



中国石化
SINOPEC

2022

Environmental, Social and Governance Report

SINOPEC ENGINEERING (GROUP) CO., LTD.

Stock Code: 2386.HK





About This Report

This Report is the tenth Environmental, Social and Governance ("ESG") report ("the Report") of SINOPEC Engineering (Group) Co., Ltd. ("the Company" or "SEG") since its going public. This Report introduces our social responsibility practices and performance in economic, social and environmental dimensions.

Report Perimeters

Reporting Subjects: Sinopec Engineering Group Co., Ltd. together with its subsidiaries and branches the "Group", "we" or "us").

Reporting Period: This Report covers our business activities from 1 January 2022 to 31 December 2022 (hereinafter referred to as "Reporting Period"), with some content from beyond the stated Reporting Period in order to enhance the comparability and continuity of this Report.

Content Scope: This Report covers the important matters and performance of the Company in the environmental, social and governance aspects during the Reporting Period.

Sources of Information: The information herein comes from policies and internal data of the Company and its subsidiaries. Some of the operational and financial data of this Report are cited from the Company's 2022 Annual Report. In the event of any discrepancy in data between this Report and the 2022 Annual Report, the information in the 2022 Annual Report shall prevail. Unless otherwise specified, the amount disclosed in this Report is denominated in RMB.

Report Availability: The Report is available in electronic and in printed versions. The electronic version can be downloaded and browsed on the website of the Stock Exchange of Hong Kong at www.hkexnews.hk and the News and Announcements section of SINOPEC Engineering (Group) Co., Ltd. at www.segroup.cn/segroup/en/, under the heading of Social Responsibility Report. The printed version is available from the company at 010-56730525.

Compilation Guidelines

This Report is compiled based on the Environmental, Social and Governance Reporting Guide of the Stock Exchange of Hong Kong Limited (the "HKEx"). It also refers to the Guidelines to the State-owned Enterprises Directly under the Central Government on Fulfilling Corporate Social Responsibilities issued by State-owned Assets Supervision and Administration Commission of the State Council of PRC, the GRI (Global Reporting Initiative) Sustainability Reporting Standards 2021 issued by the Global Sustainability Standard Board (GSSB), the Social Responsibility Guide (ISO 26000) issued by International Organisation for Standardisation, and the Guidelines on Corporate Social Responsibility Reporting in China (CASS-CSR 5.0) of Chinese Academy of Social Sciences. With respect to the section of addressing climate change, please refer to the advice of the Task Force on Climate-related Financial Disclosure (TCFD).

Disclaimer

This Report includes forward-looking statements. Other than historical facts, all events which may or will happen in the future and their description (including but not limited to, preconditions, goals, estimates and commercial plans) are included in the forward-looking statements. Due to the influence of external changing factors, the factual development result or trend in the future may be different from such statements. The forward-looking statements of this Report were made in March 2023. Unless otherwise required by the regulatory authorities, SINOPEC Engineering (Group) Co., Ltd. undertakes no obligation or responsibility to update these forward-looking statements.

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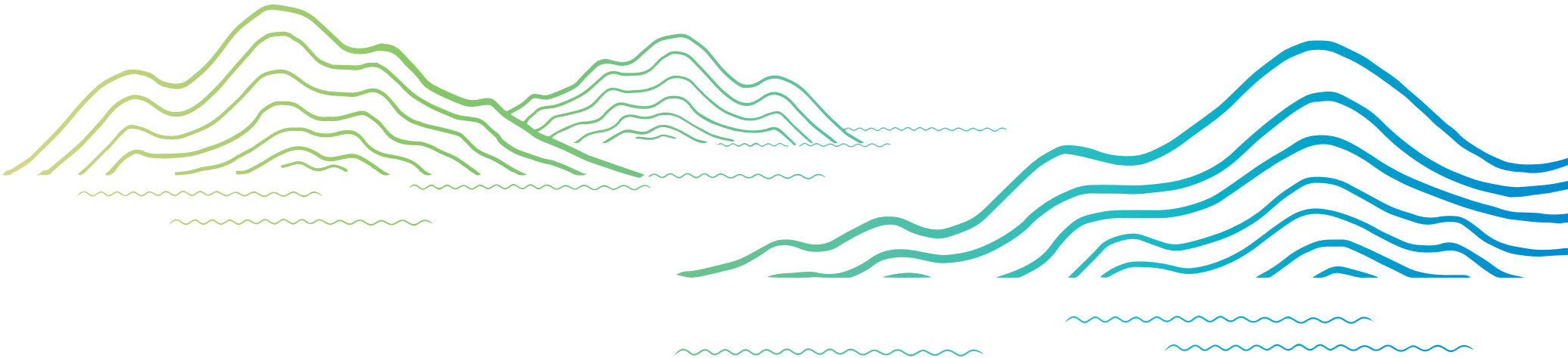
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Letter from Chairwoman



Mdm. SUN Lili
Chairwoman of the Board

On behalf of the Board of Directors of Sinopec Engineering (Group) Co., Ltd., I express my utmost gratitude to our esteemed shareholders and stakeholders for their unwavering support!

Reflecting upon the year 2022, facing the daunting challenges posed by climate change and energy security, people long for green and low-carbon development more than before. As a leading energy and petrochemical engineering company in China with a rich 70-year history, we have proactively embraced the green transition and are firmly committed to the path of green, low-carbon, safe, and responsible high-quality development. Our unwavering dedication is aimed at contributing to the sustainable development of human society. Throughout the past year, we have relentlessly pursued our development strategy, namely Value-Oriented, Innovation-Driven, Green & Clean, Talent-Based, Globalization-Targeted, Fusion Symbiosis. By actively integrating ourselves into the new development pattern, we have achieved remarkable results in promoting high-quality development and operations, and our ESG management has become an essential aspect of our development. This integration has allowed us to make new progress in vital areas such as corporate governance, green development, technological innovation, quality and safety, talent development, and social responsibility.

Our focus on standardisation and efficiency remains unwavering, enabling us to improve our governance effectiveness continuously. The Board of Directors has conscientiously undertaken its responsibilities conscientiously, in accordance with the relevant national laws and regulations, the Articles of Association, and the Shareholders' Meeting, and ensured that the resolutions of the Shareholders' Meeting could be effectively implemented. We have reinforced our ESG governance and management by validating the quantitative data of environmental performance for the first time. Our supervision function has been further enhanced by improving the coordination of various types of supervision. In addition, we have improved our corporate transparency by strengthening exchanges with stakeholders.

Our focus on green and low-carbon development has been unyielding, inspiring us to build a clean and beautiful homeland. We have helped reduce emissions at their sources with clean processes, and provided comprehensive services to customers in green and low-carbon endeavours. We have fully implemented the philosophy of resource conservation and utilization in the consulting, planning, and overall design of more than 10 major petrochemical bases located in places such as Maoming City, Luoyang City, Jilin City, and Huizhou City. Our approaches included improving the utilization efficiency of energy, water and land resources at the source of the life cycle of petrochemical plants, and implementing clean production. A batch of representative facilities such as the Gulei Ethylene Project and Jiujiang Aromatics Project, equipped with our independently developed technologies, have further reduