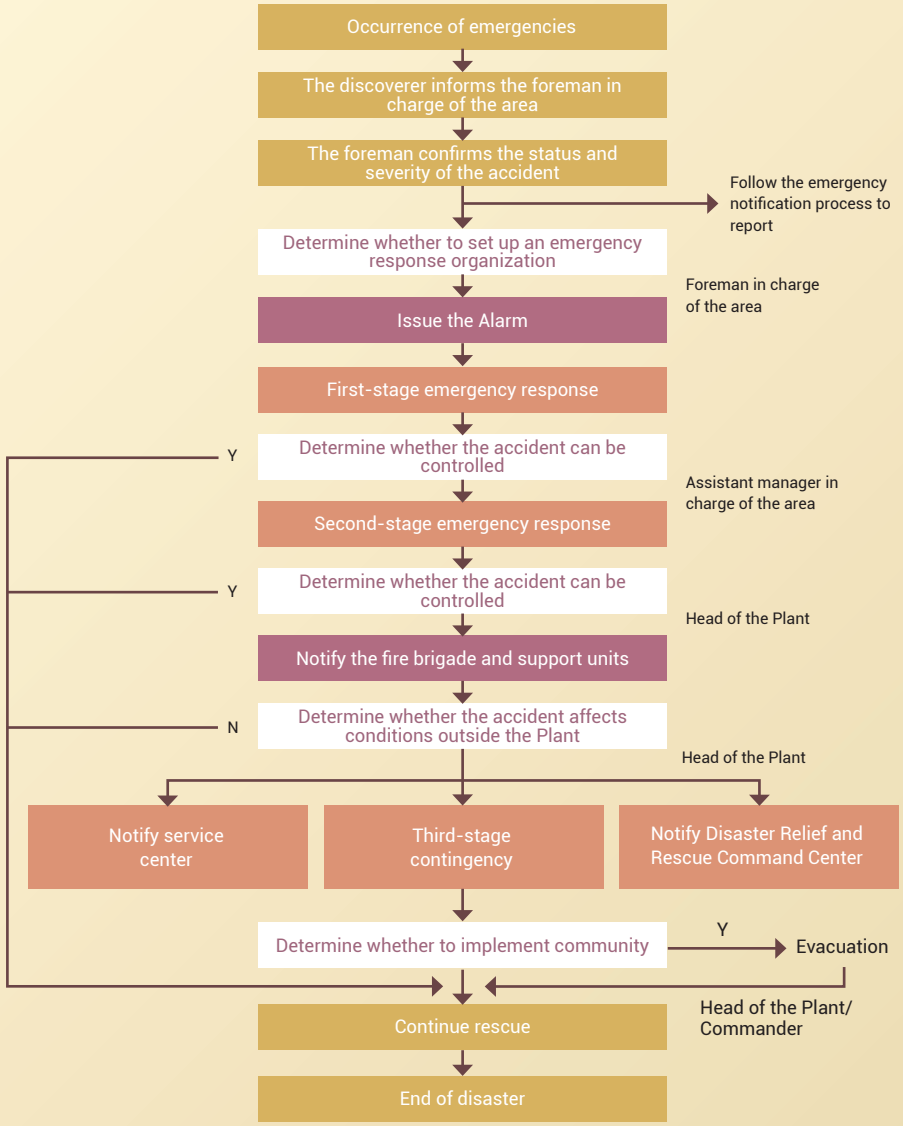
7.3.2 Emergency response plan operations

When an emergency occurs, the foreman of the jurisdiction is notified first, and the foreman decides whether to set up a response organization and enters a Level 1 accident response. If the situation cannot be controlled, it will be upgraded to Level 2. At this time, it will be commanded by the designated class and notification will be given to support units such as the fire brigade. When the situation is upgraded to Level 3 and indicates that it will spread its effects outside the plant, a complete emergency response plan organization will be activated for immediate management, and relevant units inside and outside the plant will work together to deal with the crisis.

System diagram for plant emergency response



Emergency response plan operation process



Hierarchical control

Level 1	Level 2	Level 3 (Incidents expending outside of plant)
An accident that causes minor injuries to fewer than five people, or a direct economic loss of less than NTD 500,000 and more than NTD 100,000. For a small amount of harmful or polluting substances leaks in the factory, small fires, or personal injuries that the on-site personnel in the jurisdiction can handle it by themselves.	An accident that causes serious injuries to fewer than three people, or minor injuries to more than five people, or direct economic loss of less than NTD 1 million and more than NTD 500,000. For a large amount of harmful or polluting substances leaking in the factory, medium-sized fires, or personal injuries that can be dealt with by seeking the personnel of other units or jurisdictions in the factory, and do not need to seek the support of units outside the factory.	An accident that causes more than one death, or serious injury to three or more people, or a direct economic loss of more than NTD 1 million. When a large volume of harmful or polluting substances are leaked or there are large-scale fires, they may spread to neighboring factories or homes, and must seek rescue assistance from units outside of the plant.
Head of site command: Foreman on duty Emergency response command center: Control room	Head of site command: Head of accident unit Emergency response command center: Accident unit office	Head of site command: Inside the plant: Plant Director Outside the factory: Kaohsiung City Disaster Relief and Rescue Command Center; Maanshan Disaster Relief and Rescue Command Center; Anshan City Disaster Relief and Rescue Command Center Emergency response command center: Plant Director Office

7.3.3 Emergency and fire safety training

Each plant of CSRC responds to potential crises by having an annual emergency response drill plan. This is aimed at making personnel familiar with the process flow through continuous training. Linyuan Advanced Plant conducted the Linyuan Industrial Park Area Joint Defense Emergency Response Drill Activity in 2022. Linyuan Industrial Park Service Center, a division of the Industrial Development Bureau of the Ministry of Economic Affairs, issued to Linyuan Advanced Plant a certificate of appreciation that praised the spirit of mutual support to neighboring factories in the area. Maanshan Plant conducted a confined space emergency drill in 2022 to strengthen the skills of self-rescue and rescue in case of accidents. In 2022, Anshan Plant held "Firefighting Equipment and Facility Usage Training", "Fire System Linkage Training", and "Fire Laws and Safety Knowledge Training" three times in total, and simulated factory equipment fire explosion and other related drills seven times to ensure the implementation of fire protection concepts. In addition, "Fire Control Room Duty Personnel Training" was carried out to compile the fire protection task force in the factory. Regular training and assessment by external fire safety teams is conducted to obtain building intermediate firefighter certification. At the same time, Anshan Plant operated jointly with a range of units in the location in 2022, including the Lishan District Government, the Emergency Bureau, the Environmental Protection Bureau, and the Fire Department to carry out linkages in emergency drills involving production safety accidents. These efforts were intended to improve the emergency self-rescue skills of businesses and the emergency response capabilities of the whole area to ensure timely, rapid, and safe handling of emergencies among businesses, to minimize the loss of life and property, and to maintain the production safety of all production units in the area.

Linyuan Advanced Plant Industrial Park Area Joint Defense Emergency Response Drill Activity

Linyuan Industrial Park Area Joint Defense business promotion effectiveness briefing, CSRC was in first place

Maanshan Plant, "Confined Space Emergency Drill"

Linyuan Advanced Plant and neighboring businesses and local fire safety teams conducted area joint defense emergency response drill and physical drills for chemical incidents





Anshan Plant, "Firefighting Equipment and Facility Use Training," "Fire System Linkage Training," "Fire Laws and Safety Knowledge Training," and production safety accident emergency drills






7.4 Health Service and Promotion

7.4.1 Occupational health services

Health is the greatest wealth in life, and the health of colleagues is a factor that the CSRC attaches great importance to. As time advances, harm exists not only in industry activities; workers of all occupations may be exposed to hazards in the workplace. Problems are faced not only in terms of hygiene but also of health. In order to improve the health of all employees, CSRC continues to introduce the relevant safety and health measures through the PDCA mechanism while implementing, tracking and improving related procedures to provide high quality employee health and safety services. We also pay great attention to the personal privacy and security of employees. We do not track what is discussed with medical staff, protecting the rights and interests of employees.

In addition to occupational health services, CSRC also provides all employees with personal health checkups at cooperative hospitals every year. In addition to the personal health check services for employees before and on duty, Maanshan and Anshan Plants provide personal health checks upon resignation to help workers get the most complete health care. After the inspection report of Linyuan Advanced Plant is released, cooperative hospitals will also provide temporary health consultation services for colleagues whose inspection items are abnormal.

To improve the health protection of employees when they work in the practice site, Linyuan Advanced Plant has upgraded the temporary factory health service to the appointment of full-time nurses, and continues to care for the health of employees. In addition, CSRC plans special physical examinations for new employees and conduct the Nordic Musculoskeletal Questionnaire (NMQ)[Note] as well as occupation-related special health inspections. The target is colleagues who work in environments that are particularly hazardous to health. (This includes those featuring high temperatures, noise, ionizing radiation, abnormal air pressure, lead, lead alkyl compounds, dust, organic solvents, specific chemical substances, yellow phosphorus, and other operating environments that are particularly hazardous to health.) In addition to plant employees, Linyuan Advanced Plant conducts disease assessments for contractors to determine their suitability for 30 types of operations before they can enter the plant for training. Cardiovascular disease or abnormal hearing would make one unsuitable for noisy work, high blood pressure or heart disease would mean an individual is assessed as not suitable for high-temperature work. These and other regulations are in place to ensure the safety of each project and personnel of CSRC.

Maanshan and Anshan Plants also implement special health checks every year according to occupational characteristics. In 2022, the inspection rates of Maanshan Plant were 100% for dust, 100% for noise, and 100% for xylene, and this certainly strengthened occupational health management and services for colleagues. According to the “Liaoning Provincial Labor Protection Measures for Female Workers,” two items of gynecological examination and cervical cancer examination have been newly added to the health examinations of female employees in Anshan Plant. The general health examination is conducted once a year, and 232 people participated in the health examination in 2022 in Anshan Plant. In addition, Anshan Plant formulates the annual physical examination plan and the frequency of occupational illness inspection items are in accordance with the "Occupational Health Surveillance Technical Specifications." Classification of productive dust operations encompass Level I, which examine once every 4 years; Level II and above will be need to examine once every 2 to 3 years; 8-hour equivalent sound level of workplace noise ≥ 85 dB, will have to examine once a year; between 80~85 dB, will need to examine once every two years. In 2022, 158 people participated in the occupational illness physical examination, and the occupational illness physical examination rate was 100%. For contractor injuries, Anshan Plant requires annually contracted contractors to submit a worker's medical examination report every year.

Note: Nordic Musculoskeletal Questionnaire: A Questionnaire commonly used to survey the types of musculoskeletal injuries and provide recommendations for improvement. After identifying a workstation or operation that may be at risk for musculoskeletal injury, those with a soreness level may be included in those who may need to be evaluated.

7.4.2 Identification and management of occupational illness

Based on existing hazard identification, Linyuan Advanced Plant has identified two kinds of specialty hazardous operations including dust and noise, and implemented control and training for the existing special hazard operations, such as hearing protection education and training and respiratory protection education and training, or reducing exposure time and other related risk control measures. In terms of personnel, it is not only limited to the control of the job site. It also provides general and specialized health checks every year that are superior to the regulations to ensure that employees can safely perform operations in Linyuan Advanced Plant. In 2022, according to the statistics of special health examinations for dust and noise, no one exceeded level 2 in the health classification.

Linyuan Advanced Plant
Potential risk of occupational disease number of worker deaths in 2022 (person)

Dust	Noise
0	0

Emerging occupational injuries and diseases have risen in recent years, and individuals would be harmed by their physical, psychological, and social environments. This is also an issue of concern for Linyuan Advanced Plant. Linyuan Advanced Plant has established and implemented plans for the prevention of musculoskeletal injuries, prevention of diseases caused by abnormal workloads, prevention of illegal infringements in performing duties, and maternal health protection. We seek to protect against and reduce the injuries suffered by employees due to physical and mental load in their daily work. To enable employees to find relief after their hard work, we have hired masseurs to work every Thursday to relieve the tense muscles of employees on the spot. In addition, a breastfeeding room has been set up in the Company for employees who need to breastfeed and collect milk. We care for female employees who must consider the hardships of family and the workplace to enables female employees to exercise their strengths without any worries.

In order to provide employees with the most important health services and prevent occupational injuries caused by occupational diseases, Maanshan Plant and Anshan Plant comply with the local occupational disease prevention and control laws to identify occupational diseases with potential risks from the 10 categories and 115 occupational diseases defined in the code. Five types of occupational diseases were identified: pneumoconiosis, occupational ENT diseases, physical factor occupational diseases, occupational skin diseases and occupational eye diseases. In 2022, the number of deaths of all employees and non-employees according to these five types of occupational diseases was 0. No cases of occupational illness occurred. Maanshan and Anshan Plants have formulated the “Measures for Tiered Management and Control of Occupational Hazard Risks,” so that risks are controlled based on hierarchical management. Furthermore, it is hoped that more relevant measures will be refined in the future and in line with international standards, in the hope to learn from the past and protect employees from irreversible occupational injuries.

Maanshan Plant and Anshan Plant
Potential risk of occupational disease number of worker deaths in 2022

- Pneumoconiosis 0
- Occupational ENT diseases 0
- Occupational diseases from physical factors 0
- Occupational skin diseases 0
- Occupational eye diseases 0

7.4.3 Employee health promotion

Linyuan Advanced Plant has signed a contract with the health check hospital to hold health seminars and doctor's health check consultations every quarter. Furthermore, we regularly provide information about mental health promotion so that colleagues are well taken care of in terms of both physical and mental health. As we adhere to the principles of managing employee health and exceeding regulatory requirements, CSRC has contracted with occupational physicians from Kaohsiung Chang Gung Memorial Hospital to handle the following health management related tasks:

- Participate in the development, planning, promotion and implementation of the labor health service plans.
- Identify and evaluate labor hazard factors, working environment assessments and risks.
- Based on the risk assessment results, propose assessments and suggestions for risk notification, medical consultation, health education, health education guidance, work adjustment or job replacement.
- Assessment of occupational diseases and work-related diseases, health examination of special hazard health work and health management classification examination, assistance in work selection and assignment, and plans for returning to work, etc.
- Medical services and referrals for occupational and non-occupational injury as well as disease diagnosis.
- Provide a physio-medical assessment for the personnel using breathing/noise protection gears.
- Assist in reviewing the implementation performance of the labor health services as well as the related physical and mental health hazards prevention programs.
- Regularly report the implementation status and performance of labor health services, and propose suggestions for improvement.

CSRC Labor Health Promotion Service, Activities and Active Care Program

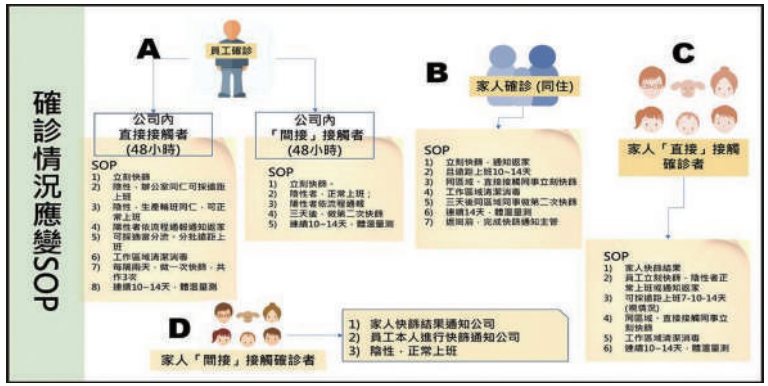
- Newcomer abnormal physical examination interview
- Personal health consultation
- Introduce health management system data into EHS
- Revision of the maternal health protection plan
- Revision of prevention plan for diseases caused by excessive workloads
- Discussion of health management of middle-aged and elderly workers
- Health promotion lectures, including stress management and emotional adjustment in the workplace; how to restore vitality and a new life after the COVID-19 pandemic; soothing shoulder and neck pain by self
- Marathon and walking competitions

Linyuan Advanced Plant health lecture

7.4.4 Pandemic prevention and control measures

Starting from February 2020, COVID-19 caused a worldwide pandemic. After two years, this public health crisis had gradually subsided by the end of 2022. During this period, to maintain the basic living needs of employees and ensure their health and safety, and in addition to complying with the response orders issued by the government, CSRC formulated internal health management policies to actively reduce threats to the health and safety of employees from the pandemic, and to avoid material impacts on the normal operation of the Company. Also, CSRC provided paid public leave for self-health management employees who were isolated at the request of the employer in accordance with the law. Other employees with autonomous isolation were also provided salaries according to leave, giving salary rights for employees. In addition to formulating relevant policies, if a confirmed case is encountered, it must be immediately reported to the factory personnel and relevant SOPs established.

1. Non-essential visitors are not allowed to enter the plant or office area, and are requested to make good use of video conferences
2. It is not allowed to work across plants to reduce the risk of transferred infection
3. If colleagues feel unwell, they are recommended to take sick leave and rest at home
4. Masks must be worn in the plant
5. During the pandemic, colleagues are advised to reduce social activities to reduce the risk of infection
6. For those eligible for vaccination, it is recommended to get the COVID-19 vaccine as soon as possible
7. Colleagues should wash hands frequently, wear a mask, and maintain good pandemic prevention habits



SOP of Diagnosis situation response

Maanshan Plant and Anshan Plant set up the leadership group for the prevention and control of the COVID-19 pandemic after the outbreak of COVID-19, in order to command the pandemic prevention and control work in unity. The main tasks of the leadership group are to carry out personnel management, environmental disinfection, daily monitoring, pandemic publicity, material storage and so on. The "Pandemic Prevention Report Liaison Group" submits daily reports on plant management to control the entry and exit statuses of the plant personnel, urges employees not to leave the plant area unless necessary and actively cooperates with the community to conduct routine nucleic acid testing. Before overseas personnel enter the plant, it is implemented strictly the upper management pandemic prevention requirements, i.e., quarantine at home, stick seals, with door magnetic sensors and conduct regular nucleic acid testing. The drivers from outside are tested with nucleic acid. They must not leave their vehicle unless necessary, must stick seals and do closed-loop management. Employees must wear masks in public places and maintain a safe social distance.

7.5 Occupational Safety and Health Education and Training

7.5.1 Occupational safety and health education and training for employees

CSRC requires new employees to participate in a 6-hour course on "Health and Safety Education and Training for New Employees" and must pass a test. Occupational health and safety education training are also regularly organized for existing employees every year, and promotion is made for management education and training in respect to the working environment, equipment, and hazardous substances. This improves employees' safety awareness so that they can master emergency response and self-rescue abilities; and it ensure the effectiveness of education and training through various evaluation methods such as written examinations, oral examinations, practical exercises, and study reports.

The types of training courses implemented by Linyuan Advanced Plant in 2022 included education and training related to occupational health and safety, education and training related to personal protective equipment, and other education and training related to safety and health. 196 full-time employees participated as attendees with total training hours of 8,230 hours.

2022 Occupational Safety and Health Education and Training Implemented by Linyuan Advanced Plant

Occupational health and safety related education and training (including hazard education and on-the-job health and safety education and training)		Personal protective equipment related education and training (including on-the-job health and safety education and training)	Other education and training related to safety and health (including on-the-job health and safety education and training)
◆ Supervisor education and training ◆ Hearing protection education and training ◆ Health lecture: Metabolic syndrome ◆ Health lecture: Physical fitness ◆ Occupational Health and Safety Committee job duty education and training ◆ Respiratory protection education and training ◆ Safety education and training for overhead cranes, cranes, and stackers ◆ Traffic safety briefing and training ◆ Metabolic syndrome avoidance course ◆ AED emergency ambulance course	◆ Incident notification and handling principles education and training ◆ Training for construction safe operations and risk identification ◆ Self-defense fire standard drill education and training ◆ Accident notification and handling procedures ◆ Prevention of falling in high-risk operations ◆ Poor air quality emergency response drill education and training in 2022 ◆ Firefighting team education and training	◆ Wearing of SCBA personal protective equipment and European style fire safety apparel education and training ◆ Specifications for the use of protective equipment	◆ independent use education and training for COVID-19 rapid screening reagent ◆ Tips for diagnosis and prevention of COVID-19

Maanshan Plant regularly conducts occupational safety information sharing and safety training in weekly supervisor meetings, and holds safety training and briefing courses every quarter. These include interpretation of the New Safe Production Law, a Briefing on Working at Heights, a safety production warning educational film, and a briefing on post-holiday work resumption and production safety matters. Every month, the Plant Director leads the heads of relevant departments to conduct factory inspections and the implementation of occupational safety training for each unit. Maanshan Plant implemented Occupational Health and Safety training in 2022, and 195 employee attendees participated for total training hours of 1,950 hours.

Anshan Plant conducts regular monthly occupational safety information sharing and safety training in supervisor meetings. In 2022, 25 planned training sessions were conducted in Anshan Plant. Furthermore, experience transmission and safety training advocacy courses were set up every month to explain and learn from industrial safety incidents in the same industry and to promote the safe use of equipment. This aimed to enhance employees' safety awareness to ensure their safety and health, while strengthening equipment operation management, personnel training, inspection, and improving the dust collection system to ensure the normal operation of all environmental protection equipment. Every month, Plant Director of Anshan Plant leads the heads of relevant departments to conduct factory inspections and the implementation of occupational safety training for each unit. Anshan Plant implemented Occupational Health and Safety training in 2022, and 314 employee attendees participated for total training hours of 3,484 hours.

2022 Occupational Safety and Health Education and Training Implemented by Maanshan Plant and Anshan Plant

Production safety

- Safety training for all staff
- Three levels of education and training before entering the factory
- Briefing on 6S topic inspection standards
- Briefing on accident cases, safety knowledge
- Construction safety briefing during overhaul
- Heatstroke prevention and flood prevention knowledge training
- Special safety training for special equipment operation
- Special safety training for specialty operations
- Training on the use of personal safety protective equipment
- Training on the use of emergency rescue and protective materials
- Safety occupational health management personnel training
- Certificate for working at heights
- Certificate for electrical work operations
- Certificate for fusion welding and cutting operations
- Special operations certificate (forklift license)
- Special operations certificate (gantry crane driver)
- Contractor safety education and training
- Interpretation of the New Safe Production Law
- Briefing on Working at Heights
- Production safety warning educational film
- Briefing on returning to work and production after holiday, production safety matters promotion

Occupational safety

- Training of exposure to occupational hazards on special position
- Occupational health first aid knowledge training
- Occupational health training for all staff

Fire safety

- Fire control room duty personnel training
- Use of fire safety equipment and facilities
- Fire system linkage training
- Fire regulations and safety knowledge training

Environmental protection

- Environmental regulations training

7.5.2 Occupational safety and health education and training for contractors

Contractor education and training is an important part of CSRC's security management. In 2022, Linyuan Advanced Plant provided contractor-related education and training, including for hazard-related protective measures; for pre-operation protection plans involving high risks (hot fires and overhead/high places/hypoxia/annual repairs/excavation), for emergency notifications and public communications and so on. The number of participants was 2,393 and total training hours reached 14,358 hours. Meanwhile, in order to assist the contracted manufacturers to improve the working environment and eliminate occupational disasters, Linyuan Advanced Plant promotes and establishes a Labor Safety and Health Registration Family (hereinafter referred to as the Safety and Health Family), with the experience sharing and cooperation model of "big plants bringing along small plants," through its organization platform. In this way, it exchanges safety and health improvement experience, and assists the small- and medium-sized enterprises (in the non-industrial district) with weaker industrial safety to improve the working environment, and through professional assistance from county and city government disaster prevention counselors and core enterprises. Throughout the training enterprises understand the direction they need to pursue to improve their workplace environment and self-management capabilities, thereby reducing the occurrence of occupational disasters. On October 7, 2022, we took the initiative to invite the Kaohsiung City Government Labor Bureau and the Labor Inspection Office to jointly organize Health and Safety Family activities.

- Demonstrated the Company's determination to improve health and safety.
- Learned the health and safety advantages of other plants and shared better external resources that are not easy to self-obtain.
- Participated in training or activities organized by the Health and Safety Family for free.
- Obtained related tools and experience in implementing health and safety in other plants.
- Professional counselors and supporting tools assisted in the establishment and improvement of health and safety management.
- Used the website communication platform and regularly received the latest health and safety information.
- Professional counselors came to the plant to provide health and safety improvement suggestions.
- Received subsidies from the Labor Committee for SMEs to improve safety and sanitation facilities and implementation.
- Obtained counseling on engineering/facilities improvement techniques from the Labor Committee.

Health and Safety Family activities organized by Linyuan Advanced Plant

Safety and Health Family Experience Sharing: Mr. Chen, head of Hongyuan Mechanical Engineering Co., Ltd.

I benefited significantly after two lecture courses from the Safety and Health Family. In addition to meeting with more than 20 members and sharing valuable labor safety experiences, participants also shared in one another's existing labor safety resources and visited the safety devices set up in the working environments of labor safety model example (large manufacturers). This was done to enhance the labor safety awareness and standards of our small manufacturing facilities. At the same time, they arranged for counseling engineers to come to the factory to undertake professional technical guidance. There were several cotton openers in the factory, and the fact that two of them, the transmission belts had been exposed. Protective covers were added after counseling. In addition, a leakage circuit breaker was installed on the machine table to prevent employees from being injured by electric shock, and an automatic electric shock prevention device was installed on the welding machine. In terms of management, stipulation was made of health and safety operating standards, and this greatly improved the management of labor safety in preventing the occurrence of occupational accidents and ensuring the health and safety of workers. Under the leadership of the Safety and Health Family and counseling engineers, we carried out the promise of labor safety with an attitude of earnest implementation to achieve zero accidents and zero mishaps, and at the same time making money with working safety. We believe this was our biggest gain from participating in the Safety and Health Family.

Maanshan Plant implemented industrial safety lectures and training for contractors to assist contractor personnel in familiarizing themselves with the factory environment and with industrial safety and health and environmental protection regulations. In 2022, there were 467 participating attendees for total training hours of 467 hours.

Anshan Plant implemented industrial safety lectures and training for contractors. In 2022, there were 525 participating attendees for total training hours of 12,600 hours.

Safety training for contractors entering the factory in 2022 in Maanshan Plant and Anshan Plant

- Interpretation of the New Safety Production Law
- Briefing on Working at Heights
- Safety production warning educational film
- Briefing on returning to work and production after holiday, production safety matters
- Safety education and training for contractors before entering the factory
- Construction safety briefing during overhaul
- Contractor entry management procedures
- Special job ticket sign-off briefing

Contractor hazard communication course offered by Linyuan Advanced Plant

Contractor agreement organization meeting convened by Linyuan Advanced Plant

Contractor training process provided by Anshan Plant

Contractor evacuation drill process provided by Maanshan Plant

CH 8 Employees

Performance highlights

- Employees of the physically and mentally disabilities **exceeded the number of employees specified in the statutory standards**.
- The total training hours reached **14,260 hours** and the average annual training hours of employees was more than **24 hours**.
- In 2022, there were **no incidents related to human rights violations** in Taipei Headquarters, Linyuan Advanced Plant, Maanshan Plant and Anshan Plant.

Material topics: Employment Relations

GRI standards: GRI 3-3、GRI 401-1、GRI401-2、GRI401-3

Description of impact	Employees make up the irreplaceable foundation for business continuity. At CSRC, we treat employees with integrity and respect, and strive to create a diverse yet accommodating work environment.				
Policies and commitments	CSRC seeks to offer smooth communication channels for employees, maintaining a harmonious relationship between labor and management, and strengthening employee training and career development, so that employees elaborate potential and contribute to the company.				
Goals	Goals	Baseline year	2022 performance	Short-term (2023 ～ 2025)	Medium and long-term (2025 ～ 2030)
	Career development and training	2020	▪ Due to COVID-19 epidemic slowed down compared to the situation in 2022. Employees were gradually getting used to online course. Therefore, the number of training hours reached 24.21 hours, represented 31% increase year-on- year.	▪ The Carbon Black Academy has been established in 2022. The learning system of the Carbon Black Academy is rooted in general education and professional foundations of various positions, and gradually will expand to the capabilities required by the management level	▪ Build a career development blueprint of professional and management staff and critical talents reserved plan based on the carbon black college
	Working conditions	2021	▪ Held at least one Labor–management meeting every quarter as planned, collected employee feedback occasionally and announced improvements and progress to employees. ▪ In 2022, COVID-19 infected employees were able to take seven days of paid sick leave.	▪ Regular Labor–management meetings are held to discuss salary and benefits of employees and the health and safety of the work environment ▪ When government policies are revised, we immediately assess the impact and adjust internal regulations	▪ Encourage employees to submit problems through all kinds of communication channels and find out employee needs voluntarily ▪ When government policies are revised, we immediately assess the impact and adjust internal regulations
	Employee engagement	2021	▪ The survey response rate of the entire Group in 2022 was 91.7%. The average engagement rate of Taiwan's employees was 65.4% and that of China's employees was 85.8%. ▪ The engagement rate for Maanshan Plant and Anshan Plant in 2022 was 83.4% and 95.8%, respectively.	▪ Improve employee communication channels and help employees understand the company's goals and policies ▪ Carry out employee opinion survey every year to find out the engagement level of employee	▪ The employee engagement level for all plants reach 85 points and above ▪ Carry out employee opinion survey every year to find out the engagement level of employee
	Employee diversity, discrimination, and harassment	-	▪ The proportion of overall female employees and supervisors in CSRC was 22%. ▪ The proportion of female employees and supervisors in Taipei Headquarters and Linyuan Advanced Plant reached 23%. ▪ The proportion of female employees and supervisors in Maanshan Plant reached 28%. ▪ The proportion of overall female employee and supervisor in Anshan Plant reached 15%. ▪ 0 complaints of discrimination and harassment.	▪ 0 complaints of discrimination and harassment	▪ 0 complaints of discrimination and harassment
	Issues of labor, forced labor, and human rights	-	▪ In 2022, 0 complaints of human rights violations. ▪ In 2022, the human rights policy was promoted at Taipei Headquarters, Linyuan Advanced Plant, Maanshan Plant and Anshan Plant. All employees read the human rights policy online.	▪ 0 complaints of violations of human rights each year ▪ Human rights advocacy education and training are held every year. The current employee training rate and new employee training rate in Taipei headquarters and Linyuan Advanced Plant reach 80% and 100%, respectively	▪ 0 complaints of violations of human rights each year ▪ Human rights advocacy education and training will be held every year. Both employee training rate and new employee training rate in Taipei headquarters, Linyuan Advanced Plant, Maanshan Plant and Anshan Plant reach 100%
Responsible units	▪ Human Resources Department			▪ Human Resource Unit of each Plant	

Resources	As for talent cultivation, the total training hours reached 14,260 hours. The annual average training hours of all employee was over 24 hours.
Grievance mechanisms	Plant and office suggestion mailbox: csrc_hr@csrcgroup.com
Action plans	**Negative Impact Management** ▪ The employee seminar is held by each department. Employees not in supervisory positions are invited to talk with the human resource unit and collect opinions from employees. ▪ With regards to employee communication, we hand out satisfaction survey to new/resigned employees, collect employee's opinions, hold the employee seminar to listen to employee's opinions. We conducted the employee satisfaction survey of the entire Group for the first time in 2022, hoping to further find out employee needs and collect all kinds of suggestions for continuous development of the company. **Positive Impact Management** ▪ Provide a platform to encourage employees to put forward suggestions that are conducive to operational improvement. ▪ Encourage colleagues to exchange and share experience, implement experience inheritance and improve the professional knowledge and skill system of employees. ▪ Encourage colleagues to recommend outstanding personnel and enhance employees' participation in the company's growth. ▪ Establish the actions of organizational development and employee talent development as well as the operating standards for employees to participate in internal or external training to improve themselves and to stimulate employees' potential. ▪ As for reserve cadre, the department head is appointed as mentor when reserve cadre is on board to help solve problems during the training.
Evaluation of effectiveness	Carry out evaluation of effectiveness through all kinds of measures: ▪ Proposal and reward measures: The organization review committee executes preliminary and final review and approves the score for the employee. In each stage, the passing or contribution reward is granted to employees who passed the stage or made substantial benefits. ▪ Internal lecturer management measures: Organize internal lecturer training seminars and invite internal and external experts for internal lecturer review. Lecturers approved will be honored the lecturer certificate and praised in public. ▪ Employee referral incentive measures: After a new employee is referred by the current employee and on board, an incentive will be granted when the probation ends, and when the new employee has been for six months and a year. ▪ Training management measures: Carry out training need survey and evaluation every year, and the training plan depending on the need of each position, and execute the training as planned and acceptance of the training outcome.

8.1 Human Resources

8.1.1 Talent recruitment

Talent is the key to the development of an enterprise. CSRC Group adheres to the concept of suitable talent for suitable position and only the right person suitable for hiring, regardless of individual race, color, religion, gender, age, ethnicity, sexual orientation, disability, nationality, or marital status. In response to our development of our globalization strategy, with the goal of sustainable operation, CSRC actively recruits excellent talents to meet the challenges of the new generation and develop excellent milestones.

Both the Taipei Headquarters and Linyuan Advanced Plant of CSRC Group recruit personnel in accordance with the “Regulations on Recruitment and Appointment of New Employees.” The recruitment processes are in the order of talent demand application, talent selection, admission and reporting for duty, of which in the process of talent selection. In respect to talent selection, we primarily post recruitment information on the website of CSRC, job banks, Linkedin and campus job fair. In addition, we provide employee introduction incentives. After recruitment needs are opened, we encourage employees to recommend outstanding individuals to join the Company. We also entrust an external management consulting company to recruit talents, and CSRC pays recruitment service fees in accordance with the recruitment salary conditions and requirements. Moreover, CSRC provides more technical services to customers by cultivating professional and technical personnel, in order to respond to the competitiveness required by the global market and its supply chain, and is committed to cultivating product development and application researchers, global business management talent, and management professionals of upstream and downstream supply chain.

8.1.2 Personnel structure

There were 664 employees at the Taipei Headquarters, Linyuan Advanced, Maanshan Plant and Anshan Plant by the end of 2022. Due to the characteristics of the industry, most of the employees at Linyuan Advanced Plant, Maanshan Plant and Anshan Plant are male. In 2022, approximately 85% of the employees for Linyuan Advanced Plant were male, 71% for Maanshan Plant and 85% for Anshan Plant. In 2022, common non-employee workers of CSRC included cleaning staff, security guard and packaging worker, 197 in total. In addition, CSRC cares about employee diversity. There was one handicapped employee at Taipei Headquarters and four at Linyuan Advanced Plant, which exceeded the number of employees specified in the statutory standards.

Total number of employees

Item	Taipei Headquarters	Linyuan Advanced Plant	Maanshan Plant	Anshan Plant	Total
Male employee	21	166	139	193	519
Female employee	25	30	56	34	145
Total	46	196	195	227	664

Employee structure by gender, area, and employment contract

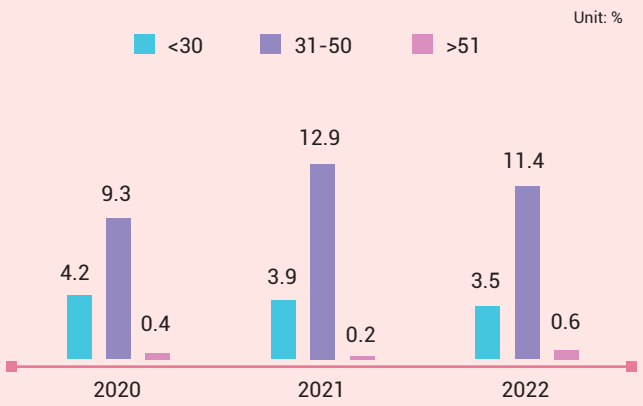
Area	Age	Male			Male in total	Female		Female in total
		Permanent	Contract			Permanent	Contract	
		Full time	Full time	Part time		Full time	Full time	
Taipei Headquarters	<30 years old	4	0	0	4	3	0	3
	30-50 years old	15	0	0	15	17	0	17
	>50 years old	2	0	0	2	5	0	5
Linyuan Advanced Plant	<30 years old	12	0	0	12	6	0	6
	30-50 years old	118	1	1	120	19	2	21
	>50 years old	32	2	0	34	3	0	3
Maanshan Plant	<30 years old	19	0	0	19	8	0	8
	30-50 years old	81	0	0	81	47	0	47
	>50 years old	39	0	0	39	1	0	1
Anshan Plant	<30 years old	25	0	0	25	4	0	4
	30-50 years old	136	0	0	136	29	0	29
	>50 years old	32	0	0	32	0	1	1

Note: There was no any employees with non-guaranteed working hours at the Taipei Headquarters, Linyuan Advanced, Maanshan Plant or Anshan Plant of CSRC in 2022, and there was no part-time job for contracted female employees.

Anshan Plant has been included in the report for disclosure since 2022. According to statistics, the overall turnover rate of CSRC (including Taipei Headquarters, Linyuan Advanced Plant, Maanshan Plant, and Anshan Plant) in 2022 was 15.8%, and it was lowered by 25.4% comparing with the overall turnover rate 21.2% in 2021. CSRC maintains a certain turnover rate in its proportion of new hires and resignations to enhance the competitiveness of the enterprise.

New employee ratio (By age)

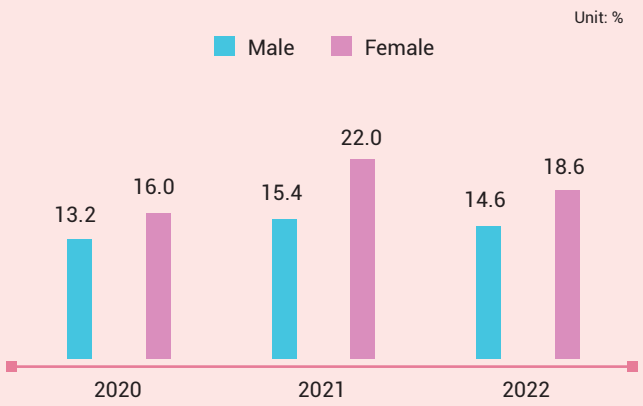
Unit: %



Note: The calculation method is the total number of new employees in the current year/the total number of employees at the end of the year.

New employee ratio (By gender)

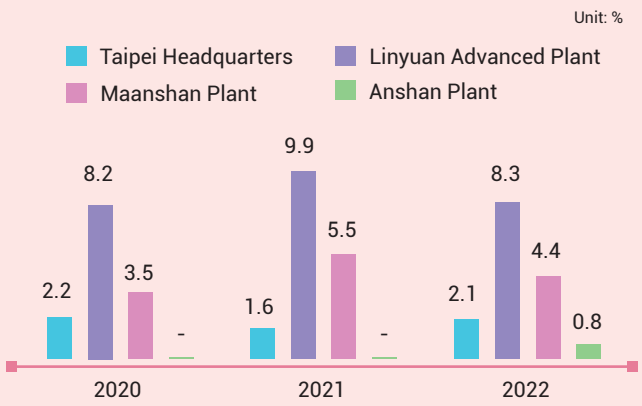
Unit: %



Note: The calculation method is the total number of new employees of the gender in the current year/the total number of employees of the gender at the end of the year.

New employee ratio (By operating location)

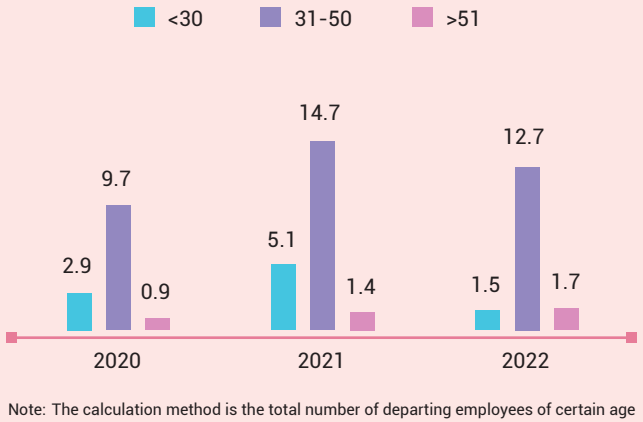
Unit: %



Note: The calculation method is the total number of new employees in the current year/the total number of employees at the end of the year.

Turnover ratio (By age)

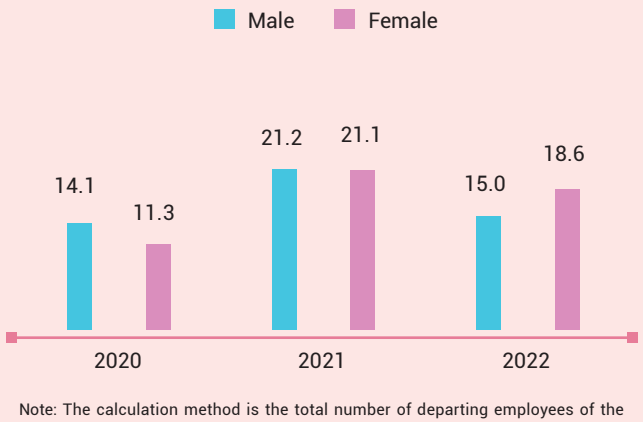
Unit: %



Note: The calculation method is the total number of departing employees of certain age group in the current year/the total number of employees at the end of the year

Turnover ratio (By gender)

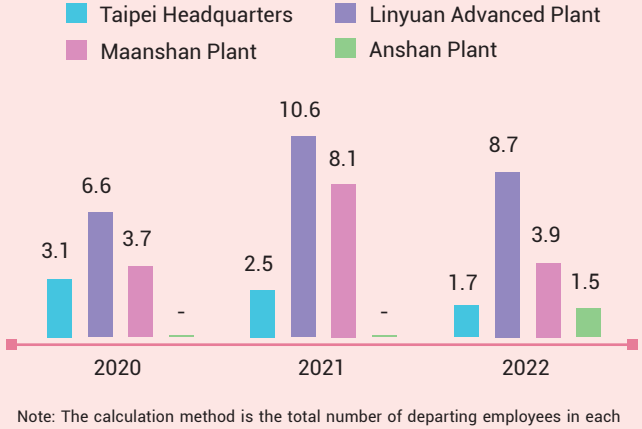
Unit: %



Note: The calculation method is the total number of departing employees of the gender in the current year/the total number of employees of the gender at the end of the year

Turnover ratio (By operating location)

Unit: %



Note: The calculation method is the total number of departing employees in each operation site in the current year/the total number of employees at the end of the year

Other employee diversity data information

Total employees by gender, age group and job title (Taipei Headquarters)

	< 30 (excluding 30 years old)		30-50 years old		> 50 (excluding 50 years old)		Total
	Male	Female	Male	Female	Male	Female	
Senior Supervisor	-	-	-	-	2	2	4
Mid-level supervisor	-	-	5	5	-	2	12
Basic level supervisor	-	-	5	5	-	-	10
Specialists	4	3	5	7	-	1	20
Direct staff	-	-	-	-	-	-	-
Subtotal	4	3	15	17	2	5	46
Percentage (by gender)	8.7%	6.5%	32.6%	37.0%	4.3%	10.9%	100%
Percentage (by age)	15.2%		69.6%		15.2%		100%

Total employees by gender, age group and job title (Linyuan Advanced Plant)

	< 30 (excluding 30 years old)		30-50 years old		> 50 (excluding 50 years old)		Total
	Male	Female	Male	Female	Male	Female	
Senior Supervisor	-	-	-	-	2	-	2
Mid-level supervisor	-	-	7	-	4	1	12
Basic level supervisor	2	-	7	3	1	-	13
Specialists	2	5	41	15	9	2	74
Direct staff	8	1	65	3	18	-	95
Subtotal	12	6	120	21	34	3	196
Percentage (by gender)	6.1%	3.1%	61.2%	10.7%	17.3%	1.5%	100%
Percentage (by age)	9.2%		71.9%		18.9%		100%

Total employees by gender, age group and job title (Maanshan Plant)

	< 30 (excluding 30 years old)		30-50 years old		> 50 (excluding 50 years old)		Total
	Male	Female	Male	Female	Male	Female	
Senior Supervisor	-	-	-	-	-	-	-
Mid-level supervisor	-	-	4	1	1	1	7
Basic level supervisor	1	1	8	4	3	-	17
Specialists	3	4	7	16	6	-	36
Direct staff	15	3	62	26	29	-	135
Subtotal	19	8	81	47	39	1	195
Percentage (by gender)	9.7%	4.1%	41.5%	24.1%	20.0%	0.5%	100%
Percentage (by age)	13.8%		65.6%		20.5%		100%

Total employees by gender, age group and job title (Anshan Plant)

	< 30 (excluding 30 years old)		30-50 years old		> 50 (excluding 50 years old)		Total
	Male	Female	Male	Female	Male	Female	
Senior Supervisor	-	-	-	-	-	-	-
Mid-level supervisor	-	-	4	-	2	-	6
Basic level supervisor	-	-	10	2	3	-	15
Specialists	7	2	23	14	1	1	48
Direct staff	18	2	99	13	26	-	158
Subtotal	25	4	136	29	29	1	227
Percentage (by gender)	11.0%	1.8%	59.9%	12.8%	14.1%	0.4%	100%
Percentage (by age)	12.8%		72.7%		14.5%		100%

Total employees by education level (Taipei Headquarters)

	Ph.D.	Master's degree	Bachelor's degree	College degree	High school and below (inclusive)	Total
Senior Supervisor	-	2	1	1	-	4
Mid-level supervisor	-	6	6	-	-	12
Basic level supervisor	-	7	3	-	-	10
Specialists	-	3	16	1	-	20
Direct staff	-	-	-	-	-	-
Subtotal	-	18	26	2	-	46
Proportion	0%	39.1%	56.5%	4.4%	0%	100%

Total employees by education level (Linyuan Advanced Plant)

	Ph.D.	Master's degree	Bachelor's degree	College degree	High school and below (inclusive)	Total
Senior Supervisor	-	-	2	-	-	2
Mid-level supervisor	3	4	4	1	-	12
Basic level supervisor	-	7	5	1	-	13
Specialists	4	20	38	5	7	74
Direct staff	-	1	36	23	35	95
Subtotal	7	32	85	30	42	196
Proportion	3.6%	16.3%	43.4%	15.3%	21.4%	100%

Total employees by education level (Maanshan Plant)

	Ph.D.	Master's degree	Bachelor's degree	College degree	High school and below (inclusive)	Total
Senior Supervisor	-	-	-	-	-	-
Mid-level supervisor	1	-	4	1	1	7
Basic level supervisor	-	1	5	4	7	17
Specialists	-	-	10	20	6	36
Direct staff	-	-	4	41	90	135
Subtotal	1	1	23	66	104	195
Proportion	0.5%	0.5%	11.8%	33.9%	53.3%	100%

Total employees by education level (Anshan Plant)

	Ph.D.	Master's degree	Bachelor's degree	College degree	High school and below (inclusive)	Total
Senior Supervisor	-	-	-	-	-	-
Mid-level supervisor	-	3	2	1	-	6
Basic level supervisor	-	2	9	1	3	15
Specialists	-	1	29	16	2	48
Direct staff	-	1	28	42	87	158
Subtotal	-	7	68	60	92	227
Proportion	0%	3.1%	30.0%	26.4%	40.5%	100%

The employee categories are described as follows:

Senior Supervisor	Mid-level supervisor	Basic level supervisor	Specialists	Direct staff
Special Assistant to the Chairman, President, Technical Director, Assistant Vice President	General Plant Director, Deputy General Plant Director, Plant Director, Deputy Plant Director, Senior Manager, Manager, Senior Deputy Manager, Deputy Manager, Project Manager	Assistant Manager, Project Assistant Manager, Supervisor, Deputy Supervisor, Acting Supervisor, Acting Deputy Supervisor	Consultants, Researchers, Chief engineers, Senior Engineers, Engineers, Senior Specialists, Specialists, Reserve Cadres, Assistants, Contract employees	Foreman, Technicians, Senior Analysts, Analysts, Maintainers, Senior Operators, Operators, Clerks

8.2 Talent Cultivation

8.2.1 General functional training

CSRC Group actively promotes the cultivation of talent and has drawn up "Training Management Measures" to respond to international development and future operational needs. At the same time, in order to implement the brand spirit, five complete training courses are planned for professional functions, core functions, management functions, environmental safety and health, and new personnel training. The scope of application includes regular employees of CSRC and subsidiaries under its direct jurisdiction (including the Linyuan Advanced Plant, Maanshan Plant and Anshan Plant). In 2022, approximately NTD 4,183,300 has been invested in employee education and training. In response to the changes in the learning mode brought about by COVID-19 and to help new employees understand the company, CSRC began to record digital courses in 2022 and has launched them online in 2023. Course themes include product application and production process introduction courses. The digital courses are aimed to break the constraints of time and space, so that employees can learn the knowledge and application of carbon black through videos on the first day of employment, so as to enhance their sense of identity with work and products.

Professional functions	Core functions	Management functions	Environmental safety and health	New personnel training
The professional knowledge or skill training required by each unit in response to the job title, such as procurement contract risk, rubber material science, electric vehicle development and products trend, AutoCAD and Python, etc.	General training activities for all levels that link the core values or strategies of the organization, such as the CSRC Brand and Value Training, carbon management education and training, and cross-cultural seminar, etc.	Training activities planned according to the management ability and responsibilities of supervisors at all levels: 1. New supervisor: Role and responsibilities of basic level supervisor. 2. Basic and mid-level supervisor: Goal setting and performance comment writing. 3. Senior supervisor: EMBA.	Cooperate with the environmental safety and health related training required by government laws and company policies, such as specific chemical substance operating training, first aid personnel safety and health on-the-job education and training, organic solvent operations supervisor training, carbon asset management training, process safety assessment personnel education and training, etc.	Basic training and on-the-job-related guiding activities for new employees, including basic knowledge application of carbon black, basic safety and health/ environmental protection/fire awareness and plant tours. Online courses are recorded for playback and application.

We carry out education and training surveys for various departments, conducting training needs interviews with supervisors to understand the needs of the department and provide corresponding training materials and courses to strengthen and enhance the ability of employees and build up their experience. The most participants course in 2022 was "Goal Setting and Performance Interviews." In 2022, the average training hours was 24.21, higher than in 2021. We will continue to optimize the face-to-face course, and plan to organize more online courses to adapt to the digital technology wave for employees to acquire enough learning and training resources.

Average number of training hours per employee in 2022

Employee category	Gender	Taiwan (Taipei Headquarters and Linyuan Advanced Plant)		Maanshan Plant		Anshan Plant	
		Training hours	Average training hours	Training hours	Average training hours	Training hours	Average training hours
Senior Supervisor	Male	128	32.00	-	-	-	-
	Female	38	19.00	-	-	-	-
Mid-level supervisor	Male	571	23.79	91	8.27	40	20.00
	Female	316	31.60	8	2.67	-	-
Basic level supervisor	Male	813	32.52	264	9.78	288	24.00
	Female	744	74.40	83	8.30	-	-
Specialists	Male	2,587	34.04	649	15.09	616	26.78
	Female	2,184	43.68	148	3.08	72	24.00
Direct staff	Male	1,805	16.12	912	30.40	1,664	32.00
	Female	175	29.17	40	8.00	24	24.00
Total		9,361	29.34	2,195	12.40	2,704	29.08

Training hours of employees in recent 3 years in Taipei Headquarters

Employee category	Gender	2020			2021			2022		
		Number of employees	Training hours	Average training hours	Number of employees	Training hours	Average training hours	Number of employees	Training hours	Average training hours
Senior Supervisor	Male	2	19	9.25	2	8	4.00	1	77	77.00
	Female	1	27	27.00	1	39	39.00	2	38	19.00
Mid-level supervisor	Male	6	174	29.00	6	122	20.25	4	62	15.50
	Female	5	74	14.80	7	138	19.71	7	80	11.43
Basic level supervisor	Male	3	82	27.17	4	71	17.75	5	216	43.20
	Female	7	162	23.14	6	140	23.33	6	438	73.00
Specialists	Male	7	381	54.36	6	149	24.75	10	128	12.80
	Female	15	457	30.43	13	289	22.23	14	645	46.07
Direct staff	Male	-	-	-	-	-	-	-	-	-
	Female	-	-	-	-	-	-	-	-	-
Total		48	877	18.27	46	1,529	33.23	49	1,684	34.37

Training hours of employees in recent 3 years in Linyuan Advanced Plant

Employee category	Gender	2020			2021			2022		
		Number of employees	Training hours	Average training hours	Number of employees	Training hours	Average training hours	Number of employees	Training hours	Average training hours
Senior Supervisor	Male	1	44	43.50	1	20	20.00	3	51	17.00
	Female	-	-	-	-	-	-	-	-	-
Mid-level supervisor	Male	12	490	40.83	13	277	21.31	20	509	24.45
	Female	1	28	28.00	1	21	21.00	3	236	78.67
Basic level supervisor	Male	19	516	27.13	12	156	13.00	20	597	29.85
	Female	3	105	35.00	2	36	18.00	4	306	76.50
Specialists	Male	54	1,520	28.15	49	1,070	21.83	66	2,459	37.26
	Female	19	566	29.76	27	289	10.69	36	1,539	42.75
Direct staff	Male	95	1,074	11.30	96	813	8.47	112	1,805	16.12
	Female	2	68	33.75	2	35	17.50	6	175	29.17
Total		206	4,409	21.40	203	2,716	13.38	270	7,677	28.43

Training hours of employees in recent 3 years in Maanshan Plant

Employee category	Gender	2020			2021			2022		
		Number of employees	Training hours	Average training hours	Number of employees	Training hours	Average training hours	Number of employees	Training hours	Average training hours
Senior Supervisor	Male	-	-	-	-	-	-	-	-	-
	Female	-	-	-	-	-	-	-	-	-
Mid-level supervisor	Male	5	44	8.80	6	-	-	11	91	8.27
	Female	1	-	-	1	40	40.00	3	8	2.67
Basic level supervisor	Male	13	160	12.31	12	16	1.33	27	264	9.78
	Female	4	176	44.00	4	18	4.50	10	83	8.30
Specialists	Male	21	194	9.24	16	2	0.13	43	649	15.09
	Female	19	192	10.11	25	50	2.00	48	148	3.08
Direct staff	Male	102	1,848	18.12	103	1,390	13.50	30	912	30.40
	Female	28	48	1.71	23	248	10.78	5	40	8.00
Total		193	2,662	13.79	190	1,764	9.28	177	2,195	12.40

Training hours of employees in recent 2 years in Anshan Plant

Employee category	Gender	2021			2022		
		Number of employees	Training hours	Average training hours	Number of employees	Training hours	Average training hours
Senior Supervisor	Male	-	-	-	-	-	-
	Female	-	-	-	-	-	-
Mid-level supervisor	Male	2	48	24.00	2	40	20.00
	Female	-	-	-	-	-	-
Basic level supervisor	Male	14	360	25.71	12	288	24.00
	Female	-	-	-	-	-	-
Specialists	Male	22	504	22.91	23	616	26.78
	Female	6	104	17.33	3	72	24.00
Direct staff	Male	68	1,312	19.30	52	1,664	32.00
	Female	2	48	24.00	1	24	24.00
Total		114	2,376	20.84	93	2,704	29.08

To respond to quick change of global environment and industrial profession, CSRC has offered diversified education and training courses to cultivate talents required for organizational operation and the development of the Group systematically. We also care about the actual feelings of employees and feedback after class. All internal training initiated by the Human Resources Department and employees applying for external training courses on their own will conduct a satisfaction survey, with focus on the learning response of curriculum design, lecturer performance, and personal learning benefits. If necessary, training, and related homework will be deepened to facilitate the acceptance of learning effectiveness and to enhance overall effectiveness of the course. 330 questionnaires were collected for course satisfaction in 2022, and the overall feedback was as high as 9.2 points (Full score is 10 points).

8.2.2 Employee function improvement project

Experience Inheritance and Knowledge Building Project

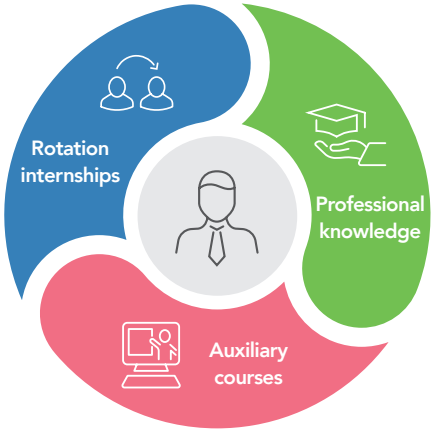
CSRC deeply understands the importance of internal communication among employees, and specially formulated its “Internal Lecturer Measures” (The scope of application of these measures includes regular employees of CSRC and subsidiaries under its direct jurisdiction, including Linyuan Advanced Plant, Maanshan Plant and Anshan Plant). In addition to conducting regular seminars on consensus cohesion strategy for senior executives, we also gather management consensus through activities to jointly establish future operation strategies as the basis for the development of various department goals and serve as the exchange of internal senior and high-level employees. In addition, we have started the “Experience Inheritance and Knowledge Building Project” since 2019, through the way of senior employees as mentor to transform their accumulated knowledge and technology experience over the years into the important teaching materials for the Company. During the creation of knowledge building project, senior and junior employees teach and learn from each other and discuss and interact with each other to provide a knowledge database for work process optimization and work efficiency improvement. In 2022, CSRC promoted the carbon black college as the training blueprint for talent cultivation. Based on the work manual, required knowledge and skills are designed in corresponding courses with required training time. The work effectiveness will be the goal for training.

Rehiring Senior Staff as Consultants

CSRC makes full use of the skills and experience of senior staff, rehiring retired senior employees as consultants for the Company. In 2022, Linyuan Advanced Plant rehired Yu Chou Shih, a senior staff of steam and electricity unit, and Chang Chin Teng, a senior staff of carbon black unit, as a contract engineer. They have up to 30 years of experience and help us cultivate new and current employees, build a knowledge base of production process, integrate and promote improvement plans for all plants and build a talent team.

Global Elite Program

CSRC Group actively responds to the sustainable development goals of the United Nations, and in response to the expansion of CSRC Group's overseas territory, we invite talents with forward looking, international perspective and willing to challenge overseas dispatch opportunities to join the CSRC Group team. We recruit and cultivate global management talents through our "Global Elite Program." Since 2021, the training period have been adjusted to 20 months. In addition to extending the rotation practices in each plant area, we increase the unit's deep cultivation stage to let members participate in medium and large-scale projects across departments and plants. Overseas internship will be arranged later to build and enhance cross-functional breadth and profession depth in all aspects. There was a total of 5 sessions of training by 2022, with 24 elite members have passed through the program. They are allocated in China, India, and Turkey respectively, responsible for managing the operation and production of overseas plants, and helping overseas factories with plant construction project.



8.3 Salary and Benefits

8.3.1 Salary and performance

Salary and incentives

In order to provide employees with comprehensive salary and incentives, CSRC Group conducts external market salary survey regularly every year to understand the industry salary standards, and through the performance appraisal of personal professional capabilities to calculate the salary with market competitiveness, and ensure that the level of colleagues' salaries have a certain degree of advantage over external markets. For key positions, we also design salary packages that are better than market conditions to cultivate excellent talents to serve as a helping hand to the continued growth of CSRC Group's operations.

In addition to the fixed salary, CSRC also provides qualified peer performance bonuses and rewards to effectively link the Company's operating results, the performance of each plant, and individual performance. This is done to improve team morale, increase productivity in the organization, and ensure that the overall rewards are more competitive to attract outstanding personnel to join. According to the "Measures for the Approval and Issuance of Annual Bonuses for Employees" of CSRC Group, a system of annual festival bonus and annual performance bonus has been established. The annual festival bonus includes year-end bonus, Dragon Boat Festival, Mid-Autumn Festival and annual performance bonus, while the annual performance bonus is paid to the employees based on the Company's annual operating performance and personal work performance and contribution. In addition, employees who have served for more than one year will be paid with two months' salary as a year-end bonus every year, and a half-monthly salary will be paid as a bonus during annual festivals such as the Dragon Boat Festival and Mid-Autumn Festival. For employees with less than one year of service, the annual bonus will be calculated based on the number of working days.

CSRC attaches great importance to gender equality and equal pay for equal work. The salary payment benchmark and basic starting salary are not different from gender, and the salary payment is mainly based on factors related to business performance, same industry salary level, job position evaluation and the Company's future operation needs. The scope of application of this management standard includes the official staff of CSRC Group and its subsidiaries under its direct jurisdiction (including Linyuan Advanced Plant, Maanshan Plant and Anshan Plant). Due to the industry specificity in the gender composition of talents in the industrial chain affiliated to CSRC Group, most of the workers in professional and technical positions in the factory are men, while women are mainly engaged in administrative/supporting types of positions. Comparing with market standards, there are differences in the level of different types of positions. Therefore, the salary difference between male and female in Linyuan Advanced Plant and Maanshan Plant is more obvious than that in Taipei Headquarters. In order to manage the difference in the salary structure of employees at Taipei Headquarters, Linyuan Advanced Plant, Maanshan Plant and Anshan Plant, CSRC Group conducts regular surveys by the Human Resources Department to ensure the appropriateness and rationality of salary payment.

The Salary Comparison of Average Salary Ratio of CSRC group in 2022 (male:female)

Item	Taipei Headquarters	Linyuan Advanced Plant	Maanshan Plant	Anshan Plant
Mid-level supervisor	0.93:1	1.25:1	0.54:1	- (Note 1)
Basic level supervisor	0.96:1	1.01:1	1.20:1	1.05:1
Specialists	1.07:1	1.37:1	1.19:1	1.06:1
Direct staff	- (Note 2)	1.09:1	1.31:1	1.13:1

Note 1: There's no female mid-level supervisor at Anshan Plant.
Note 2: There's no direct staff at Taipei headquarters.

Performance appraisal

CSRC's annual performance appraisal work mainly targets colleagues who are currently on duty for three months. Colleagues who have been employed for less than three months will be appraised based on the standards of new employees, in consideration of the fact that organizational fit and individual results are still forthcoming. In 2022, there were 247 employees in Taipei headquarters and Linyuan Advanced Plant in total, 175 in Maanshan Plant and 222 in Anshan Plant who fell within annual performance appraisal operations. All of them completed 100% of their assessments. In 2022, feedback from supervisors and employees on current performance management mechanism and system had been collected. Adjustment began at the end of 2022, including promoting a clearer and more consistent assessment standard. The second performance calibration meeting was held at the Linyuan Advanced Plant and the scope of performance calibration was extended to basic level supervisors. Through appraisal courses, the appraisal supervisors realize the importance of performance communication and remark composition, and the influence of appraisal on employees for their future career, to build a fairer, more just performance management system and process.

In addition, in order to make it more convenient and more immediate for colleagues to respond to performance, we have introduced an online performance management platform since 2019. In addition to fully recording the performance results and appraisal process of colleagues over the years, online performance management platform can also connect the goals and results between the management and colleagues. We have conducted evaluations based on objective standards and processes, established performance management measures. We implement performance management projects for employees every year. The performance management project procedures include employee goal setting, management approval, goal achievement tracking, annual performance appraisal, senior level executives and Chairman approval, and performance interviews.

Employees Eligible for Regular Performance Appraisal by Region and Number in 2022

	Number of Employees	Actual Number of Employees Completed the Appraisal	Assessment Percentage
Taipei Headquarters	73	73	100%
Linyuan Advanced Plant	174	174	100%
Maanshan Plant	175	175	100%
Anshan Plant	222	222	100%

8.3.2 Employee benefits

Insurance system

Taipei Headquarters, Linyuan Advanced Plant

- Social insurance (labor health insurance, labor pension)
- Group insurance (term life insurance, accident insurance, accident medical insurance, cancer insurance)
- Travel insurance
- Employers' liability insurance

Maanshan Plant

- Five types of insurance and one housing fund
- Employers' liability insurance
- High-temperature subsidy

Anshan Plant

- Five types of insurance and one housing fund
- Employers' liability insurance
- Heating bill
- High temperature subsidy

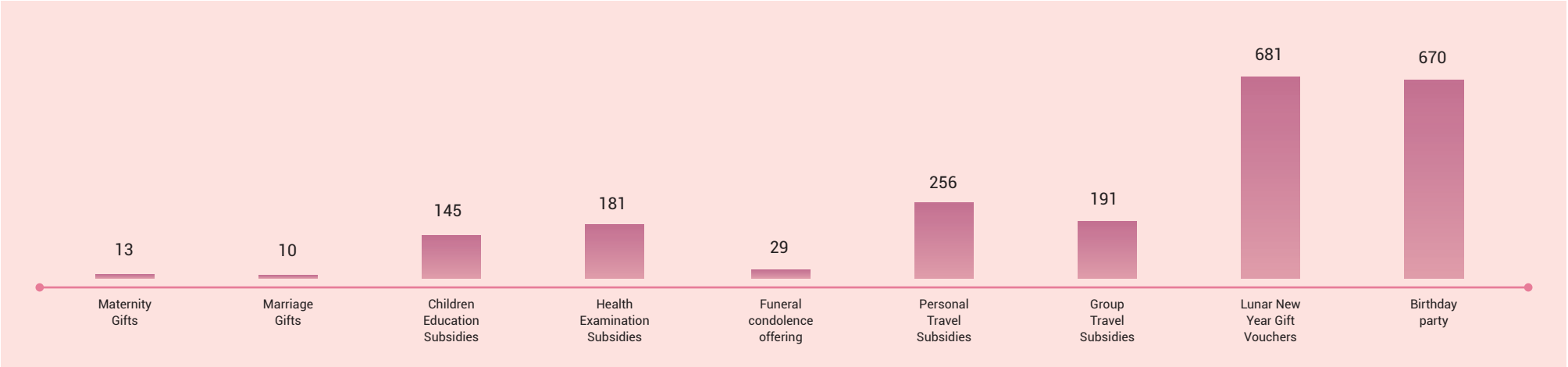
Retirement system

CSRC Group has set up a "Labor Retirement Reserve Supervision Committee" to regularly allocate retirement funds to Bank of Taiwan Co., Ltd. and regularly convenes committees to review the amount of employee retirement reserves, saving and expenditure, payments, and other matters to ensure employees' rights and interests. Among them, more than half are labor representatives. In addition, for employees who choose to adopt the new labor pension system, 6% of the monthly salary shall be paid to the employee's personal pension account in the Bureau of Labor Insurance in accordance with laws and regulations for protecting the rights and interests of employees.

Maanshan Plant and Anshan Plant plan the retirement system in accordance with the "Social Insurance Law" stipulated by the government of the People's Republic of China. Approximately 16% is set aside as pension insurance with a legally determined contribution rate. The retirement pensions of all working and retired employees are arranged by the local government. The pension system covers 100% of employees. Once the employees join the company, the company purchases five insurances for them (retirement insurance, medical insurance, unemployment insurance, work-related injury insurance and maternity insurance). When an employee is eligible for retirement, Human Resources will assist in handling the retirement work. The Social Security Retirement Section will calculate the retirement salary based on the number of years purchased by the employee and the balance of the account. After retirement, the Social Security Retirement Section will pay the retirement salary.

Other welfare measures

◆ The number of employees receiving the welfare allowance in 2022



◆ Employee Stock Ownership Trust Program

Taipei Headquarters and Linyuan Advanced Plant created Employee Stock Ownership Trust Program since 2019 where colleagues shall choose to withdraw a certain amount from their salary every month and the Company will allocate the same amount as a reward for participants, through regular and fixed investment in the Company's stocks. Employees are encouraged to move forward with the company, so that the interests of employees can be linked to the interests of shareholders and create a win-win situation for the Company, employees and shareholders. In addition to the monthly allocation of a certain amount from their salary income, from November 2021 onwards, the "Personnel Ready for Retirement Additional Deposit" and the "Single Self-raised Amount Sharing Program" were implemented. Colleagues shall submit their application in May and November each year, which strengthened the Company's overall benefits, and accumulate retirement reserves early for employees themselves.

◆ Childcare

CSRC adheres to a belief in gender equality. Female employees enjoy pregnancy leave without pay, prenatal check-up leave, and maternity leave. Male employees are entitled to paternity leave when their spouse gives birth. For employees with infant-care needs, we will handle the work of employees without pay for childcare leave in accordance with the “Gender Work Equality Act” and the “Implementation Measures for Infant Care Leave without Pay". Furthermore, after the expiration of the employee's period of leave without pay, we will arrange for a return to the original unit and position, and actively assist the employee to reintegrate into the workplace. There are no differences between the parental stays due to gender, position, and work area. Breastfeeding time is available for female employees twice a day (half hour each time). Both male and female employees can apply for childcare leave without pay. In Maanshan Plant and Anshan Plant, male employees are entitled to 10 days of paid paternity leave and female employees are entitled to 158 days of paid maternity leave, as required by the China's government.

	Taipei Headquarters		Linyuan Advanced Plant		Maanshan Plant		Anshan Plant	
	Male	Female	Male	Female	Male	Female	Male	Female
Total number of employees entitled to parental leave in 2022 (A)	-	1	5	1	-	4	4	2
Total number of employees used parental leave in 2022 (B)	-	-	2	1	-	4	3	2
Total number of employees entitled to be reinstated after taking parental leave in 2022 (C)	-	-	2	-	-	3	4	2
Total actual number of employees reinstated in 2022 after taking parental leave in 2022 (D)	-	-	2	-	-	3	4	2
Total actual number of employees reinstated in 2021 after taking parental leave in 2021 (E)	-	-	1	-	3	1	5	-
Total number of employees who took parental leave in 2021 and still working 12 months after reinstatement (F)	-	-	1	-	3	1	5	-
Application rate of parental leave without pay (B/A)	-	-	40%	100%	-	100%	75%	100%
Reinstatement rate (D/C)	-	-	100%	-	-	100%	100%	100%
Retention rate (F/E)	-	-	100%	-	100%	100%	100%	-

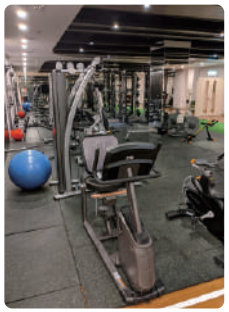
Our human rights policy provides diverse tolerance and equal job opportunities. We create a safe and healthy working environment and abides by the spirit of Taiwan's "Act of Gender Equality in Employment” and the “Special Regulations on Labor Protection for Female Employees" in Mainland China. We established the “Administrative Measures for Breastfeeding Rooms" in various places of the Company provided for use by colleagues who need breastfeeding, thereby we fully protect maternal employment and family care.

In order to help our employees work at ease and promote the welfare of children by the CSRC Group, Linyuan Advanced Plant signed a preferential childcare contract with kindergartens that passed the evaluation by the Kaohsiung City social and governmental competent authorities. We do so in the hope of combining the power of the Company's support to reduce the burden of childcare for laborers.

Other Benefits or Systems

Beyond providing a caring and comfortable working environment, we also care about the lives of our employees as we adhere to a "people-oriented" ideal. With the support and encouragement of the Company, we plan various subsidies or welfare measures for festivals, life events, health insurance, and learning, to achieve a balanced life that promotes work, study, and leisure.

Benefits	Description
Employee Cafeteria	CSRC Group attaches great importance to the employee food hygiene issues and has set up the Employee Cafeteria, emphasizing the use of seasonal ingredients, cooking with less oil and less salt, to provide employees with healthy meals
Fitness Center	The Company provides a fitness room (including a treadmill, all kinds of health facilities and equipment, and weight equipment) as well as a sports area (encompassing a yoga space, shooting machine, and pool table).
Relief Massage Area	The "Stress Relief Massage Room" is set up to provide free professional massage therapists service to help employees relieve stress in sympathizing the hard work of colleagues
Employee Rest Area	A special floor has been set up for employees to communicate and relax with many movable tables and chairs and small meeting rooms in the comfortable decorated space, allowing employees to choose to talk openly or privately. There is also a reading area and game area, VR area, beverage area and even slides and ball pools for children to play. These spaces not only allow colleagues to maintain their best condition during work, but also allow family members to use them during vacation time, enhancing the closeness between the Company and the family.
Volunteer System	CSRC Group provides each employee with 2 days of volunteer leave per year to encourage colleagues to participate in social welfare services outside of their work. By doing so, we aspire them to implement the spirit of service and of devotion of giving back to society.
Study Grants	In addition to providing scholarships and stipends for children of employees, we also provide employees with advanced study grants and the company pays for the expenses when employees are selected for training in external institutions.
Festive Gifts	We provide gift vouchers for Spring Festival, Dragon Boat Festival, Mid-Autumn Festival and birthday.
Wedding and Funeral Subsidies	CSRC Group cares for all employees. Whenever there is marriage, childbirth or death of relatives, the Company will give congratulatory gifts or condolence stipends to accompany and support colleagues through all important stages of their lives.
Flexible Working Hours	The Company has set up with a flexible commuting system for nonscheduled employees where the employees can choose their times to go to and get off from work every quarter.


Fitness center



Staff rest area

8.3.3 Labor-management relations

Employee Communication Channels

CSRC values positive employee relations. We have multiple two-way communication channels in accordance with the Labor Standards Act and the Labor-management Conference Implementation Measures, and CSRC holds at least one labor-management meeting every quarter. In these meetings, labor and management will each send five representatives. Both employers and employees will discuss plans including but not limited to salaries and benefits, working conditions, and employee assistance programs (EAPs) as well as vacation planning and other topics for discussion. In addition, if employees have any complaints, they can send an email to the chairman of the union. The labor union will understand and communicate the content of the complaint and reach a consensus with the company through two-way discussions at the meeting to establish a harmonious working environment for labor and management. Linyuan Advanced Plant has a Trade Union of Linyuan Advanced Materials Technology Co., Ltd. (registered and established with the Kaohsiung Labor Bureau in 2019). Union members are workers employed at the Linyuan Advanced Plant. Except for assistant vice presidents, factory directors, deputy factory directors, personnel supervisors, security personnel, and team leaders, section chiefs, etc., who exercise management rights on behalf of the employer, they may join the trade union as members. The number of employees joined in 2022 was 163, accounting for 83.2% of the employees of the Plant. According to the "Articles of the Kaohsiung Labor Union of Linyuan Advanced Materials Technology Co., Ltd.", the union will assist members in the following tasks:

- The conclusion, modification, or annulment of group agreements.
- Promotion of matters related to improving working conditions and member welfare.
- Handling of labor disputes or member disputes.
- The formulation and revision of labor laws and recommendations for repeal matters.
- Mutual assistance and cooperation for group members to ensure labor rights.
- Assistance of members in improving production skills and quality, and assisting in reducing costs and developing production businesses.
- Organization of member savings.
- The organization of cooperatives such as production, consumption, and credit.
- Organization or promotion of member recreation, medical equipment, mutual aid business, and labor education.
- Establishment of the library and publishing of publications.
- Surveys of members' livelihoods and the compilation of labor statistics.

Although Maanshan Plant and Anshan Plant do not have a labor union, employee suggestion boxes are available for soliciting employees' opinions or suggestions. The suggestion box key is to be kept by the Plant Director. The employee feedbacks are summarized once a month and every comment and suggestion is dealt with and responded to in a timely manner.

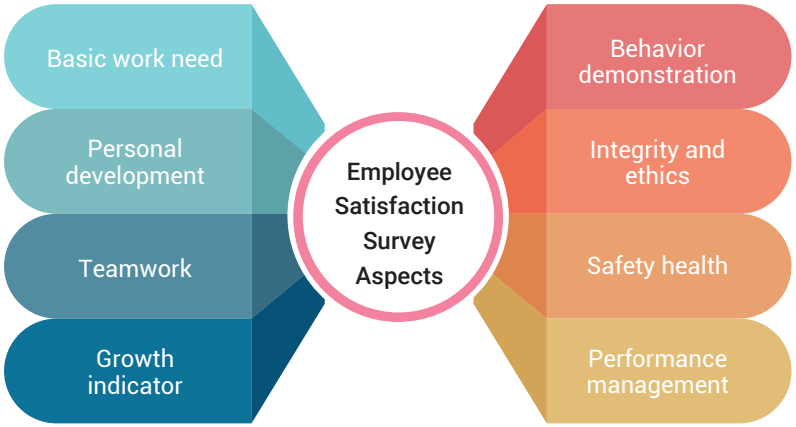
CSRC is committed to providing a comfortable work environment, while encouraging colleagues to balance family life, physical and mental health and work enthusiasm. We provide a variety of internal communication channels, in addition to regular labor management meetings, trade union communication and coordination, company internal website information announcements, e-newsletters, and other irregular meetings. In order to better understand and listen to the opinions and voices of employees, regular employee forums have held since 2021 to collect colleagues' suggestions for the Company, and we regularly announce responses to employees' opinions. We also continue to cooperate with Hsinchu Lifeline on the EAP (Employee Assistance Programs) employee assistance service program, with the help of professional psychological counseling agencies, it can strengthen the types of employee communication channels and consider employee privacy to ensure confidentiality during the entire process.

There were three labor disputes at CSRC in 2022. The disagreements were resolved through sufficient communication and negotiation with employees. The Company's internal regulations have been examined regarding the controversial content. If there are any labor rights or welfare suggestions or complaints, all employees of CSRC (including employees from the Taipei Headquarters, Linyuan Advanced Plant, and other plants) can express their opinions through the employee communication mailbox (csrc_hr@csrcgroup.com) or the suggestion boxes provided in the plant and office.

Employee Satisfaction Survey

CSRC values the ideas of employees. In addition to smooth communication at regular labor-management meetings, we conducted an opinion survey for the entire Group in 2022 to understand employee identification and engagement with the Company. 922 questionnaires were collected to continue to improve Company's practices based on the employee's feedback to the question. The survey results showed that the employees held positive responses with the basic needs fulfilled by the Company, and the teamwork and safety and health measures. However, they mentioned that the Company still needs to make efforts to enable employees to achieve better development and progress. In addition to the standard survey response, 16.5% of employees offered additional suggestions. We examined individual employee need. While trying to meet expectation from most of the employees, we anticipated responding to individual employee needs, and we continue to offer a platform for realization of employee's self-value, build a good mechanism, and offer a development direction for employees. The people-oriented philosophy is the concept of company development basis. We continue to improve various company measures and enhance employee identification and retention rate.

In addition to the employee opinion survey of the entire Group, Maanshan Plant and Anshan Plant carried out a satisfaction survey. 178 and 241 employees at Maanshan Plant and Anshan Plant filled out the survey and the identification rate of the Company was 83.4% and 95.8%, respectively. Based on statistical analysis of survey, Maanshan Plant will continue to strengthen supervisor and employee communication mechanism to employees' sense of belonging. Job satisfaction of employees at the Anshan Plant is higher for labor safety health and prevention, and impact of quality control on understanding of corporate business strategy. This demonstrates that the Company cares more about employee care, health, and safety. The Company will continue to keep up and increase the quality regarding the aspects above mentioned. As for Items with lower satisfaction regarding workplace, job inheritance and welfare system, the Company will bring up improvement opinions at the supervisor meeting and enhance the workplace quality. In the meantime, we focus on training of employee skill and expertise for the job inheritance and training items and encourage employee engagement.



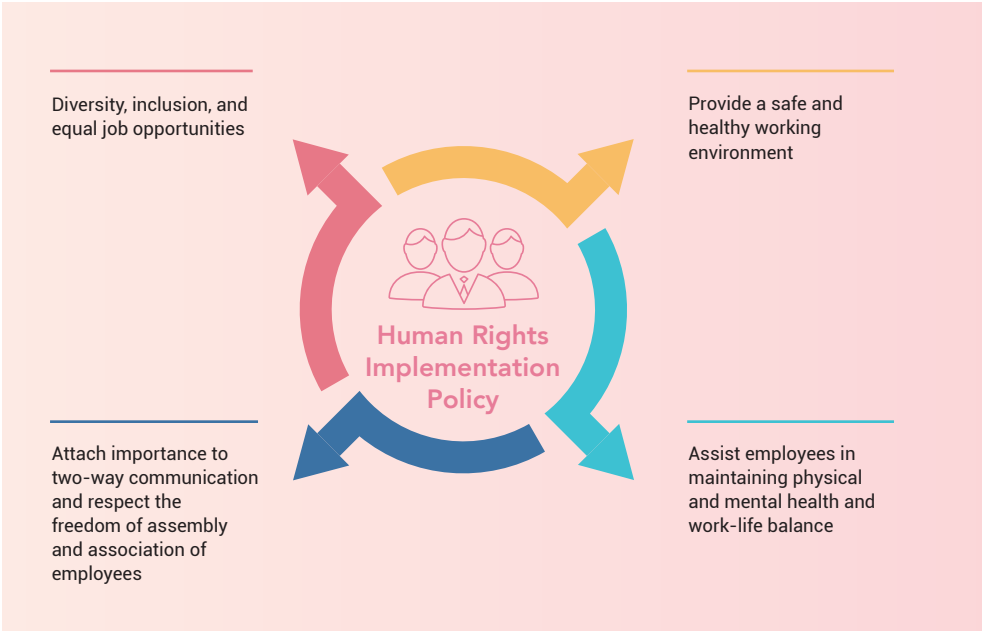
8.4 Human Rights Management

8.4.1 Human rights policy

CSRC Group regards employees as its most important asset. A deep understanding of employees is an important cornerstone of the Company's growth. We strive to build a high-quality and respectful workplace and provide employees with a complete and secure employment environment. It is also a basic commitment to face the society and sustainable operation. CSRC strictly abides by the "United Nations Global Compact", "United Nations Universal Declaration of Human Rights", "ILO Declaration on Fundamental Principles and Rights at Work" and other international human rights conventions and labor-related laws and regulations in the locations of its operating bases, to establish the "CSRC Group Human Rights Policy", the scope of application includes CSRC Group and its domestic and foreign subsidiaries, joint venture companies and other Group-affiliated enterprise organizations with substantial control capability. We thus fully demonstrating our responsibility to respect and protect human rights, treating and respecting on the job colleagues with dignity. We firmly believe that only when employees are happy and respected can they grow together with the Company. In 2021, there were no incidents related to human rights violations at the Taiwan (Taipei Headquarters, Linyuan Advanced Plant), Maanshan Plant, or Anshan Plant.

CSRC Human Rights Policy

In 2022, CSRC engaged in human rights advocacy. Employees of Taipei Headquarters, Linyuan Advanced Plant, Maanshan Plant and Anshan Plant attained 100% of reading of human rights policy online. For new employees, we also advocate ethical principles and ethical standards in hardcopy. CSRC will continue to advocate human rights via numerous way and facilitate human rights practice at all operating bases.



8.4.2 Prohibition of forced labor

CSRC Group's human rights policy guarantees the implementation of all national labor laws, prohibiting child labor and forced labor, regardless of whether workers work overtime, shifts or regular holiday (leave) duty, there are corresponding measures to protect the rights and interests of employees and reduce the risk of forced labor by CSRC Group. In 2022, CSRC Group did not have any forced labor incidents.

CSRC internal regulations [Note 1]	Action
"Administrative Measures for Overtime Work"	In order to standardize the employee's overtime application and all overtime works to be followed, the "Administrative Measures for Overtime Work" has been established, to manage overtime pay, missed meal expenses and compensatory leave for weekdays, rest days, vacation days, regular holidays and call-out overtime works [Note 2].
"Measures for Shift Management"	In response to shift system setting up for the plant operation, we provide the shift stipend for the employees required for shift work for job duties. The related job duties include mid-day shift duties, night shifts and day shifts.
"Rotation Work Method for Managers and Engineers on Duty for Regular Holidays (Leave)"	In order to maintain the plant operations, there is a rotation system for the supervisors and production engineers on duty during regular holidays (leave) and with the setting of related allowances. The supervisor on duty during regular holidays are paid with on-duty allowances and can apply for one-day off. If the rotating engineer is on duty in accordance with the shift rules, a monthly allowance will be paid. If the rotating engineer is not on duty in accordance with the shift rules, the allowance will be paid proportionally.
"Regular Holiday Attendance Warning Notice"	An internal notification mechanism is set up for working overtime on regular holidays to notify the department heads to avoid forced labor.
"Linyuan Advanced Plant Leave Management Measures"	In order to direct the employees of the Company to follow the rules of leave request, the "Leave Management Measures" has been established. Employee leave is divided into 15 kinds including marriage leave, leave of absence, family care leave, ordinary injury and sick leave, full-pay sick leave, physiological leave, bereavement leave, work related injury and sick leave, pre-natal examination leave, maternity leave, paternity leave, leave to attend to official business, special leave, parenting leave and volunteer leave. Among them, in order to encourage colleagues to actively participate in public welfare service, care and give back to the society, we specially provide two days of volunteer leave per year to practice corporate citizenship and contribute to the society.

Note 1: The regulations are applicable to Taipei Headquarters and Linyuan Advanced Plant. Maanshan Plant and Anshan Plant establish relevant norms and regulations in the employee handbook according to local regulations.

Note 2: Call-out overtime means that if there is an abnormality in the equipment that needs to be repaired urgently in the middle of the night, for the on-duty engineering work colleagues go to the Plant for repair.

8.4.3 Anti-discrimination and harassment

CSRC Group has established the "Measures for Prevention and Control of Sexual Harassment in the Workplace and Measures for Complaints and Handling of Cases" to provide a working environment free from sexual harassment for all employees, dispatched personnel, and job applicants and take appropriate preventive, corrective, disciplinary and handling measures to protect the rights and privacy of the parties. The scope of application of the Measures includes all employees of subsidiaries under the direct jurisdiction of the Company. The complaint process for sexual harassment is to file a complaint with the Human Resources Department after the incident. After the case is accepted, the Complaint Handling Committee will be established to conduct investigations in a private manner and to be handled based on the investigation results. In response to the sexual harassment that has occurred, the target of complaint shall be appropriately punished in accordance with the relevant provisions of the work rules and recorded in the party's personnel data. There shall be subsequent follow-up, assessment and supervision of related behaviors to ensure the effective implementation of disciplinary or handling measures, and to avoid the occurrence of similar incident or retaliation. If the subject has counseling or medical needs, he/she will be referred to professional counseling or medical institutions for treatment and counseling according to the application.

We also conduct education and training on the prevention of sexual harassment, explaining to employees the definition of sexual harassment, behavior patterns, internal complaint channels and internal investigation procedures of the Company. For example, Linyuan Advanced Plant requires new employees to sign the "Written Statement for Linyuan Advanced Plant on Prohibition of Sexual Harassment in the Workplace".

In order to prevent workplace violence, we have established plans to prevent illegal harassment while performing duties. The "Linyuan Advanced Plant Prevention Plan for Illegal Harassment while Performing Duties" aiming at the workplace violence that has occurred, in addition to providing health and psychological counseling for concerned employees while making work adjustments. We will also assist both parties in the coordinated handling of workplace violence, including necessary legal assistance, internal discipline and so on, and follow up with related reviews and improvements and keep the relevant file records for at least three years.

At the same time, in order to protect the rights and interests of the physically and mentally handicapped, ensure their equal opportunities to participate in society, politics, economy, culture, etc. and promote their self-reliance and development and in response to the People with Disabilities Rights Protection Act of the Ministry of Health and Welfare, we have installed accessible restroom and wheelchair ramps to overcome obstacles to improve the working environment for the employees with disabilities. There were no incidents of discrimination or harassment at CSRC Group in 2022.

Accessible facilities of Linyuan Advanced Plant

CH 9 Local Communities

Performance highlights

- A total of NTD **1.67 million** was invested in public welfare in 2022.
- In 2022, **92** new species of plants were added to the "Dr. Cecilia Koo Botanic Conservation Center" and a total of **34,138** species of plants from all over the world have been preserved.
- In 2022, our online channel Koo Cloud Theater launched 37 programs to promote opera culture. 877,995 viewers were attracted to the online channel, which was increased by **30%** compared to 2021. The channel subscribers reached 10,139 in 2022, with an annual growth rate of **26%**.

Material topics: Local Communities

GRI indicator: GRI 3-3、GRI 413-1、GRI 413-2

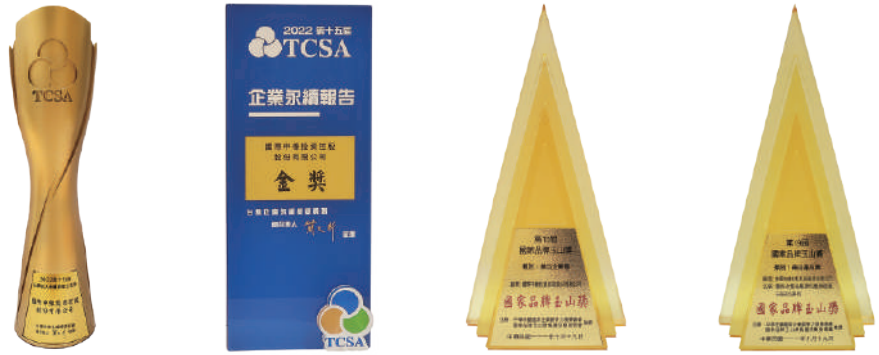
Description of impact	CSRC's production base is close to the local community and very close to residents' living environments. Any situation in the plant will directly impact the community where it is located, and any response from residents will also directly affect the operations of the plant. Therefore, building mutual trust and understanding with local communities is a very important issue.
Policies and commitments	CSRC is dedicated to meeting its corporate social responsibility by aggressively lowering the environmental impact of its operating sites on adjacent communities and focusing on local ecological protection. Its specific implementation direction for the year includes "social contribution," "ecological preservation," and "cultural promotion," contributing to s ociety with practical actions.

Goals

Goals	Base year	2022 Performance	Short-term (2023 ～ 2025)	Medium and long-term (2025 ～ 2030)
Improve neighborhood relations	2019	▪ Understood the needs of local neighbors and communities and establish a mutual trust relationship via a rapid processing mechanism. No exchange meetings or dinners were held in 2022 due to the COVID-19 status	▪ Linyuan Advanced Plant: Improve the cleanliness and safety of the surrounding community environment, and donate NTD 100,000 annually to improve the neighborhood environment (such as disinfection and drain dredging to prevent dengue fever, etc.) ▪ Linyuan Advanced Factory: Establish communication channels, quickly responds to problems, and hold 2 exchange meetings with neighborhood chiefs every quarter ▪ Maanshan Plant: Sponsor cleanup for the community, deploy personnel to regularly clean up foreign seeds to remove foreign invasive plants, and organize staff to participate ▪ Anshan Plant: Establish communication channels with the government and the community and conduct at least 4 communication sessions annually; provide a budget of RMB 2,000 annually and organize employees to implement public welfare activities such as weeding	▪ Linyuan Advanced Factory and Maanshan Factory: Create trust and connection with neighbors, invite neighborhood chiefs and representatives to monthly discussions, and enhance the frequency of neighborhood interaction to create effective communication channels ▪ Linyuan Advanced Plant: Sponsor NTD 120,000 per quarter for community environment and weed removal and add 10% of the budget in summer for environmental disinfection and ditch dredging ▪ Maanshan Plant: Sponsor cleanup for the community, deploy personnel to regularly clean up foreign seeds, and organize colleagues to participate ▪ Anshan Plant: Establish communication channels with the government and the community, and conduct at least 6 communication sessions annually; sponsor RMB 2,000 annually to support surrounding environmental protection work and improve the neighborhood environment
Contribute to the neighborhood	2019	▪ Invited students from Shanwei Elementary School in Linyuan District, Kaohsiung City, to visit the Linyuan R&D Center ▪ Maanshan Plant sponsored the community river beach protection and organized colleagues to clean up foreign seeds ▪ Provided monthly funds for 88 nutritional meals and computer/English tutoring classes for children in Fengqiao Elementary School in Maanshan City ▪ provided Cement Academy supplementary classes for 330 students ▪ Awarded scholarships to outstanding 15 students in 2022	▪ Promote educational activities in neighboring schools. Cement Academy provided supplementary classes for more than 300 students annually. ▪ Continue to issue outstanding student scholarships to 3 students per school per semester ▪ Continue to provide nutritious meals and computer/ English tutoring classes for children in neighboring primary schools	▪ Improve the neighborhood education environment and provide additional teaching curriculum design according to the schools' needs. ▪ Continue to issue 3 outstanding student scholarships and participate in neighborhood community activities
Promote the image of environmental protection education	2019	▪ Held the "Green to Gold Little Scientist+" circular economy drawing competition, and invited elementary school children from Tainan City, Kaohsiung City, and Pingtung County to brainstorm extension themes for carbon reduction. 350 entries were submitted, and 20 winning works were selected in the coloring and creative groups ▪ 26 "CSRC x Chemical Tour Fun" carbon black quick stick experiment vehicle tours were held, and 373 students participated in the experiment operations ▪ 14 sixth-grade students from the Shanwei Elementary School in Linyuan District, Kaohsiung City, were visited to conduct exchanges with the CSRC R&D Center ▪ Won several corporate sustainability practice-related awards: 2022 TCSA Taiwan Corporate Sustainability Award for Taiwan's Top 100 Sustainable Model Enterprises, the Gold Award for Sustainability Reporting; award of Outstanding Enterprises category, and Eco-friendly Carbon Black for Printing and Coating Applications–EREBOS Series for Best Product Category in the 19th National Brand Yushan Award	▪ Compete in ESG-related awards. ▪ Continue to invest in environmental protection education, and expand the scope of project implementation to the central and southern regions ▪ In 2021 and 2022, the number of directly and indirectly promoted students reached about 2,000. By 2025, the number of promoted students is expected to reach 5,000	▪ Compete in ESG-related awards ▪ Continue to invest in environmental protection education and life-carbon-neutral education promotion and expand the scope of project coverage to the north, central, and south regions ▪ In 2021 and 2022, the number of directly and indirectly promoted students reached about 2,000. By 2030, the number of promoted students is expected to reach 10,000

Responsible units	■ Each Carbon Black Plant ■ Brand Marketing Department	■ Human Resources Department
Resources	■ 54 people participated in the circular economy drawing competition each day in the "2022 Third Taiwan Science Festival" popular science fair. ■ 11 Shanwei Elementary School students visited the R&D Center and conversed with doctoral researchers. ■ A total of NTD 1.67 million was invested in public welfare in 2022.	
Grievance mechanisms	■ Stakeholder Communication Contact of Linyuan Advanced Plant: csrcir@csrcgroup.com ■ Stakeholder Communication Contact of Maanshan Plant: xiaojian@continentalcarbonasia.com ■ Stakeholder Communication Contact of Anshan Plant: csrcas-tb@continentalcarbonasia.com	
Action plans	**Negative impact management** ■ Continue to hold neighborhood communication meetings.	**Positive impact management** ■ Continue to participate in the school's various motivational activities. ■ Actively care for disadvantaged groups. ■ Sponsor cultural and charity activities.
Evaluation of effectiveness	■ Regularly review the implementation of various community participation projects. ■ Regularly review the achievement of relevant goals in the annual internal management meeting.	

In 2022, CSRC received several sustainable corporate awards, including 2022 TCSA Taiwan Corporate Sustainability Award for Taiwan's Top 100 Sustainable Model Enterprises, the Gold Award for Sustainability Reporting; Outstanding Enterprises category and our Eco-friendly Carbon Black for Printing and Coating Applications– EREBOS Series for Best Product Category in the 19th National Brand Yushan Award. These demonstrates our efforts to fulfill corporate social responsibility.



With the vision of "coexistence with civilization and nature" and the mission of " energy regeneration and natural symbiosis", CSRC Group not only actively promotes the benefits of circular economy, but also promotes social welfare by investing in three major aspects: social contribution, ecological preservation, and cultural promotion. In 2021, the total investments in public welfare reached NTD 1.67 million.

Aspects of CSRC's Social Welfare Promotion

9.1 Social Contribution

In line with our corporate social responsibility, we are committed to the implementation of social welfare policies and commitments, which can be divided into "Neighborhood Care" and "Education Care" to promote social welfare.

9.1.1 Neighborhood Care

CSRC takes social responsibility for the neighboring communities and treats the communities around its production plants as its family members. Environmental protection control and production process safety are fundamental operational policies of the highest priority. In addition to our operations, we continue to interact with our neighbors through various means to understand the needs of the local community. Every year, we implement communication and development plans with the local community at our operating locations and actively develop relevant management measures to deal with wastewater, exhaust and waste emissions in accordance with regulatory requirements, and conduct regular training and drills for emergency response plans to enable employees to understand the rescue and evacuation process and improve employee safety awareness. Furthermore, CSRC has collaborated with local government to monitor carbon emission and develop energy-saving and emission-reduction plans to meet the 2023 carbon reduction goal.

CSRC's operations significantly impact the air quality of neighboring communities. In response to the risk of air pollution, Linyuan Advanced Plant has established the necessary pollution monitoring equipment in all its process stages, and equipment maintenance is performed annually. According to the regulations, the relevant air pollution factor data is reported yearly. Maanshan Plant focuses on continuous investment in environmental protection equipment and is committed to reducing process emissions. Internal air pollutant emission audits and management reviews is regularly conducted. In addition to installing desulfurization and denitrification equipment as well as bag filters, Anshan Plant is scheduled regular maintenance and adopted online monitoring technology to ensure that the data is up to standard via real-time monitoring. All operating Plants are requested to strictly adhere to the government's standards for environmental protection work and the various internal management development plans are implemented. In 2022, there were no significant negative impacts on local communities and the environment as a result of our operations.

CSRC aims to be a role model in the industry. In addition to minimizing the negative environmental impact, we also actively hold interactive communication sessions with the community to improve the local employment environment. Creating local employment opportunities is one way to demonstrate our ability to connect with local communities. In 2022, the proportion of local employees employed by Linyuan Advanced Plant was as high as 94% (54% direct, 46% indirect). The local employment ratio of Maanshan Plant was 98% (67% direct, 33% indirect). The proportion of local employees employed by Anshan Plant was 100%. We believe retaining local talents is the key to promoting local economic development. CSRC promotes community development, supports public welfare activities, and implements the circular economy and environmental protection concepts in local neighborhoods. In 2022, CSRC's R&D colleagues formed a chemical volunteer lecturer team to communicate with the Shanwei Elementary School sixth-grade students in the CSRC's R&D Center. 14 students participated in this event, which gave the schoolchildren in the community a better understanding of the plants and knowledge of the circular economy concept. It broadened the schoolchildren's horizons and imagination for future development.

Visit from Shanwei Elementary School students to CSRC's R&D Center

Protect local neighborhood safety

- Communicate and cooperate with neighbors to continuously interact and understand the safety needs of the neighborhood.
- Formulate emergency response plans and immediately follow the procedures for notification in case of emergency.
- Conduct fire safety drills to ensure employees are familiar with rescue and evacuation procedures.
- Strictly follow the government's requirements for environmental protection, develop internal management plans, and raise employees' safety awareness.

Maintain local neighborhood relationship

- Employ locals, provide local job possibilities, and raise the employees' understanding of the Company's culture and philosophy.
- Support school education activities in the community.
- Students visit to CSRC R&D Center was held in 2022.

9.1.2 Educational Care

Cement Academy

CSRC has deeply cultivated schools nearby our Plants through the "Cement Academy" jointly promoted by the Taiwan Cement Group. We are dedicated to fostering the development of students, broadening their perspectives, and increasing their eagerness to learn. Our goal is to support community school education activities, provide schoolwork guidance for rural school children, improve the performance of school children, and reduce the financial burden on parents. In 2022, the Maanshan Plant arranged English and computer after-school tutoring for 88 students in Fengqiao Elementary School to help improve their English listening, speaking, reading, and writing as well as computer skills.

CSRC has set up scholarships and subsidiaries for the Cement Academy and provided nutritious lunch funds to 88 students to reduce the financial burden of disadvantaged families. In 2022, 15 schoolchildren received a TWD 36,000 scholarship (due to COVID-19, Maanshan and Anshan Plants did not issue scholarships to subsidize schoolchildren in 2022).

Environmental Protection Education & Circular Economy Promotion Activities

CSRC is committed to promoting the circular economy and supports social care and education implementation, including environmental protection and circular economy sustainability in education. In 2022, the Company held the "Green to Gold Little Science+" Circular Economy Drawing Competition to invite elementary school children to brainstorm together and create a complete comic strip on a single sheet of paper for the carbon reduction topic. 350 entries were submitted for elementary school pupils in Tainan City, Kaohsiung City, and Pingtung County. Through this drawing competition, the concept of green environmental protection and sustainable development was engrained in the next generation.

To further embed circular economy-related knowledge and concepts, CSRC collaborated with Tamkang University Center for Science Education to host a Fun Chemistry Science Camp, in which the tour vehicles went to 9 schools in Taiwan to conduct carbon black sticks experiment with students and disseminate knowledge on circular economy. We also held science camp experience activities with the “2022 Third Taiwan Science Festival." During the popular science fair experiment activities, a hand-painted maze game was distributed to let the students play while learning at the same time. 26 popular science fair sessions were held during the “2022 Third Taiwan Science Festival." 373 students participated in the experiment activities, which allowed them to learn about the circular economy and the widespread use of carbon-black materials in everyday life.

2022 Circular Economy Education Activities

CSRC x Chemical Tour Fun

CSRC collaborated with Tamkang University's Center for Science Education to host a Chemistry Science Camp to provide circular economy education. Hands-on experiment of carbon black was conducted through chemical car tour to combine knowledge with circular economy, and the Company held science camp experience activities at the "2022 Third Taiwan Science Festival."

Circular Economy Drawing Competition "Green to Gold Little Science+"

We invited elementary school children from Tainan City, Kaohsiung City, and Pingtung County to brainstorm extension themes for carbon reduction. The goal is to extend the theme of carbon reduction that is referred the “CSRC Little Scientists: Reduce Carbon to Save the Earth" story, and create a complete comic strip on a single drawing paper. 350 drawings were submitted during the event.

9.2 Biodiversity Maintenance

To help preserve biodiversity, CSRC collaborated with Taiwan Cement Co., Ltd., Ho-Ping Power Company, and Jiantan Temple, established the "Dr. Cecilia Koo Botanic Conservation Center" (hereinafter referred to as the Conservation Center) in 2007, located in Gaoshu Township, Pingtung County. Its mission is to conserve tropical and subtropical plants worldwide via off-site preservation as well as plant studies and exchanges. The goal is to take practical actions to promote co-prosperity and sustainable coexistence with the natural ecology.

9.2.1 Hundred species prosperity initiative

The "Hundred Species Prosperity Initand Momentum Actioniative", spearheaded by the Conservation Center, is a project that aims to propagate species that have been judged by the conservation community to be extinct, critically endangered, endangered, and threatened in the wild. These species are difficult to obtain in vivo, and the number of individuals preserved at the Conservation Center is extremely small, so they must be propagated in projects to be sustainable. In 2022, 92 new species of plants were added to the Conservation Center and a total of 34,138 species of plants from all over the world have been preserved. The Conservation Center plans to reach a collection of 40,000 species of plants by 2027 to become the world's most important tropical and subtropical plant sanctuary.

The Conservation Center will continue to focus on ex situ conservation, academic research, and participate in the world's tropical plant conservation programs through international academic exchanges. We have drawn up a priority list of species to be conserved, and expect to increase the number of individual plants to 100-1000 in each of the three years, by which time we will transplant the seedlings to their original habitats and major botanical gardens around the world. The public is invited to participate in the action of sustainable germplasm conservation.

9.2.2 Local Cultivation and Promotion

After years of hard work, the Conservation Center has collected abundant species, which the academic community has widely used to conduct research and publish papers in numerous domestic and foreign journal articles. Aside from collecting species, the Conservation Center regularly collaborates with other organizations to conduct conservation operations. Since 2018, the Conservation Center has signed a cooperation plan with the Nuclear Energy Back-End Operation Office of Taiwan Electric Power Corporation, and has successfully restored nearly 10,000 orchid seedlings. Four special rare orchids, including Bletilla formosana f. kotoensis (Hayata) T.P.Lin. (Lanyu Bletilla), Dendrobium miyakei, Vanda lamellata, and Tuberolabium kotoense, were selected as the priority list for restoration. In 2022, the environmental and ecological restoration event "Orchid Returning to Their Home" was held, and more than 1,000 orchids were transported back to Taipower's Orchid Island low-level storage site, and orchids were handed over to the local folks for adoption. The Conservation Center intends to hold a seed source restoration program every year in the future and plans to continue the activity for at least 3 years and include other rare plant species. A list of local cooperative individuals or groups in Lanyu has been prepared, seedlings have been distributed, and a rehabilitation team (connected via a Line app group) has been formed to further strengthen the local community network.

The Conservation Center and Taipower held the event "Orchids Returning to Their Home"

Bletilla formosana f. kotoensis (Hayata) T.P.Lin is a small ground orchid, and the flower color is all white

9.2.3 Expansion of overseas seed conservation initiatives

Since 2018, the Conservation Center, the National Museum of Natural Sciences, and the Forestry Laboratory of the Council of Agriculture have jointly carried out plant surveys in Vietnam. The efforts have successfully replicated the successful plant survey experience in the Solomon Islands in Vietnam. The research team has cooperated with the Southern Institute of Ecology of the Vietnamese Academy of Sciences and the local Bidoup Nui Ba National Park to organize a plant survey mission to collect abundant specimens of plants living in the plateau jungle of southern Vietnam.

In December 2018, the "Taiwan-Vietnam Joint Plant Conservation Research Center" was officially established in Bidoup Nui Ba National Park to promote the research and conservation of precious plants. The two countries have organized a combined plant survey team, which has already traveled deep into southern Vietnam three times. A wealth of specimens and living plants were collected on the plateau jungle, and several new orchid and fern species were discovered. In addition to cooperating with Vietnam, the Taiwan-Vietnam Joint Plant Conservation Research Center also investigates plant resources, publishes papers, and keeps track of flora. The center also invites researchers from Vietnam and other Southeast Asian regions to come to Taiwan from time to time to participate in training courses and intern at gardens to promote conservation awareness in Southeast Asia.

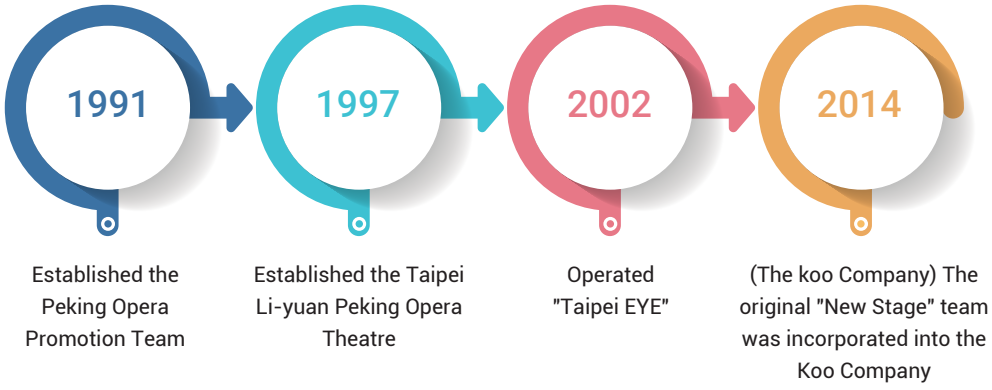
More information about the Conservation Center

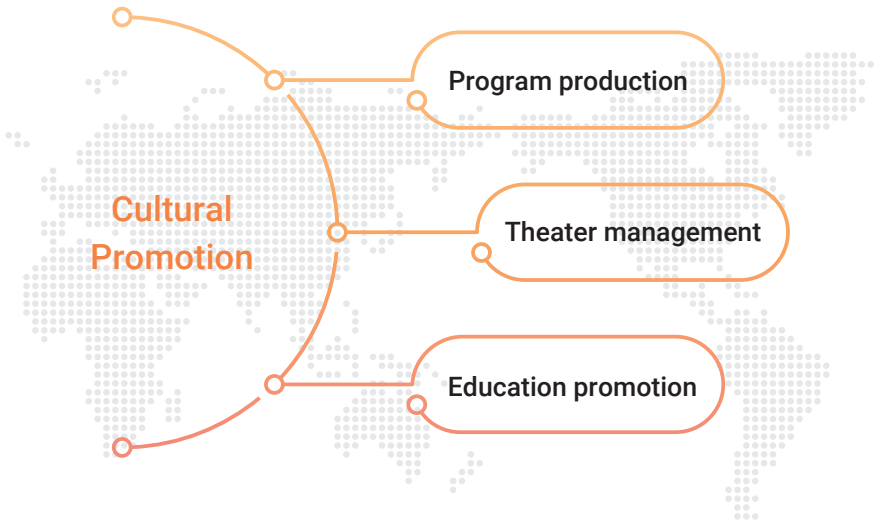
9.3 Cultural Promotion

The C.F. Koo Foundation was founded in 1988 by Mr. Koo Chen-Fu (Koo Kung-Liang), Chairman of the Koos Group, and jointly donated by CSRC and TCC. The purpose is to promote art and culture-related activities of Taiwan through international exchange activities. In 2022, the C.F. Koo Foundation continued to promote and invest in cultural conservation in 3 aspects: "program production," "theater management," and "lecture promotion."

In 2022, all activities in the performing arts field in Taiwan were full of uncertainties as the COVID-19 epidemic ran rampant for the third year. Despite this severe environmental challenge, the C.F. Koo Foundation adjusted its operation strategy quickly and tries its best to complete the annual production, including continuously updating the broadcast content of the only online drama channel “the Koo Cloud Theater” in Taiwan. The goal is to steadfastly manage the family-friendly theater, and resume "the Koo Theater" series projects, and continue to promote the cultural conservation efforts with successive campus promotion lectures.

Chronology of C.F. Koo Foundation Establishment





9.3.1 Program Production

In response to the severe COVID-19 threats mid-year, the Foundation postponed the Beijing-Kunming drama "Jingkun Opera in the Palace of Eternal Life" and the Peking Opera "the Magic Flute" originally scheduled to be performed in Taipei and Taichung at the end of May and early June to November of the year. The reruns of the old favorites were well received by the audience. The "Jingkun Opera in the Palace of Eternal Life" integrates Peking Opera and Kunming Opera into one. It portrays the story of Emperor Xuanzong of Tang and Imperial Consort Yang from falling in love to bidding farewell. Bao-Chun Li played the role of Emperor Xuanzong of Tang for the Peking Opera, and Yu-Hang Wen played the same role for the Kunming Opera. The reappearance of the Peking Opera "The Magic Flute" is still a sensation despite the huge momentum of the premiere at the end of 2021. Chinese and Western music were perfectly blended under Yiu-Kwong Chung's design, and the Mozart is also insane!

In addition, in March 2022, the "Peking Opera Gala" also launched classics dramas such as "Li Kui Visits His Mother," "The Drunken Concubine," "Hu Jia Zhuang," "Pursuit," and "Cosmic Front." Bao-Chun Li edited the scripts and acted as the art director. The young leading actors of the Taipei Li-Yuan Peking Opera Theatre performed brilliantly in singing and combat scenes, and won the applause of the audience!


"The Magic Flute"


"Jingkun Opera in the Palace of Eternal Life"

Li Kui "Visits His Mother"

"The Drunken Concubine"

"Pursuit"

"Cosmic Front"

The Foundation transfers the abundant performance energy to the opera channel "Koo Cloud Theater". At least one play was uploaded to the channel every week in 2022, and overall 37 programs was launched to promote opera culture, including live broadcasts of Peking Opera and classic productions.

Chinese Opera on the Koo Cloud Theater Channel

The only online opera channel in Taiwan, Koo Cloud Theater entered its third year of operation in 2022. Since 1996, approximately 80 outstanding dramas produced by the C. F. Koo Foundation have been broadcast, including 56 video rebroadcasts and 11 live performances, which have steadily accumulated a dedicated audience. In 2022, different styles of opera performances were brought to the audience. The "Laughing and Watching Opera: Liyuan Baihuachun" produced by C. F. Koo Foundation and FJTV in 2007 were broadcast since May. The series included the essence of Peking Opera, Sichuan Opera, Kunqu Opera, Huangmei Opera, Henan Opera, and other local operas in mainland China as well as Taiwan's local Gezai opera, Hakka opera, and palm opera. The show was hosted by Mr. Bao-Chun Li, the head of the Taipei New Theater Company. He explained the characteristics and styles of various drama types and styles in a relaxed and humorous way, which received perfect audience receptions. In 2022, we arranged the simultaneous "Koo Theater" performance live broadcast each Sunday to expand the viewing effect of the project produced by "Koo Theater", which triggering polarized reactions from subscribers. Some learned while others thought it quite avant-garde. Overall, they have sparked a lot of artistic innovations.

Koo Cloud Theater Programs

In 2022, the Koo Cloud Theater launched 37 programs, including 5 productions by the C. F. Koo Foundation, 26 episodes of "Liyuan Baihuachun," and 6 live performances. 877,995 viewers watched the programs, an increase of nearly 30% compared to 2021. In 2022, the number of channel subscribers reached 10,139, showing an increase of 26% over the previous year.

"The Legend of the White Snake"- Sanchong Gymnasium

9.3.2 Theater Management

The Foundation believes that theater management is an important cultural and creative service. It offers artists a professional setting for development and performance through the theater space, enabling them to be appreciated and cherish the opportunities for growth. For the audience, it provides a unique performance environment for them to enjoy high-quality services.

The Foundation has continued to work on the "Parent-Child Theatre Front and Backstage Technical and Service Management " project in 2022 to uphold the spirit of theater service talent development and supporting the performing arts audience. The Taipei City Government has entrusted the foundation team with managing the theater and serving audiences and performing arts groups because of their extensive theater management experience.

Project of "Starting Against the Wind" - One million rewards for best creative perofrmances

The Foundation debuted the Koo Theater's "Starting Against the Wind" project in 2022 in reaction to the COVID-19's recurring effects on the performing arts sector to give theater artists more opportunities to create shows and sustain cultural inheritance. The efforts provided a subsidy of up to NTD 1 million in production allowance to solicit new creative performances. The application cases are cross-disciplinary and diverse, including puppet shows, rap, opera, aboriginal song and dance, modern dance, stage play, western vocal music, and jazz to fully demonstrating the creative explosiveness of performing arts in Taiwan. In addition to the financial subsidies from the foundation, the winners also performed during the weekends of November to December 2022 in the Cement Hall at the TCC Building, which were simultaneously broadcast live on the "Koo Cloud Theater" YouTube drama channel.

The selection principle of this time was to develop transboundary productions that were not limited to the form of performance and opera components. Over 10 application cases were submitted since August 9th. These transboundary and diverse cases included puppet show, rap, opera, aboriginal song and dance, modern dance, stage play, western vocal music, and jazz to fully demonstrating the creative explosiveness of performing arts in Taiwan. After discussion and deliberations, the reviewers selected three performances. They were “The Fallen Orchids” by Physical Sentimental Theatre Company of LeeQingZhao, “AI SH69VA Final Version of Desire” by Liu Guanxiang Dance and Music Studio , and “Leifeng Pagoda 1924” by Chao Hsin x Hua Theater. In addition to the full production subsidy for the three teams, the box office proceeds were also given to the teams. The selected teams, works, and performance schedules were announced in late September. The Sunday episodes of each show were broadcast live simultaneously on the “Koo Cloud Theater” YouTube drama channel from late November to early December. 1,200 audiences physically attended the 6 performances on three occasions. The average box office results were as follows: “The Orchids” 86%, “AI SH69VA” 42%, and “Leifeng Pagoda 1924” 93%. The scale of viewing was expanded to 3,914 people through the “Koo Cloud Theater”, and the total was 5,114 audiences.

"Starting Against the Wind" Project

Group photo of "Starting Against the Wind" project

"The Fallen Orchids"

"Leifeng Pagoda 1924"

"AI SH69VA"

9.3.3 Lecture Promotion

In 2022, the foundation took the education promotion lectures out of the campus and into the society by holding lectures on Peking Opera in collaboration with the "Taipei Reading and Writing Association." The participants showed as much excitement as that of campus students.

Despite the effects of COVID-19, the Foundation held 13 lectures attended by 747 participants in 2022.

Events Category	Project Title	Date	Number of People
Lecture	"Talk about Peking Opera" at Fu Jen Catholic University - Inheritance and Innovation of Taipei New Theater Troupe	3/16	65
Promotion Lecture	"Talk about Peking Opera" at Shih Hsin University - Inheritance and Innovation of Taipei New Theater Troupe	3/17	50
Lecture	Ching Cheng High School: Voice of Jingkun - Opera of Love between Emperor Xuanzong of Tang and Yang Guifei	4/20	60
Promotion Lecture	Fu Jen Catholic University: Peking Opera Costume Introduction and Experience	4/25	42
Promotion Lecture	Tunghai University: Peking Opera and Kun Opera	4/26	55
Promotion Lecture	National Taichung Theater's Corner Salon: "Jingkun Opera in the Palace of Eternal Life" Promotion Lecture	5/7	50
Promotion Lecture	Taipei National University of the Arts: Stage For the Up and Coming Talent Series "Lian Jinfeng"	9/27	25
Promotion Lecture	NTU Peking Opera: "Jingkun Opera in the Palace of Eternal Life"	9/28	20
Promotion Lecture	Taipei Reading and Writing Association	9/28	50
Promotion Lecture	National Chung Hsing University: "Jingkun Opera in the Palace of Eternal Life"	9/29	60
Promotion Lecture	Taipei Hwa Kang Arts School: The Versatility and Adaptability of Peking Opera — "Jinkun Opera in the Palace of Eternal Life" and Peking Opera "Magic Flute"	10/5	150
Promotion Lecture	Shih Hsin University: New Peking Opera Performance Features and Guided Listening	10/27	50
Promotion Lecture	Association of Music & Aesthetics, Taichung: "Jingkun Opera in the Palace of Eternal Life" Promotion Lecture	11/18	70
Total			747

Ching Cheng High School: Voice of Jinkun -
Opera of Love between Emperor Xuanzong of Tang and Yang Guifei

NTU Peking Opera: "Jingkun Opera in the Palace of Eternal Life"

National Chung Hsing University: "Jingkun Opera in the Palace of Eternal Life"

CH 10

SASB Disclosure of Sustainability Information

Message from the President

Greenhouse Gas Emissions

Air Quality

Energy Management

Water Management

Hazardous Waste Management

Community Relations

Worker health and safety

Product design

Safety & Environmental Stewardship of Chemicals

Genetic modification

Management of laws and environmental regulations

Operational Safety, Emergency Preparedness & Response

Message from the President

Institutional investors are gradually coming to favor the quantification of sustainability metrics. In addition to requiring enterprises to prepare Sustainability Reports in accordance with GRI guidelines, the "Corporate Governance 3.0 - Blueprint for Sustainable Development" released by Financial Supervisory Commission (FSC) additionally refers to relevant international standards including provisions of the Task Force on Climate-related Financial Disclosures (TCFD) and the standards issued by the US Sustainability Accounting Standards Board (SASB). These measures are aimed at strengthening sustainability report disclosure information.

CSRC already takes the circular economy and the promotion of green energy and environmental protection as its own responsibility. In view of the increasing attention that SASB receives from international investors, we have introduced 6 indicators that align with SASB guidelines for Chemicals industry starting from 2021. In 2022, all the sustainability disclosure topics of SASB have been introduced, and Anshan Plant was included in the scope of disclosure in 2022. In such ways, we are able to provide more comprehensive sustainability information. In addition to helping CSRC implement sustainability management, this also helps our stakeholders better understand our efforts in terms of the aspects of environment, society, and governance. As such, we can move forward together toward achieving a sustainable development process.

SASB guidelines for disclosure in the chemicals industry include Greenhouse gas emissions, Air quality, Energy management, Water management, Hazardous waste management, Community relations, Workforce health and safety, Product design for Use-phase efficiency, Safety & environmental stewardship of chemicals, Management of the legal & regulatory environment, and Operational safety and emergency preparedness and response. (Genetically modified organisms is not within the business scope of CSRC). Among these, requirements concerning the environment and society account for half of all topics. This in turn coincides with the sustainable management concept implied by CSRC Group's emphasis on environmental protection and community development. As such, we take this as our direction for self-examination and for long-term strategy development.

CSRC takes being a "Circular Economy and Green Sustainability Company" as our mission statement. We have a long-term commitment to sustainable development and deeply cultivate educational promotions and social contribution to carry out the concept of a circular economy. Through SASB Standards, we demonstrate our emphasis on carbon emissions, recycling of energy and waste, and caring for the neighborhoods surrounding our manufacturing facilities. We are committed to reducing greenhouse gas emissions and creating green products for all of humanity by developing new processes, coming up with low-carbon products, optimizing operating parameters, and selecting alternative fuels. At the same time, we continue to improve process safety and occupational health and safety related regulations and procedures, demonstrating the importance we attach to the safety of our employees and contractors.

CSRC believes that we can respond to forward-looking environmental deployment by leading the Company on a longer-term road. Our path toward corporate sustainable management can only be followed by strengthening corporate governance, investing in environmental protection, committing to community care, and improving neighborhood relations. We promise that we will continue to make more efforts and investments in the green road, and do our part for the world.

CSRC President

Po-Sung, Huang

Chemicals – Sustainability Accounting Standard

SASB Topic	SASB Code	Accounting Metric
Greenhouse Gas Emissions	RT-CH-110a.1.	Global Scope 1 emissions, percentage covered under emissions-limiting regulations
	RT-CH-110a.2.	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets
Air Quality	RT-CH-120a.1.	Air emissions of the following pollutants: (1) NOx (excluding N_2O), (2) SOx, (3) volatile organic compounds (VOCs), and (4) hazardous air pollutants (HAPs)
Energy Management	RT-CH-130a.1.	(1) Total energy consumed, (2) percentage grid electricity, (3) percentage renewable, (4) total self-generated energy
Water Management	RT-CH-140a.1	(1) Total water withdrawn (2) Total water consumed (3) percentage of (1) and (2) in regions with High or Extremely High Baseline Water Stress
	RT-CH-140a.2	Number of incidents of non-compliance associated with water quality permits, standards, and regulations
	RT-CH-140a.3	Description of water management risks and discussion of strategies and practices to mitigate those risks
Hazardous Waste Management	RT-CH-150a.1	Amount of hazardous waste generated, percentage recycled
Community relations	RT-CH-210a.1	Discussion of engagement processes to manage risks and opportunities associated with community interests
Worker health and safety	RT-CH-320a.1	(1) Total recordable incident rates and (2) fatality rates for (a) direct employees and (b) contract employees
	RT-CH-320a.2	Describe efforts to assess, monitor, and reduce employee and contract employee exposure to long-term (chronic) health risks
Product design	RT-CH-410a.1	Product revenue designed to improve resource efficiency in the usage phase
Safety & Environmental Stewardship of Chemicals	RT-CH-410b.1	(1) Percentage of products that contain Globally Harmonized System of Classification and Labeling of Chemicals (GHS) Category 1 and 2 Health and Environmental Hazardous Substances, (2) percentage of such products that have undergone a hazard assessment
	RT-CH-410b.2	Discussion of strategy to (1) manage chemicals of concern and (2) develop alternatives with reduced human and/or environmental impact
Genetic modification	RT-CH-410c.1	Percentage of revenues from products containing genetically modified organisms (GMOs)
Management of laws and environmental regulations	RT-CH-530a.1	Discuss the Company's position in relation to government regulations and/or policy proposals that address environmental and social factors affecting the industry
Operational Safety, Emergency Preparedness & Response	RT-CH-540a.1	Process Safety Incidents Count (PSIC), Process Safety Total Incident Rate (PSTIR), and Process Safety Incident Severity Rate (PSISR)
	RT-CH-540a.2	Number of transport incidents

Note: There are 12 disclosure topics in the chemicals industry SASB guidelines. Starting from 2021, CSRC was gradually introducing SASB for disclosure. By 2022, all 12 indicator disclosures had been introduced.

Greenhouse Gas Emissions

RT-CH-110a.1. Scope 1 emissions, percentage covered under emissions-limiting regulations

1. Scope 1 emissions: Linyuan Advanced Plant, 227,064 tonnes of CO_2e; Maanshan Plant, 55,274 tonnes of CO_2e; Anshan Plant, 43,998 tonnes of CO_2e; Taipei Headquarters, 0 tonne of CO_2e. Total emissions were 326,336 tonnes of CO_2e. Calculated greenhouse gases included carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride. Emissions are calculated based on operational control, and the calculation method is activity data × emission factor × GWP value.
2. Scope 1 emissions calculation basis: Linyuan Advanced Plant adheres to "Management Regulations Governing Greenhouse Gas Emission Inventories and Registration" while the Maanshan Plant and Anshan Plant follow the "Guidelines for Accounting and Reporting Greenhouse Gas Emissions, China Chemical Production Enterprises (Trial)" in the calculation of emissions by using emission factors for all three plants.
3. Percentages of regulated emissions: Linyuan Advanced Plant's emissions are regulated by the "Greenhouse Gas Reduction and Management Act", and emissions accounted for 70% of the factory emissions accounted for in the reporting scope. Maanshan Plant and Anshan Plant are governed by the " Guidelines for Accounting and Reporting Greenhouse Gas Emissions, China Chemical Production Enterprises (Trial)" and the "14th Five-Year Plan". Emissions accounted for 30% of the operation plant emissions within the reporting boundary.

RT-CH-110a.2. Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets

1. Scope 1 emissions management strategy:

   CSRC formulates the Group's carbon reduction strategy in accordance with the "Greenhouse Gas Reduction and Management Act". Linyuan Advanced Plant is based on ISO 14064-1 and Taiwan's Climate Change Response Act. The factories in mainland China follow the "Guidelines for Accounting and Reporting Greenhouse Gas Emissions, China Chemical Production Enterprises (Trial)" and the "14th Five-Year Plan". For the respective plants, greenhouse gas management strategies are respectively formulated:

Plant	Short-term Strategy (2023-2025)	Medium and Long-term Strategy (2025-2030)
Group Strategy	▪ Low carbon products ▪ Optimizing operating parameters and technical upgrading of equipment ▪ Choosing alternative fuels ▪ Using energy savings equipment and renewable energy	We develop new processes and low-carbon products, replacing fuel oil with natural gas use, use biomass energy, and continue to evaluate the efficiency improvement of process equipment and reduce the use of raw materials by improving production efficiency.

2. Emission reduction performance and emission reduction targets for 2022:

Plant	Base year	Target	2022 Performance
Linyuan Advanced Plant	2016	Greenhouse gas emissions intensity reduced 30% by 2030 from a 2016 base year	Emissions intensity reduced 21% compared to 2016
Maanshan Plant		Greenhouse gas emissions intensity reduced 26% by 2030 from a 2016 base year	Emission intensity reduced 21% compared to 2016 Note
Anshan Plant		Greenhouse gas emissions intensity reduced 25% by 2030 from a 2016 base year	Emissions intensity reduced 16% compared to 2016 Note

Note: In 2022, the emissions intensity for Maanshan Plants' offsetting external supply performance decreased by 21% compared with the base year, while the actual emissions intensity decreased by 31% compared with the base year; the emissions intensity for Anshan Plants' offsetting external supply performance decreased by 16.3% compared with the base year, while the actual emissions intensity decreased by 15.8% compared with the base year.

3. Plans and investments implemented to achieve emissions reduction targets: Linyuan Advanced Plant and Maanshan Plant have built natural gas pipeline equipment in 2022 and start operations in 2023. Projects such as energy-saving improvement projects for frequency conversion of windmills in exhaust gas filter bins, and adjustment of power consumption through equipment technical transformation are also planned. In 2022, the Maanshan Plant promoted the technical transformation of waste heat boilers on the U6 line, energy-saving transformation of the U4 main control fan, and heat exchange of the EBF SCR denitrification tail gas furnace and carried out technical transformations (such as the use of temperature increased APH and high-temperature-resistant reactors). In 2022, the unit oil consumption of Anshan Plant is reduced by 5.3%, and the installation of low-nitrogen burners on the U3 production line is completed.
4. Obstacles and identified risks that each plant/the Group encounter when implementing greenhouse gas emissions management:
   Linyuan Advanced Plant: The feedstock oil and fuel oil consumption resulted in an increase in greenhouse gas emissions.
   Maanshan and Anshan Plant: Outdated equipment led to increased resource consumption, and feedstock fuel requirement resulted in increased carbon emissions. The feedstock oil used is limited by product standards, increases in acquisition cost, and more initial costs are invested to achieve environmental benefits, resulting in increased financial costs.
5. How departments/plants located in different regions/countries implement emission reduction plans, and explain the related activities that were implemented: The emission reduction plan of Linyuan Advanced Plant includes using natural gas to replace fuel oil, planning to use APH to raise the temperature and improve unit oil consumption, recovering process tail gas to convert into steam for power generation, recovering heat energy from waste heat boiler, energy-saving improvement projects with frequency conversion of windmills in exhaust gas filter chambers, energy-saving projects with frequency conversion of fans, replacement of old equipment with new ones, and adjustment of power consumption through technical transformation of equipment. The emission reduction plan of Maanshan Plant and Anshan Plant includes recovering heat

energy by waste heat boilers, replacing with high-efficiency and energy-saving motors, reducing the use of oil through technical upgrading of processes and equipment, replacing old equipment, reducing the use of oil, conducting technical upgrading of existing equipment and installing new equipment to increase carbon reduction benefits, and planning to replace fuel oil consumption with natural gas in the future.

Air Quality

RT-CH-120a.1. Air Emissions of the 4 Pollutants

1. 2022 air pollutant emissions:

Unit: Tonne

Air Pollutants	Linyuan Advanced Plant	Maanshan Plant	Anshan Plant
Sulfur oxides (SOx)	85.2	8.8	7.7
Nitrogen oxides (NOx)	213.6	18.4	50.5
Volatile organic compounds (VOCs)	4.6	0.5	3.6
Hazardous air pollutants (HAPs)	0	0	0

Note 1: SOx covered gases: The statistical data of Linyuan Advanced Plant comprises SO_2+SO_3, and the data of Maanshan Plant and Anshan Plant are measured by the automatic monitoring and basic database of national key pollutant emission units, which is SO_2

Note 2: NOx covered gases: The data of each operating plant excludes N_2O

Note 3: HAPs covered gases: No HAPs are emitted at each operating plant

2. Calculation method of air pollutant emissions: Regularly monitor the emission status of various air pollutants every month and comply with the detection method, emission factor, and calculation method announced by the Taiwan Environmental Protection Administration / local authority in mainland China.

Energy Management

RT-CH-130a.1. The Company's (1) total energy consumed, (2) percentage grid electricity, (3) percentage renewable, (4) total self-generated energy

1. Total energy consumption of the enterprise: Total energy consumption within the Group in 2022 was 13,466,890 GJ, including Linyuan Advanced Plant, 7,984,974 GJ; Maanshan Plant, 3,370,299 GJ; Anshan Plant, 2,111,098 GJ; and Taipei Headquarters, 519 GJ.
2. Percentage grid electricity: Linyuan Advanced Plant 2.0% (159,623 GJ), Maanshan Plant 0.2% (8,281 GJ), Anshan Plant 1.6% (37,372 GJ); the Taipei headquarters was 100% (519 GJ). The percentage of energy consumed that was supplied from grid electricity was 1.5% (205,795 GJ).
3. Renewable energy consumption: Each operating plants does not use renewable energy in 2022.
4. Total self-generated energy by the entity: 1,532,971 GJ (Linyuan Advanced Plant 1,330,818 GJ, Maanshan Plant 143,048 GJ, Anshan Plant 59,105 GJ, Taipei headquarters 0 GJ).

Note 1：The total internal energy consumption is calculated according to the type of fuel and energy used in each operating plant. This is respectively Linyuan Advanced Plant = heavy oil + purchased electricity + natural gas; Maanshan Plant = heavy oil + purchased electricity + natural gas + diesel; and Anshan Plant = heavy oil + purchased electricity + diesel. Among them, the process tail gas and self-produced electricity are the from the burning of feedstock fuel, and are not included in the calculations to avoid double calculation of energy consumption

Note 2：Self-generated energy = self-consumed and self-generated electricity + self-generated electricity for sale + self-generated steam. Out of this, self-generated electricity mainly comes from the recovery of reuse steam generated during operation and production for power generation. However, the sales of steam will affect the amount of steam recovered, which in turn will affect self-generated electricity and self-consumed electricity.

Note to RT-CH-130a.1. Reduce energy consumption and/or improve energy efficiency throughout the manufacturing and production processes

The main direction of energy management is to improve energy efficiency. Examples include improving the power consumption efficiency of process equipment or recovering the tail gas produced by the process for power generation and reuse. Each plant conducts regular large-scale equipment maintenance to improve operation yield and productivity, reduce the output of defective products and waste, improve equipment efficiency year by year, and improve the efficiency of resource use. In addition, in the circular economy mode, thermal energy is reused to maximize the value in use and the process heat energy is used to produce steam for self-use or outsourcing. No other resources required for removing VOC before the process tail gas is emitted, the principle is that process of reusing VOC will convert it into heat energy to produce steam. Part of the steam is put into power generation to reduce the demand for electricity purchased in the plant.

The 2022 energy reduction plan for the manufacturing process of each plant is as follows:

Linyuan Advanced Plant

Energy Conservation Program		Description	2022 Performance
Energy structure management	Recycling process tail gas is converted into steam for power generation	The steam generated by burning process tail gas is supplied to neighboring factories, any remaining steam can also generate electricity for self-operation .	▪ Electricity generation is 17,153,000 kWh, accounting for 27.87% of total electricity consumption
Improving energy efficiency	Waste heat recovery from boilers	Waste heat boilers can recover waste heat in the production process for heat exchange and generate steam. Steam can be used for power generation, reducing the use of purchased electricity	▪ Reduction in electricity consumption of approximately 1,351,520 kWh ▪ Reduction in CO_2e emissions of approximately 678 tonnes
	Equipment optimization	Replace the C2 air preheater and increase the temperature of the T4 air preheater	▪ Actual carbon reduction of 1,523 tonnes of CO_2e
		Improvement of steam-electricity performance and improvement of boiler efficiency	▪ Actual carbon reduction of 346 tonnes of CO_2e
	Reduction of energy consumption per unit of output	Track energy consumption per unit output of main products and continuously save fuel consumption and control daily/monthly	▪ Total oil consumption was reduced by 0.2258 tonnes per tonne of carbon black compared with 2021

Maanshan Plant

Energy Conservation Program		Description	2022 Performance
Energy structure management	Recycling process tail gas is converted into steam for power generation	The steam generated by burning process tail gas is supplied to neighboring factories, any remaining steam can also generate electricity for self-operation .	▪ Power generation is 37,508,760 kWh, accounting for 124% of total electricity consumption
Improving energy efficiency	Waste heat recovery from boilers	Waste heat boilers can recover waste heat in the production process for heat exchange and generate steam. Steam can be used for power generation, reducing the use of purchased electricity	▪ Reduction in electricity consumption of approximately 391,680 kWh ▪ Reduction in CO_2e emissions of approximately 1,608 tonnes
	Replacements using high efficiency and energy saving motors	Continue to replace high-efficiency energy savings motors, in line with energy savings work promotions	▪ Reduction in electricity consumption of approximately 96,127 kWh ▪ Reduction in CO_2e emissions of approximately 126 tonnes

Anshan Plant

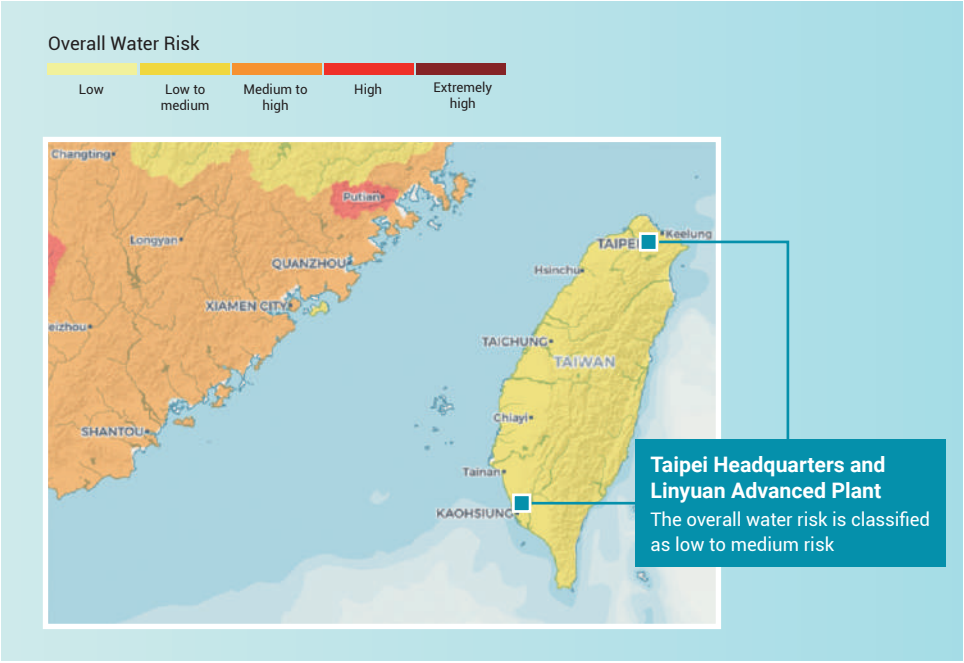
Energy Conservation Program		Description	2022 Performance
Energy structure management	Recycling process tail gas is converted into steam for power generation	The steam generated by burning process tail gas is supplied to neighboring factories, any remaining steam can also generate electricity for self-operation .	▪ Power generation is 16,418,280 kWh, accounting for 64% of total electricity consumption
Improving energy efficiency	Replacements using high efficiency and energy saving motors	Replacement of original IE2 series motors with IE3 series ultra-high efficiency motors	▪ Reduction in annual electricity consumption of approximately 332,361 kWh ▪ Reduction in annual CO_2e emissions of approximately 189 tonnes
	Replacement of old equipment	Implementation of 90T boiler equipment improvement, replacing the upper economizer tube bundle to improve boiler efficiency and increase steam production	▪ Increase in power generation of 270 kWh, ▪ Estimated annual carbon reduction of 1,232 tonnes of CO_2e
	Reduction of energy consumption per unit of output	Track energy consumption per unit output of main products and continue to reduce fuel use	▪ Savings of 4,542 tonnes of oil consumption ▪ CO_2e reduction of approximately 3,343 tonnes

Water Management

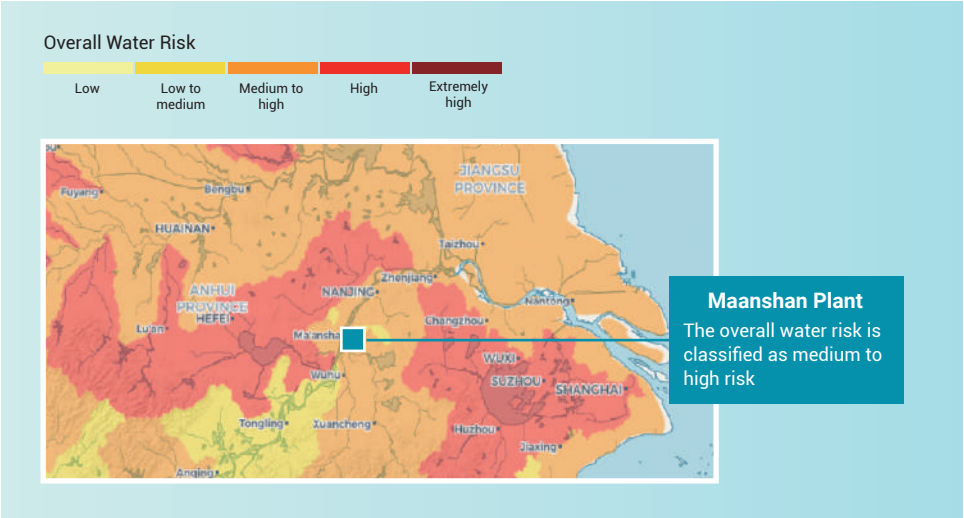
RT-CH-140a.1 **(1) Total water withdrawn, (2) total water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress**

1. CSRC total water withdrawn: 2,625 thousands m^3 (Linyuan Advanced Plant, 1,387 thousands m^3; Maanshan Plant, 565 thousands m^3; Anshan Plant 673 thousands m^3; Taipei headquarters, 0.00047 thousands m^3)
   1) Group total water consumption: 2,374 thousands m^3 (Linyuan Advanced Plant, 1,281 thousands m^3; Maanshan Plant, 553 thousands m^3; Anshan Plant, 541 thousands m^3; No statistics for Taipei headquarters)
   2) Operating locations located in "high" or "very high" water-scarcity areas and their proportions in respect to (1) and (2)

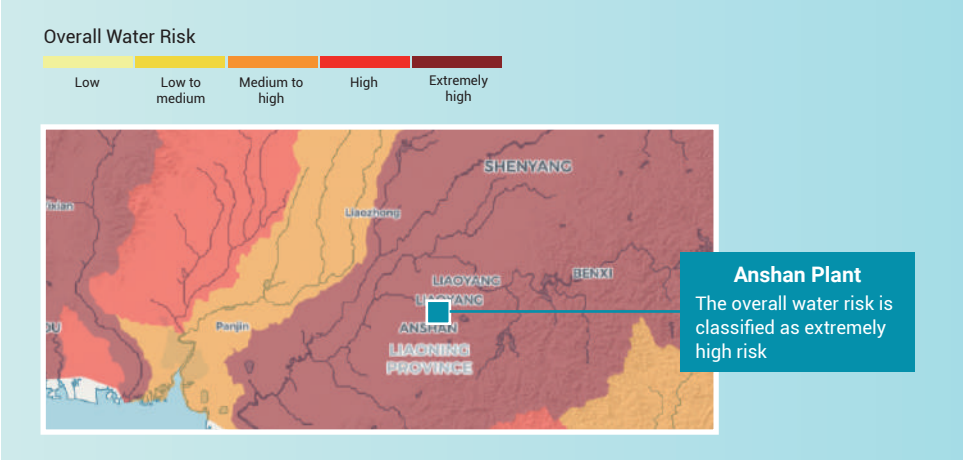
Linyuan Advanced Plant's overall water risk classification in the World Resources Institute (WRI) Aqueduct Water Risk Atlas is low risk and there is no withdrawn water stressed area. The water withdrawal of Linyuan Advanced Plant accounts for 52.8% of total water withdrawal. Its water consumption accounts for 53.9% of total water consumption.



The overall water risk classification of Maanshan Plant is medium to high risk. Although the plant is located in water stressed area, there is currently no water shortage or flooding situation. The water withdrawal of Maanshan Plant accounts for 21.5% of total water withdrawal; its water consumption accounts for 23.3% of total water consumption.



The overall water risk classification of the Anshan Plant is extremely high risk, and the water withdrawal of the Anshan Plant accounts for 25.6% of total water withdrawal; its water consumption accounts for 22.8% of total water consumption.



RT-CH-140a.2 Number of incidents of non-compliance associated with water quality permits, standards, and regulations

No water quality violations were recorded during 2022.

RT-CH-140a.3 Description of water management risks and discussion of strategies and practices to mitigate those risks

1. Risks associated with water withdrawals: According to the overall water risk evaluation results of WRI Aqueduct Water Risk Map, Maanshan Plant and Anshan Plant belong to medium to extremely high-risk areas.
2. Risks associated with wastewater: Due to the characteristics of the industry, discharged sewage may contain carbon black particles and a small amount of oil.
3. Short-term and long-term strategies:

Plant	Short-term strategy (2023-2025)	Medium and long-term strategy (2025-2030)
Linyuan Advanced Plant	1. Continue to implement the water balance management plan, review it regularly, and use water resources with a main direction of optimizing the operation surface 2. Discharged wastewater is to be treated by the wastewater treatment plant to remove carbon black particles and oil	Continually request benefits from all peers, and aim to utilize a portion of the evaporated water and discharged water
Maanshan Plant	1. Perform well in the operation and management of the wastewater treatment plant, and wastewater is to be treated by the wastewater treatment plant to remove carbon black particles and oil 2. Carry out water balance evaluation, trace from the source, reduce water consumption, and maximize water conservation through scientific management	Zero wastewater discharge
Anshan Plant	1. Perform well in the operation and management of the effluent's treatment plant, and wastewater is to be treated by the wastewater treatment plant to remove carbon black particles and oil 2. Increase the usage rate of recycled water through process technology and equipment improvement (for example, recycled water is to be used to produce granulation water and quenching water) 3. Carry out water balance evaluation, trace from the source, reduce water consumption, and maximize water conservation through scientific management	Zero wastewater discharge

4. Water resource management objectives: The water quality standard of Linyuan Advanced Plant is aligned with the wastewater water quality standard of Linyuan Industrial Zone (Petrochemical Specialized Zone); Maanshan Plant complied with "Pollutant Discharge Standard for Urban Sewage Treatment Plants"; The water quality discharge standard of Anshan Plant complies with the "Liaoning Province Comprehensive Wastewater Discharge Standard". In 2022, the quality of effluent water from each plant meets the effluent discharge standards.
5. Water resource management strategies result in additional life cycle impacts: Using air-cooled auxiliary water-cooling for heat recovery treatment can reduce water consumption and drainage, increase heat recovery, and reduce greenhouse gas emissions. Increase the use of recycled water while reducing water outsourcing and external drainage; perform well in water balance management to prevent channel water leakage, pollution, and damage to the land.

Hazardous Waste Management

RT-CH-150a.1 Amount of hazardous waste generated, percentage recycled

1. The total amount of hazardous waste produced by the Group: 913.9 tonnes (Linyuan Advanced Plant, 181.5 tonnes; Maanshan Plant, 386.3 tonnes; Anshan Plant, 346.1 tonnes; no hazardous waste generated in the Taipei Headquarters).
2. Hazardous waste recovery proportions: Linyuan Advanced Plant, 1.87% (3.4 tonnes for recycling and reuse); Maanshan Plant, 0% (all disposal through incineration); Anshan Plant, 0% (all disposal through incineration). 0.37% of hazardous waste generated by CSRC was recycled.

Note to RT-CH-150a.1. The legal or regulatory framework(s) used to define hazardous waste and recycled hazardous waste

1. Regulations defining hazardous waste: Linyuan Advanced Plant identifies and declares hazardous wastes in accordance with the hazardous industrial wastes defined by the "Taiwan Waste Disposal Act. Hazardous waste (hazardous solid waste)". Maanshan Plant and the Anshan Plant all refer to waste listed in mainland China's "National Hazardous Waste Inventory" or are identified in accordance with national hazardous waste identification standards and identification methods.
2. The amounts of waste defined in accordance with regulations or regulatory regimes: The waste in each operating plant follows the local regulations or regulatory system to identify, manage, and dispose of hazardous waste.

Community Relations

RT-CH-210a.1 Discussion of engagement processes to manage risks and opportunities associated with community interests

CSRC takes social responsibility for the neighboring communities and treats the communities around its production plants as its family members. Both environmental protection control and production process safety are top priority basic operating policies. As the Company is operating, we continue to interact with nearby neighbors in various ways to understand the needs of the local surrounding community. Every year, we implement communication and negotiation with local communities and related development plans at our operating locations, and we regularly conduct emergency response plan training and drills. Operations of CSRC may affect the air quality of neighboring communities. In response to the risk of air pollution, Linyuan Advanced Plant has established the necessary pollution monitoring equipment in all its process stages, and equipment maintenance is performed annually. Maanshan and Anshan Plant focus on continuous investment in environmental protection equipment, striving to reduce process emissions and regularly conducting management reviews of internal audit and air pollutant emissions. Anshan Plant has set up desulfurization and denitrification equipment and bag filters, and undertakes regular maintenance and installation of online monitoring equipment as well as real-time monitoring to ensure data compliance. Each operating plant manages environmental protection work in accordance with government requirements, and formulates a range of internal management plans. In 2022, there were no significant negative impacts on local communities and the environment because of our operations.

CSRC expects to be a role model in the industry. In addition to minimizing environmental negative impact, we are active in respect to engaging with the community to improve the local employment environment. Out of this, creating local employment opportunities is one way to demonstrate our ability to connect with local communities. In 2022, the proportion of local employees employed by Linyuan Advanced Plant was as high as 94% (54% direct, 46% indirect). The local employment ratio of Maanshan Plant was 98% (67% direct, 33% indirect). The proportion of local employees employed by Anshan Plant was 100%. We believe retaining local talents is the key to promoting local economic development. At the same time, CSRC assists in the development of community activities and supports a range of charity activities, and we implement circular economy environmental protection concepts in local neighborhoods. In 2022, CSRC's R&D colleagues formed a chemical volunteer lecturer team to communicate with the Shanwei Elementary School sixth-grade students in the CSRC's R&D Center. 14 students participated in this event, which gave the schoolchildren in the community a better understanding of the plants and knowledge of the circular economy concept. It broadened the schoolchildren's horizons and imagination for future development of the industry.

Worker health and safety

RT-CH-320a.1 (1) Total recordable incident rates and (2) fatality rates for (a) direct employees and (b) contract employees

In 2022, Linyuan Advanced Plant had two incidents of occupational injury.The main types of injuries were high temperature exposure and traffic accidents. Unacceptable risks were re-examined in accordance with the “hazard communication and management measures” of the Plant. Furthermore, we developed countermeasures and risk management to prevent the occurrence of hazards.

Linyuan Advanced Plant

Worker category	Total working hours	Number of general occupational injuries	Number of high-consequence occupational injuries	Number of deaths	Total number of recordable occupational injuries	Rate of high-consequence occupational injuries[Note 2]	Rate of fatalities as a result of occupational injury[Note 3]	Disabling injury frequency rate (FR)[Note 4]	Lost days[Note 5]	Severity of disability injury (SR)[Note 6]
Full-time employees	435,860	2[Note 1]	0	0	2	0	0	5	103	236
Temporary workers	0	0	0	0	0	0	0	0	0	0
Securities	12,001	0	0	0	0	0	0	0	0	0
Contractors	74,009	0	0	0	0	0	0	0	0	0
Total	521,870	2	0	0	2	0	0	4	103	197

In 2022, there were two occupational injuries in Maanshan Plant, and the main types of injuries were occupational injuries and others. The factory has reviewed and revised the operating instructions and strengthened personnel safety awareness training.

Maanshan Plant

Worker category	Total working hours	Number of general occupational injuries	Number of high-consequence occupational injuries	Number of deaths	Total number of recordable occupational injuries	Rate of high-consequence occupational injuries[Note 2]	Rate of fatalities as a result of occupational injury[Note 3]	Disabling injury frequency rate (FR) [Note 4]	Lost days[Note 5]	Severity of disability injury (SR) [Note 6]
Full-time employees	419,906	2 [Note 1]	0	0	2	0	0	5	44	105
Temporary workers	59,288	0	0	0	0	0	0	0	0	0
Securities	35,040	0	0	0	0	0	0	0	0	0
Contractors	148,800	0	0	0	0	0	0	0	0	0
Total	663,034	2	0	0	2	0	0	3	44	66

In 2022, Anshan Plant had one occupational injury, and the main type of injury was falls. The factory area reviewed warning notices at places where falls have occurred and trained personnel to raise safety awareness.

Anshan Plant

Worker category	Total working hours	Number of general occupational injuries	Number of high-consequence occupational injuries	Number of deaths	Total number of recordable occupational injuries	Rate of high-consequence occupational injuries[Note 2]	Rate of fatalities as a result of occupational injury[Note 3]	Disabling injury frequency rate (FR) [Note 4]	Lost days[Note 5]	Severity of disability injury (SR) [Note 6]
Full-time employees	460,464	1 [Note 1]	0	0	1	0	0	2	145	315
Temporary workers	0	0	0	0	0	0	0	0	0	0
Securities	23,904	0	0	0	0	0	0	0	0	0
Contractors	161,360	0	0	0	0	0	0	0	0	0
Total	645,728	1	0	0	1	0	0	2	145	225

Note 1: In 2022, Linyuan Advanced Plant had a total of 2 occupational injuries, and the main types of injuries were high temperature exposure and traffic accidents; two occupational injuries happened in Maanshan Plant, and the main types of injuries were occupational injuries and others; Anshan Plant had one occupational injury, and the main type of injury was falls.

Note 2: Severe occupational injury rate (excluding fatalities) = Number of serious occupational injuries (excluding fatalities) × 1,000,000 working hours / total working hours.

Note 3: Rate of deaths caused by occupational injuries = (The number of deaths caused by occupational injuries × 1,000,000 working hours) / Total working hours.

Note 4: Disability injury frequency rate (FR) (Also known as "Recordable Occupational Injury Rate") = (Recordable number of occupational injuries × 1,000,000 working hours) / Total working hours.

Note 5: Calculated from the date of injury, the total number of days lost after all injuries occurring in a single case. The number of days the injured person is temporarily (or permanently) unable to return to work. The day of injury and the day of return to work must not be included, but the number of days elapsed in between (including Sundays, holidays or business unit off-work days) and any days of inability to work due to the incident after resumption of work must be included.

Note 6: Disabling injury severity rate (SR) = (Number of lost working days × 1,000,000 working hours) / Total working hours.

RT-CH-320a.2 Describe efforts to assess, monitor, and reduce employee and contract employee exposure to long-term (chronic) health risks

To take good care of the health of all colleagues, CSRC continues to introduce relevant safety and health mechanisms through the mechanism of PDCA; and we implement, track, and improve related procedures to provide high-quality employee health and safety services. We also pay attention to the personal privacy of employees. We do not track what is discussed with medical staff, protecting the rights and interests of employees.

In addition to occupational health services, CSRC also provides all employees with personal health checkups at cooperative hospitals every year. In addition to the personal health check services for employees before and on duty, After the inspection report of Linyuan Advanced Plant is released, the hospital will also provide temporary health consultation services for colleagues whose examination items are abnormal.

To improve the health protection of employees when working in professional sites, Linyuan Advanced Plant has upgraded the factory health service to a full-time nurse to provide uninterrupted health care for workers. In addition, we plan special physical examinations for new employees and conduct the Nordic Musculoskeletal Questionnaire (NMQ)[Note], as well as occupation-related special health inspections. The target is colleagues who work in environments that are particularly hazardous to health. (This includes those featuring high temperatures, noise, ionizing radiation, abnormal air pressure, lead, tetraalkyl lead, dust, organic solvents, specific chemical substances, yellow phosphorus, and other operating environments that are particularly hazardous to health.) In addition to plant employees, the Company conducts disease assessments for contractors to determine their suitability for 30 types of operations before they can enter the plant for training. Cardiovascular disease or abnormal hearing would make one unsuitable for noisy work; high blood pressure or heart disease would mean an individual is assessed as not suitable for high-temperature work, and so on. These and other regulations are in place to ensure the safety of each project and personnel of CSRC.

In addition to the personal health check services for employees before and on duty, Maanshan Plant provides personal health checks upon resignation to help workers get the most complete health care. Futhermore, Maanshan Plant implements special health checks every year according to occupational characteristics. The inspection rates in 2022 were 100% for dust, 100% for noise, and 100% for xylene. This should strengthen occupational health management and services for colleagues.

The Anshan Plant conducts pre-job, regular on-job, and off-job physical examinations for employees in accordance with the "Prevention and Control of Occupational Diseases Law." In accordance with the "Liaoning Provincial Labor Protection Measures for Female Employees," two items of gynecological examination and cervical cancer examination were newly added to the health examinations of female employees. The general health examination is conducted once a year, and 232 people participated in the health examination in 2022. In addition, in accordance with the "Occupational Health Surveillance Technical Specifications," Anshan Plant has formulated an annual physical examination plan and the frequency of inspection items for occupational diseases. Productive dust operation Grade I is set once every four years; Grade II and above is once every two to three years. For 8-hour equivalent sound level of workplace noise ≥ 85 dB, it is once a year; for between 80–85 dB, it is once every two years. In 2022, 158 people participated in the occupational disease physical examination, and the occupational disease physical examination rate was 100%. For annually contracted contractors, the Anshan Plant requires workers' medical examination reports to be submitted every year.

Note: The Nordic Musculoskeletal Questionnaire is often used to investigate categories of musculoskeletal injuries and provide a questionnaire for improvement. Based on this questionnaire, a survey and analysis of all employees can be carried out to identify workstations or operations that may have potential musculoskeletal injury risks, and such areas will include degrees of soreness as targets that may need to be assessed.

Product design

RT-CH-410a.1 Product revenue designed to improve resource efficiency in the usage phase

Based on our professional carbon black technology, CSRC is constantly pursuing product innovation. Based on our core concepts and principles, our most important green products are "New LH Series Carbon Black" and "Non-toxic Carbon Black Series" as well as "Eco-circular Carbon Black." The product classifications and sustainability benefits are as follows:

Classification	Products	Production plant	Product sustainability benefits
New LH	LH series carbon black	▪ Linyuan Advanced Plant ▪ Anshan Plant	▪ Reduce tire rolling resistance by more than 10%, improve wear resistance, reduce vehicle fuel consumption and reduce carbon emissions
Non-toxic Carbon Black	Low PAH series	▪ Linyuan Advanced Plant ▪ Maanshan Plant ▪ Anshan Plant	▪ Use carbon black with low PAHs content to replace traditional carbon black, reducing the risk of PAHs hazards in products
	Post-modified EREBOS	▪ Linyuan Advanced Plant	▪ Produced by a green process, the primary carbon black is post-modified. Various conditional parameters of post-modification reaction can be adjusted in real time, effectively improving the quality and production efficiency of modified carbon black products ▪ Compared with the traditional strong acid modification, this new modification technology does not produce waste gas or waste liquid, greatly reducing the environmental impact ▪ Applicable to customers' environmentally friendly water-based application formulations
Eco-circular Carbon Black	Ouroboros series	▪ Linyuan Advanced Plant	▪ Collaborate and blend with recycled carbon black to reduce reliance on petrochemical raw materials

Since the proportion is rather small, CSRC has yet to disclose green product revenue. In 2022, Linyuan Plant, Maanshan Plant, and Anshan Plant increased the revenues of the above-mentioned products by 3.5% compared to 2021.

Safety & Environmental Stewardship of Chemicals

RT-CH-410b.1. **(1) Percentage of products that contain Globally Harmonized System of Classification and Labeling of Chemicals (GHS) Category 1 and 2 Health and Environmental Hazardous Substances, (2) percentage of such products that have undergone a hazard assessment**

The products produced by CSRC's operating plants do not contain GHS category 1 and 2 health and environmental hazards substances.

RT-CH-410b.2. **Strategy to (1) manage chemicals of concern and (2) develop alternatives with reduced human and/or environmental impact**

1. All operating plants formulate chemical management procedures and processes in accordance with local regulations:

Plant	Management method	Management process
Linyuan Advanced Plant	Align with Article 11 of the Occupational Safety and Health Act, we assess the risk level of the health hazards, distribution and usage of chemicals, and adopt hierarchical management measures.	Chemical assessment refers to evaluating or estimating the health hazards of workers exposed to chemicals by qualitative, semi-quantitative, or quantitative methods; and to adopt hierarchical management according to the results. For those that meet the national standard CNS 15030 chemical classification and have health hazards, the assessment and classification management shall be carried out at least once every three years.
Maanshan Plant and Anshan Plant	In accordance with the "Regulations on the Safety Management of Hazardous Chemicals" (State Council Order No. 645) and "Regulations on the Administration of Precursor Chemicals" (State Council Order No. 445)	Establish a hazardous chemical safety management system, occupational health management system, and precursor chemicals management system for internal chemical management

2. At present, Linyuan Advanced Plant uses waste tire pyrolysis as fuel oil, which can achieve resource recycling and reuse to reduce the impact on the environment. All operating plants are actively planning to introduce natural gas instead of fuel oil.

Genetic modification

RT-CH-410c.1 **Percentage of revenues from products containing genetically modified organisms (GMOs)**

The Company business is not involved in such items.

Management of laws and environmental regulations

RT-CH-530a.1 **Discuss the Company's position in relation to government regulations and/or policy proposals that address environmental and social factors affecting the industry**

In response to climate risk responses, the Safety and Environment Center and the safety and environmental offices of each operating plant area and its management pay continuous attention to the relevant regulations and requirements of greenhouse gases of environmental protection supervision units in various regions and strictly abide by the rules. Furthermore, they continue to pay attention to new technologies and methods to reduce future air pollutant emissions. Moreover, in response to the trend of stricter laws and regulations, CSRC has also deployed high-efficiency pollution prevention and control equipment in advance, and regularly inspects the prevention and control efficiency to ensure that it exceeds the requirements of laws and regulations and meets ultra-clean emission standards.

Linyuan Advanced Plant verifies greenhouse gas emissions through a third party every year, and obtains the ISO 14064-1 greenhouse gas verification statement. Furthermore, it uses the results of the inventory as the basis for internal greenhouse gas management to clarify the operating efficiency of production equipment and the benefits of operating procedures, and then make timely adjustments as a reference for subsequent promotion of greenhouse gas management.

Maanshan and Anshan Plants have also introduced the ISO 14001 management system and pass the supervision and audit of the local quality certification center every year. These initiatives will improve the management quality in terms of energy saving, environmental protection and production processes and improve the direction of program planning, while also implementing environmental protection policies and reducing environmental impacts. Regarding raw materials, processes and products, we uphold the highest management principles of caring for the environment and cherishing resources.

In 2022, there were three violations of material environmental and occupational health and safety (with penalties exceeding NTD 100,000). The fine amount was NTD 411,084 for major breaches of regulations that are not subject to monetary sanctions.

Penalizing Unit	Regulatory Violation	Description of violation	Fine amount	Follow-up improvement
Kaohsiung Environmental Protection Bureau	Article 32 of the Air Pollution Control Act	During the carbon black production process, the junction between the granulator and the drying furnace was blocked, causing granular pollutants to escape from the sampling port of the granulator product. Although water was immediately sprayed to suppress it, it was still not collected effectively, resulting in air pollution.	NTD 150,000	Carry out repair work on abnormal equipment that causes particulate pollutants to escape, to restore normal operation.
Kaohsiung Environmental Protection Bureau	Article 23 of the Air Pollution Control Act	The bag filter was opened for maintenance due to failure, resulting in the collected carbon black (granular pollutants) directly escaping from the maintenance hole to the atmosphere.	NTD 150,000	Carry out emergency repairs to the bag filter that caused the escape of particulate pollutants and strengthen maintenance personnel briefings to avoid behaviors that cause pollutants to escape due to maintenance.
People's Government of Maanshan Municipality	Article 28 of the Fire Protection Law of the People's Republic of China	Warehouse fire facilities and equipment are damaged	RMB 25,730	Complete the damage update of the fire protection facilities in the warehouse, and approve the acceptance of the fire protection unit

Operational Safety, Emergency Preparedness & Response

RT-CH-540a.1 Process Safety Incidents Count (PSIC), Process Safety Total Incident Rate (PSTIR), and Process Safety Incident Severity Rate (PSISR)

In 2022, process safety performance indicators are as follows:

Content of indicators	Unit	2022 performance		
		Linyuan Advanced Plant	Maanshan Plant	Anshan Plant
Total Count of Process Safety Incidents (PSIC) Note 1	Number	1	2	0
Process Safety Total Incident Rate (PSTIR) Note 2	Percentage (%)	38.3	60.3	0
Process Safety Incident Severity Rate (PSISR) Note 3	Percentage (%)	38.3	60.3	0

Note 1: Statistics of the process safety incidents (PSIC) meeting the following four criteria:

(a) Must be process related. If there is an incident in the refrigeration system unrelated to the process, or a fire in an office building, etc., it will not be included in the statistics.

(b) Chemical spills exceed the minimum reporting requirements, resulting in death or injury to employees or contractors or hospitalization of a third person (not employees or contractors); official declaration of community evacuation or shelter-in-place; the direct loss of the Company caused by the fire or explosion exceeds USD$ 25,000, any of which needs to be reported.

(c) The incident site occurs in production, distribution, storage, public or pilot plants, etc.

(d) Serious spills in which the amount of leakage exceeds the allowable limit in any one hour.

Note 2: Process Safety Total Incident Rate (PSTIR): [Total Count of Process Safety Incidents (PSIC) x 200,000] / [total working hours of workers (employees, contractors, or subcontractors)].

Note 3: Process Safety Incident Severity Rate (PSISR): [Total score of serious process safety incidents x 200,000] / [total working hours of workers (employees, contractors, or subcontractors)]. The total score of the severity of the annual process safety incident is to classify the number of process safety incidents through the process safety event severity level table. There are different scores for each level; the full score is 108 points, and the grading table is formulated by ACC of the US.

Note 4: Causes of the accident: (1) During the equipment maintenance work, the operator got up after finishing the operation and did not pay attention to the upper pipeline, causing his back to touch the pipeline, resulting in burns. Improvement measures: measures to block the heat source have been taken. (2) Injuries caused by unsuitable operating height and space; and slipping caused by wet and slippery ground. Improvement measures: We have reviewed and revised the operation instructions, and strengthened personnel safety awareness training.

RT-CH-540a.2 Number of transport incidents

CSRC attaches great importance to transportation safety. During the supplier evaluation process, we include supplier transportation mode as one of the evaluation items. Suppliers that provide transportation services must meet a certain evaluation score to maintain a contracting relationship with CSRC. During transportation If there is exposure to chemicals, relevant personnel must wear personal safety protective equipment throughout the operation in accordance with the regulations. Furthermore, they must understand the operation safety operation standard procedures. In 2022, there were no major transport incidents where raw materials or chemicals were leaked.

GRI Content Index

GRI Standard	Disclosure	Reference	Page	Note
GRI 2: General Disclosures 2021	2-1 Organizational details	About This Report About CSRC	2 21-22	
	2-2 Entities included in the organization's sustainability reporting	About This Report For more information, please refer to CSRC 2022 Annual Report.	2	
	2-3 Reporting period, frequency and contact point	About This Report	2-3	
	2-4 Restatements of information	2.2 Energy Management and Greenhouse Gas Management	57	In order to comply with disclosure requirement of GRI 302-1 : Energy consumption within the organization, the energy consumption calculation method was changed in 2022, and the energy consumption intensity was also adjusted synchronously, and those values were corrected and traced back to 2020.
		3.2 Waste Management	85-86	The waste recycling rate in 2021 is different from the data disclosed in the previous report. Considering that CSRC has strengthened the management of third-party waste disposal companies, and for third-party incineration processing companies, we give priority to select manufacturers that cooperate with gas-electric cogeneration. Therefore in 2022, the calculation method of waste recycling rate was revised to include incineration (energy recovery), and those values were corrected and traced back to 2020-2021.
	2-5 External assurance	About CSRC Appendix	3 200-201	
	2-6 Activities, value chain and other business relationships	About CSRC Brand Value 1.5 Operating Performance 4.1 Innovation and Circular Economy 4.2 New Circular Economy Model in Practice 5.2 Green Product 6.1 Supplier Management	21-22 23 43-44 90-91 92-93 101-105 113-114	
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	2-15 Conflicts of interest	1.1.1 Board of Directors	28	
	2-16 Communication of critical concerns	-	-	No communication of critical concerns with the Board of Directors happened in 2022.
	2-17 Collective knowledge of the highest governance body	1.1.1 Board of Directors	29	
	2-18 Evaluation of the performance of the highest governance body	1.1.1 Board of Directors	29	
	2-19 Remuneration policies	1.1.2 Compensation Committee	30	
	2-20 Process to determine remuneration	1.1.2 Compensation Committee	30	
	2-21 Annual total compensation ratio	-	-	1. Ratio of the annual total compensation for the organization's highest-paid individual to the median annual total compensation for all employees (excluding the highest-paid individual). ◆ CSRC (Taipei): 9.88 ◆ Linyuan Advanced Plant: 6.79 ◆ Maanshan Plant: 6.42 ◆ Anshan Plant: 2.73 2. The disclosure of the ratio of the percentage increase in annual total compensation for the organization's highest-paid individual to the median percentage increase in annual total compensation for all employees (excluding the highest-paid individual) is not applicable because of no relevant salary statistics for 2021. Also, CSRC lost controls over TCC Recycle Energy Technology Company, the battery businedd unit, in August 2021. Information in 2021 still covers TCC Recycle Energy Technology Company battery businedd unit, but not in 2022, and therefore information between two years cannot be compared.
	2-22 Statement on sustainable development strategy	Message from the Chairman	4-5	
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	2-28 Membership associations	About CSRC	22	
	2-29 Approach to stakeholder engagement	Stakeholder Engagement and Analysis of Material topics	17-18	
	2-30 Collective bargaining agreements	-	-	No collective bargaining agreements signed.
GRI 3: Material Topics 2021	3-1 Process to determine material topics	Stakeholder Engagement and Analysis of Material topics	15	
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	305-2 Energy indirect (Scope 2) GHG emissions	2.2.2 Reduction of Greenhouse Gas Emissions	60-61	
	305-3 Other indirect (Scope 3) GHG emissions	-	-	No Scope 3 GHG inventory was conducted in 2022.
	305-4 GHG emissions intensity	2.2.2 Reduction of Greenhouse Gas Emissions	60-61	
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GRI 305: Emissions 2016	305-6 Emissions of ozone-depleting substances (ODS)	-	-	Linyuan Advanced Plant has no relevant emission substances, Maanshan Plant and Anshan Plant have not been tested for the emissions of ozone-depleting substances yet.
	305-7 Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	2.3 Air Pollution Prevention and Control	67-69	
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	403-5 Worker training on occupational health and safety	7.5 Occupational Safety and Health Education and Training	139-142	
	403-6 Promotion of worker health	7.4.3 Employee Health Promotion	137-138	
	403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	7.2.2 Risk Assessment and Hazard Identification	128-129	
		7.5.2 Occupational Safety and Health Education and Training for Contractors	141-142	
	403-8 Workers covered by an occupational health and safety management system	7.1.2 Safety and Health Management System	122	
	403-9 Work-related injuries	7.1.3 Management Objectives and Performance	123-126	
	403-10 Work-related ill health	7.4.2 Identification and Management of Occupational Illness	136-137	
Employment Relations				
GRI 3: Material Topics 2021	3-3 Management of material topics	8 Employees	144-145	
GRI 401：Employment 2016	401-1 New employee hires and employee turnover	8.1.2 Personnel Structure	147	
	401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees	8.3.2 Employee Benefits	156-159	
	401-3 Parental leave	8.3.2 Employee Benefits	158	
Local Communities				
GRI 3: Material Topics 2021	3-3 Management of material topics	9 Local Communities	164-165	
GRI 413：Local Communities 2016	413-1 Operations with local community engagement, impact assessments, and development programs	9.1 Social Contribution	166-167	
Product and Service Innovation				
GRI 3: Material Topics 2021	3-3 Management of material topics	5 Product R&D and Innovation	99-100	
Other Topics				
Regulatory Compliance				
GRI 2: General Disclosures 2021	2-27 Compliance with laws and regulations	1.3.3 Regulatory Compliance and Improvements	38	

GRI Standard	Disclosure	Reference	Page	Note
		Tax Governance		
GRI 207：Tax 2019	207-1 Approach to tax	1.5.2 Tax Policy	44	
	207-2 Tax governance, control, and risk management	1.5.2 Tax Policy	44	
	207-3 Stakeholder engagement and management of concerns related to tax	1.5.2 Tax Policy	44	
		Staff Training and Career Development		
GRI 404： Training and Education 2016	404-1 Average hours of training per year per employee	8.2.1 General Functional Training	151-154	
	404-2 Programs for upgrading employee skills and transition assistance programs	8.2.1 General Functional Training	154-155	
	404-3 Percentage of employees receiving regular performance and career development reviews	8.3.1 Salary and Performance	156	
		Employee Diversity and Equal Opportunity		
GRI 405： Diversity and Equal Opportunity 2016	405-1 Diversity of governance bodies and employees	1.1.1 Board of Directors 8.1.2 Personnel Structure	27-28 148-150	
	405-2 Ratio of basic salary and remuneration of women to men	8.3.1 Salary and Performance	156	
		Human Rights		
GRI 406: Non-discrimination 2016	406-1 Incidents of discrimination and corrective actions taken	8.4.3 Anti-discrimination and Harassment	162	
GRI 408: Child Labor 2016	408-1 Operations and suppliers at significant risk for incidents of child labor	8.4.2 Prohibition of Forced Labor	162	
GRI 409: Forced or Compulsory Labor 2016	409-1 Operations and suppliers at significant risk for incidents of forced or compulsory labor	8.4.2 Prohibition of Forced Labor	162	
		Product Quality and Safety Management		
GRI 416： Customer Health and Safety 2016	416-1 Assessment of the health and safety impacts of product and service categories	5.2.2 "Non-toxic Carbon Black Series" 5.3.2 Product Safety Labels	102-103 109	
	416-2 Incidents of non-compliance concerning the health and safety impacts of products and services	5.3 Product Quality and Safety	109	
		Data Security Management, Customer Privacy		
GRI 418：Customer Privacy 2016	418-1 Substantiated complaints privacy and losses of customer data concerning breaches of customer	1.4.3 CSRC Risks and Responses 5.4 Customer Relationship Management	42 109-110	

Sustainability Accounting Standards Board (SASB) Index

Topic	Code	Accounting Metric	Reference	Page
Greenhouse Gas Emissions	RT-CH-110a.1.	Gross global Scope 1 emissions, percentage covered under emissions-limiting regulations	2.2.2 Reduction of Greenhouse Gas Emissions	60-61
			10 SASB Disclosure of Sustainability Information	177
	RT-CH-110a.2.	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Management policy of Responses to Climate Change and Energy management	47
			2.2.2 Reduction of Greenhouse Gas Emissions	62-63
			10 SASB Disclosure of Sustainability Information	177
Air Quality	RT-CH-120a.1.	Air emissions of pollutants (including 4 pollutants)	2.3 Air Pollution Prevention and Control	67-69
			10 SASB Disclosure of Sustainability Information	178
Energy Management	RT-CH-130a.1.	(1) Total energy consumed, (2) percentage grid electricity, (3) percentage renewable and (4) total self-generated energy	2.2.1 Improving Energy Efficiency	57
			10 SASB Disclosure of Sustainability Information	178
Water Management	RT-CH-140a.1	(1) Total water withdrawn (2) Total water consumed (3) Percentage of (1) and (2) in regions with High or Extremely High Baseline Water Stress	3.1.1 Water Usage Management	74-79
			10 SASB Disclosure of Sustainability Information	180
	RT-CH-140a.2	Number of incidents of non-compliance associated with water quality permits, standards, and regulations	1.3.3 Regulatory Compliance and Improvements	38
			10 SASB Disclosure of Sustainability Information	181
	RT-CH-140a.3	Description of water management risks and discussion of strategies and practices to mitigate those risks	3.1.2 Wastewater Management	80-82
			10 SASB Disclosure of Sustainability Information	181
Hazardous Waste Management	RT-CH-150a.1	Amount of hazardous waste generated, percentage recycled	1.3.3 Regulatory Compliance and Improvements	38
			3.2.1 Waste Disposal	85-86
			10 SASB Disclosure of Sustainability Information	181
Community Relations	RT-CH-210a.1	Discussion of engagement processes to manage risks and opportunities associated with community interests	9.1.1 Neighborhood Care	166
			10 SASB Disclosure of Sustainability Information	182

Topic	Code	Accounting Metric	Reference	Page
Workforce Health & Safety	RT-CH-320a.1	(1) Total recordable incident rate (TRIR) (2) fatality rate for (a) direct employees and (b) contract employees	7.1.3 Management Objectives and Performance	125-126
			10 SASB Disclosure of Sustainability Information	182-183
	RT-CH-320a.2	Description of efforts to assess, monitor, and reduce exposure of employees and contract workers to long-term (chronic) health risks	10 SASB Disclosure of Sustainability Information	184
Product Design for Use-phase Efficiency	RT-CH-410a.1	Revenue from products designed for usephase resource efficiency	10 SASB Disclosure of Sustainability Information	184
Safety & Environmental Stewardship of Chemicals	RT-CH-410b.1	(1) Percentage of products that contain Globally Harmonised System of Classification and Labelling of Chemicals (GHS) Category 1 and 2 Health and Environmental Hazardous Substances (2) percentage of such products that have undergone a hazard assessment	10 SASB Disclosure of Sustainability Information	185
	RT-CH-410b.2	Discussion of strategy to (1) manage chemicals of concern (2) develop alternatives with reduced human and/or environmental impact	10 SASB Disclosure of Sustainability Information	185
Genetically Modified Organisms	RT-CH-410c.1	Percentage of products by revenue that contain genetically modified organisms (GMOs)	10 SASB Disclosure of Sustainability Information	185
Management of the Legal & Regulatory Environment	RT-CH-530a.1	Discussion of corporate positions related to government regulations and/or policy proposals that address environmental and social factors affecting the industry.	10 SASB Disclosure of Sustainability Information	185-186
Operational Safety, Emergency Preparedness & Response	RT-CH-540a.1	Process Safety Incidents Count (PSIC), Process Safety Total Incident Rate (PSTIR), and Process Safety Incident Severity Rate (PSISR).	10 SASB Disclosure of Sustainability Information	186
	RT-CH-540a.2	Number of transport incidents	10 SASB Disclosure of Sustainability Information	186

Note： SASB metrics is applied in accordance with the version 2018-10 for the Chemicals Industry.

Taiwan Stock Exchange Corporation Rules Governing the Preparation and Filing of Sustainability Reports by TWSE Listed Companies: Sustainability Disclosure Indicators for the Chemical Industry

Code	Indicator	Category	Reference	Page	Note
1	Total energy consumption, percentage of purchased electricity, rate of renewable energy use, and total self-generated and self-usage energy. Note	Quantitative	2.2.1 Improving Energy Efficiency 10 SASB Disclosure of Sustainability Information	57 178	
2	Total water withdrawal, total water consumption, and waste (sewage) water discharge volume required by law and regulations or disclosed voluntarily.	Quantitative	3.1.1 Water Usage Management 10 SASB Disclosure of Sustainability Information	74-79 180	
3	Amount of hazardous waste generated during production and percentage recycled according to legal requirements or voluntary disclosure.	Quantitative	3.2.1 Waste Disposal 10 SASB Disclosure of Sustainability Information	85-86 181	
4	Number and rate of individuals subject to occupational accidents.	Quantitative	7.1.3 Management Objectives and Performance 10 SASB Disclosure of Sustainability Information	125-126 182-183	
5	Operating activities which have significant actual or potential negative impacts on local communities.	Discussion and Analysis	9.1.1 Neighborhood Care 10 SASB Disclosure of Sustainability Information	166 182	
6	Specific and effective mechanisms and actions taken by the company and its suppliers to reduce negative impacts on the environment or society.	Discussion and Analysis	6.1 Supplier Management	113-114	
7	Production output by product line.	Quantitative	-	-	Please refer to Annual Report.

Note：The total amount of self-generated and self-usage energy is defined in the "Renewable Energy Development Act", "Implementation Regulations Governing Renewable Energy Certificates" or related sub-laws.

Climate-Related Information of TWSE/TPEx Listed Company

Item	Reference	Page
1. Describe the board of directors' and management's oversight and governance of climate-related risks and opportunities.	2.1.1 Climate Change Risks, Opportunities, and Financial Impact	51
2. Describe how the identified climate risks and opportunities affect the business, strategy, and finances of the business (short, medium, and long term).	2.1.1 Climate Change Risks, Opportunities, and Financial Impact	51-56
3. Describe the financial impact of extreme weather events and transformative actions.	2.1.1 Climate Change Risks, Opportunities, and Financial Impact	53-56
4. Describe how climate risk identification, assessment, and management processes are integrated into the overall risk management system.	2.1.1 Climate Change Risks, Opportunities, and Financial Impact	51
5. If scenario analysis is used to assess resilience to climate change risks, the scenarios, parameters, assumptions, analysis factors and major financial impacts used should be described.	Scenario analysis was not used.	-
6. If there is a transition plan for managing climate-related risks, describe the content of the plan, and the indicators and targets used to identify and manage physical risks and transition risks.	2.1.1 Climate Change Risks, Opportunities, and Financial Impact	53-54 56
7. If internal carbon pricing is used as a planning tool, the basis for setting the price should be stated.	Carbon pricing was not used.	-
8. If climate-related targets have been set, the activities covered, the scope of greenhouse gas emissions, the planning horizon, and the progress achieved each year should be specified. If carbon credits or renewable energy certificates (RECs) are used to achieve relevant targets, the source and quantity of carbon credits or RECs to be offset should be specified.	2.2.2 Reduction of Greenhouse Gas Emissions	60-63
9. Greenhouse gas inventory and assurance status.	2.2.2 Reduction of Greenhouse Gas Emissions	60-63

United Nations Sustainable Development Goals (SDGs) Index

Goals	Targets	Reference	Page
3 GOOD HEALTH AND WELL-BEING	3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	7.2 Occupational Safety Risk Management	126-132
4 QUALITY EDUCATION	4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes	9.1 Social Contribution	166-167
	4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations	8.2 Talent Cultivation	151-155
	4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development	9.1 Social Contribution	166-167
6 CLEAN WATER AND SANITATION	6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally	3.1 Water Resource Management	74-82
7 AFFORDABLE AND CLEAN ENERGY	7.2 By 2030, increase substantially the share of renewable energy in the globalenergy mix	2.2 Energy Management and Greenhouse Gas Management	58
	7.3 By 2030, double the global rate of improvement in energy efficiency	2.2 Energy Management and Greenhouse Gas Management	57-59
		4.1 Innovation and Circular Economy	91-92
		4.2 New Circular Economy Model in Practice	92-93
8 DECENT WORK AND ECONOMIC GROWTH	8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services	4.1 Innovation and Circular Economy	90-92
	8.7 Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms	6.1 Supplier Management	113
	8.8 Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment	7.1 Safety and Health Policy	121-126
		7.5 Occupational Safety and Health Education and Training	139-142
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	9.5 Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending	4.1 Innovation and Circular Economy	90-92
		5.1 Innovation and Development	100-101
10 REDUCED INEQUALITIES	10.4 Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality	8.3 Salary and Benefits	155-156
11 SUSTAINABLE CITIES AND COMMUNITIES	11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage	9.3 Cultural Promotion	169-172
	11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management	2.3 Air Pollution Prevention and Control	64-70
		3.2 Waste Management	83-87
12 RESPONSIBLE CONSUMPTION AND PRODUCTION	12.2 By 2030, achieve the sustainable management and efficient use of natural resources	3.1 Water Resource Management	74-82
		3.2 Waste Management	83-87
		4.1 Innovation and Circular Economy	91-92
		4.2 New Circular Economy Model in Practice	92-93
	12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment	5.3 Product Quality and Safety	105-109
		5.4 Customer Relationship Management	109-110
		7.2 Occupational Safety Risk Management	130-132
		6.1 Supplier Management	113-114
	12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse	3.2 Waste Management	83-87
		4.1 Innovation and Circular Economy	91-92
		4.2 New Circular Economy Model in Practice	92-93
		6.2 Raw Materials Management	116-117
	12.7 Promote public procurement practices that are sustainable, in accordance with national policies and priorities	6.3 Sustainable Procurement	117-118

Goals	Targets		Reference	Page
	13.1	Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries	2.1 Climate Change Response	50-56
	13.3	Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	1.4 Risk Management	40
			2.1 Climate Change Response	50-56
			2.2 Energy Management and Greenhouse Gas Management	57-63
	15.4	By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development	9.2 Biodiversity Maintenance	168-169
	15.6	Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed	9.2 Biodiversity Maintenance	168-169
	15.a	Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems	9.2 Biodiversity Maintenance	168-169
	16.5	Substantially reduce corruption and bribery in all their forms	1.2 Ethical Management	32-36

UN Global Compact Index

Category	10 principles	Reference	Page
Human Rights	Businesses should support and respect the protection of internationally proclaimed human rights.	8.4 Human Rights Management	161
	Make sure that they are not complicit in human rights abuses.	8.4 Human Rights Management	161
Labour	Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.	8.3 Salary and Benefits	160
	The elimination of all forms of forced and compulsory labour.	8.4 Human Rights Management	162
	The effective abolition of child labour.	8.4 Human Rights Management	162
	The elimination of discrimination in respect of employment and occupation.	8.4 Human Rights Management	162
Environment	Businesses should support a precautionary approach to environmental challenges.	1.4 Risk Management	38-40
		2 Climate Change Response	50-56
		3.1 Water Resource Management	74-79
		4.1 Innovation and Circular Economy	90-92
		4.2 New Circular Economy Model in Practice	92-93
		5.2 Green Product	101-105
		5.3 Product Quality and Safety	105-109
	Undertake initiatives to promote greater environmental responsibility.	2 Climate Change Response	50-56
		3 Water Resources and Waste Management	74-87
		4 Circular Economy	90-97
		5.2 Green Product	101-105
		5.3 Product Quality and Safety	105-109
	Encourage the development and diffusion of environmentally friendly technologies.	4 Circular Economy	90-97
		5.2 Green Product	101-105
		5.3 Product Quality and Safety	105-109
Anti-Corruption	Businesses should work against corruption in all its forms, including extortion and bribery.	1.2 Ethical Management	32-36
		6.1 Supplier Management	113

Summary of Information Assured

<table>
<tr><th>編號</th><th>項目</th><th>標的資訊</th><th>頁碼</th><th>適用基準</th></tr>
<tr><td>1</td><td>消耗能源總量、外購電力百分比、再生能源使用率及自發自用能源總量</td><td>1. 消耗能源總量：2022 年能源消耗總量為 13,466,890 GJ。
2. 外購電力百分比：2022 年外購電力比例為 1.5%。
3. 再生能源使用率：各營運廠區未使用再生能源。
4. 自發自用能源總量：2022 年自發自用能源總量為 1,532,971 GJ。</td><td>178</td><td>依據林園先進廠、馬鞍山廠、鞍山廠及台北總部非再生能源 (重油、外購電力、天然氣及柴油) 之組織內部消耗量。</td></tr>
<tr><td>2</td><td>總取水量、總耗水量、依法規要求或自願揭露之廢 (污) 水排放量</td><td>1. 總取水量為 2,625 千立方公尺。
2. 總耗水量為 2,374 千立方公尺。
3. 廢 (污) 水排放量 251 千立方公尺。</td><td>180</td><td>1. 依據自來水公司及水務公司提供之繳費憑證，統計 2022 年林園先進廠、馬鞍山廠、鞍山廠及台北總部的自來水用水量。
2. 依據污水處理廠提供之污水處理單據，統計 2022 年林園先進廠、馬鞍山廠及鞍山廠的廢 (污) 水排放量。
3. 總耗水量為總取水量扣除廢 (污) 水排放量。</td></tr>
<tr><td>3</td><td>依法規要求或自願揭露之產品生產過程所製造之有害廢棄物總量及回收百分比</td><td>1. 有害廢棄物總量：2022 年有害廢棄物總量為 913.9 公噸。
2. 有害廢棄物回收百分比：2022 年有害廢棄物回收量占有害廢棄物總量為 0.37%。</td><td>181</td><td>1. 依據環保署委託或共同處理查詢資料、廢棄物轉移聯單或出廠磅單，統計 2022 年林園先進廠、馬鞍山廠及鞍山廠的有害廢棄物總量。
2. 依據環保署委託或共同處理查詢資料，統計 2022 年林園先進廠有害廢棄物回收再利用重量。</td></tr>
<tr><td>4</td><td>說明職業災害人數及比率</td><td>職業災害人數及比率：
林園先進廠
<table>
<tr><th>工作者類別</th><th>總經歷工時</th><th>一般職業傷害數量</th><th>嚴重職業傷害數量</th><th>死亡數量</th><th>可紀錄之職業傷害件數合計</th><th>嚴重的職業傷害比率[註2]</th><th>職業傷害所造成的死亡比率[註3]</th><th>失能傷害頻率 (FR)[註4]</th><th>損工日數[註5]</th><th>失能傷害嚴重率 (SR)[註6]</th></tr>
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馬鞍山廠
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<tr><td>保全</td><td>35,040</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
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</table></td><td>182
183</td><td>依據公司內部事故調查及處理程序，統計 2022 年林園先進廠、馬鞍山廠及鞍山廠職業災害人數及總工作時數。
註 1： 可記錄之職業傷害比率 = (可記錄職業傷害數 × 1,000,000 工時) ÷ 總經歷工時。
1. 可記錄職業傷害數：
依據公司內部事故調查及處理程序及法令規範之企業職工傷亡事故分類標準，統計屬於工安事件與工作直接相關之傷害數。
2. 總經歷工時：
依有記錄於考勤系統之員工上下班打卡時數作為計算，並由資訊部門彙總工時資訊。
註 2： 失能傷害嚴重率 = 損工日數 × 1,000,000 工時 ÷ 總經歷工時。
註 3： 損工日數為自傷亡日起算，單一個案所有傷害發生後之總損失日數。受傷害者暫時 (或永久) 不能恢復工作之日數，不包括受傷當日及恢復工作當日，但應含中間所經過之日數 (包括星期天、休假日或事業單位停工日) 及復工後因該災害導致之任何不能工作之日數。</td></tr>
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<table>
<tr><th>編號</th><th>項目</th><th>標的資訊</th><th>頁碼</th><th>適用基準</th></tr>
<tr><td>4</td><td>說明職業災害人數及比率</td><td>鞍山廠
<table><tr><th>工作者類別</th><th>總經歷工時</th><th>一般職業傷害數量</th><th>嚴重職業傷害數量</th><th>死亡數量</th><th>可紀錄之職業傷害件數合計</th><th>嚴重的職業傷害比率[註2]</th><th>職業傷害所造成的死亡比率[註3]</th><th>失能傷害頻率 (FR)[註4]</th><th>損工日數[註5]</th><th>失能傷害嚴重率 (SR)[註6]</th></tr><tr><td>正職員工</td><td>460,464</td><td>1[註1]</td><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td><td>2</td><td>145</td><td>315</td></tr><tr><td>臨時雇工</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>保全</td><td>23,904</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>承攬商</td><td>161,360</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>合計</td><td>645,728</td><td>1</td><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td><td>2</td><td>145</td><td>225</td></tr></table></td><td>182
183</td><td>依據公司內部事故調查及處理程序，統計 2022 年林園先進廠、馬鞍山廠及鞍山廠職業災害人數及總工作時數。
註 1： 可記錄之職業傷害比率 = (可記錄職業傷害數 × 1,000,000 工時) ÷ 總經歷工時。
1. 可記錄職業傷害數：
依據公司內部事故調查及處理程序及法令規範之企業職工傷亡事故分類標準，統計屬於工安事件與工作直接相關之傷害數。
2. 總經歷工時：
依有記錄於考勤系統之員工上下班打卡時數作為計算，並由資訊部門彙總工時資訊。
註 2： 失能傷害嚴重率 = 損工日數 × 1,000,000 工時 ÷ 總經歷工時。
註 3： 損工日數為自傷亡日起算，單一個案所有傷害發生後之總損失日數。受傷害者暫時 (或永久) 不能恢復工作之日數，不包括受傷當日及恢復工作當日，但應含中間所經過之日數 (包括星期天、休假日或事業單位停工日) 及復工後因該災害導致之任何不能工作之日數。</td></tr>
<tr><td>5</td><td>對當地社區具有顯著實際或潛在負面衝擊之營運活動</td><td>國際中橡的營運可能影響鄰里社區的空氣品質，為因應空氣污染風險，以林園先進廠而言，所有製程階段均設有相關污染監測設備，且每年定期進行設備維護，相關空氣污染因子數據也依據法規每年申報。馬鞍山廠及鞍山廠著重於持續投入環保設備，致力降低製程排放，亦定期進行內部稽核以及空氣污染物排放之管理審查，如設置脫硫脫硝設備和布袋除塵器，定期維護保養，安裝在線監測設備，實時監控確保數據達標，各營運據點按照政府要求管理環保工作，制定內部各項管理計畫。2022 年國際中橡營運活動對於當地社區與環境無顯著之負面影響。</td><td>182</td><td>評估林園先進廠、馬鞍山廠及鞍山廠污染監測程序、空氣污染申報情事以及當地社區負面衝擊之評估及瞭解。</td></tr>
<tr><td>6</td><td>企業本身及其供應商為降低環境或社會之負面衝擊所採取之具體、有效機制及作為</td><td>2022 年新進供應商數量與篩選比例
<table><tr><th rowspan="2">類別</th><th colspan="3">林園先進廠</th><th colspan="3">馬鞍山廠</th><th colspan="3">鞍山廠</th></tr><tr><th>新進供應商數量</th><th>使用環境、社會標準篩選新供應商的家數</th><th>使用環境、社會標準篩選比例</th><th>新進供應商數量</th><th>使用環境、社會標準篩選新供應商的家數</th><th>使用環境、社會標準篩選比例</th><th>新進供應商數量</th><th>使用環境、社會標準篩選新供應商的家數</th><th>使用環境、社會標準篩選比例</th></tr><tr><td>物資</td><td>23</td><td>23</td><td rowspan="4">100%</td><td>11</td><td>11</td><td rowspan="4">100%</td><td>10</td><td>10</td><td rowspan="4">100%</td></tr><tr><td>備品</td><td>11</td><td>11</td><td>15</td><td>15</td><td>14</td><td>14</td></tr><tr><td>工程</td><td>14</td><td>14</td><td>12</td><td>12</td><td>8</td><td>8</td></tr><tr><td>合計</td><td>48</td><td>48</td><td>38</td><td>38</td><td>32</td><td>32</td></tr></table></td><td>114</td><td>依據公司內部之供應及承攬廠商評鑑作業程序，於 2022 年實際有交易供應商將環境、社會面的標準列入新供應商之評選標準。</td></tr>
<tr><td>7</td><td>依產品類別之產量</td><td>依產品類別之產量：國際中橡 2022 年生產碳黑 416,316 公噸。</td><td></td><td>國際中橡 2022 年生產碳黑之產量。</td></tr>
</table>

Independent Limited Assurance Report

pwc 資誠

會計師有限確信報告

資會綜字第 22011525 號

國際中橡投資控股股份有限公司　公鑒：

本事務所受國際中橡投資控股股份有限公司（以下稱「貴公司」）之委任，對　貴公司選定 2022 年度永續報告書所報導之關鍵績效指標（以下稱「所選定之關鍵績效指標」）執行確信程序。本會計師業已確信竣事，並依據結果出具有限確信報告。

標的資訊與適用基準

本確信案件之標的資訊係 貴公司上開所選定之關鍵績效指標，有關所選定之關鍵績效指標及其適用基準詳列於　貴公司 2022 年度永續報告書第 198 至 199 頁之「確信項目彙總表」。　前述所選定之關鍵績效指標之報導範圍業於永續報告書第 2 頁之「報告邊界」段落述明。

上開適用基準係為臺灣證券交易所「上市公司編製與申報永續報告書作業辦法」與相關問答集及有關法令之規定，以及　貴公司依行業特性與其所選定之關鍵績效指標參採或自行設計其他基準。

管理階層之責任

貴公司管理階層之責任係依照臺灣證券交易所「上市公司編製與申報永續報告書作業辦法」與相關問答集及有關法令之規定，以及　貴公司依行業特性與其所選定之關鍵績效指標參採或自行設計其他基準，以編製永續報告書所選定之關鍵績效指標，且維持與所選定之關鍵績效指標編製有關之必要內部控制，以確保所選定之關鍵績效指標未存有導因於舞弊或錯誤之重大不實表達。

會計師之責任

本會計師係依照確信準則 3000 號「非屬歷史性財務資訊查核或核閱之確信案件」，對所選定之關鍵績效指標執行確信工作，以發現前述資訊在所有重大方面是否有未依適用基準編製而須作修正之情事，並出具有限確信報告。

本會計師依照上述準則所執行之有限確信工作，包括辨認所選定之關鍵績效指標可能發生重大不實表達之領域，以及針對前述領域設計及執行程序。因有限確信案件取得之確信程度明顯低於合理確信案件取得者，就有限確信案件所執行程序之性質及時間與適用於合理確信案件者不同，其範圍亦較小。

本會計師係依據所辨認之風險領域及重大性以決定實際執行確信工作之範圍，並依據本委任案件之特定情況設計及執行下列確信程序：

資誠聯合會計師事務所 PricewaterhouseCoopers, Taiwan
110208 臺北市信義區基隆路一段 333 號 27 樓
27F, No. 333, Sec. 1, Keelung Rd., Xinyi Dist., Taipei 110208, Taiwan
T: +886 (2) 2729 6666, F: +886 (2) 2729 6686, www.pwc.tw

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- 對參與編製所選定之關鍵績效指標之相關人員進行訪談，以瞭解編製前述資訊之流程，以及攸關之內部控制，以辨認重大不實表達之領域。
- 基於對上述事項之瞭解及所辨認之領域，對所選定之關鍵績效指標選取樣本進行查詢、觀察、檢查等測試，以取得有限確信之證據。

此報告不對 2022 年度永續報告書整體及其相關內部控制設計或執行之有效性提供任何確信，另外，2022 年度永續報告書中屬 2021 年 12 月 31 日及更早期間之資訊未經本會計師確信。

會計師之獨立性及品質管理規範

本會計師及本事務所已遵循會計師職業道德規範中有關獨立性及其他道德規範之規定，該規範之基本原則為正直、公正客觀、專業能力及專業上應有之注意、保密及專業行為。

本事務所適用品質管理準則 1 號「會計師事務所之品質管理」，因此維持完備之品質管理制度，包含與遵循職業道德規範、專業準則及所適用法令相關之書面政策及程序。

先天限制

本案諸多確信項目涉及非財務資訊，相較於財務資訊之確信受有更多先天性之限制。對於資料之相關性、重大性及正確性等之質性解釋，則更取決於個別之假設與判斷。

有限確信結論

依據所執行之程序與所獲取之證據，本會計師並未發現所選定之關鍵績效指標在所有重大方面有未依臺灣證券交易所「上市公司編製與申報永續報告書作業辦法」與相關問答集及有關法令之規定，以及　貴公司依行業特性與其所選定之關鍵績效指標參採或自行設計其他基準編製而須作修正之情事。

其它事項

貴公司網站之維護係　貴公司管理階層之責任，對於確信報告於　貴公司網站公告後任何所選定之關鍵績效指標或適用基準之變更，本會計師將不負就該等資訊重新執行確信工作之責任。

資誠聯合會計師事務所

會計師　徐永堅

2023 年 7 月 24 日

Circular Economy
Green Life Sustainability

International CSRC
Investment Holdings
Company Limited

CSRC website

ESG report

Youtube

LinkedIn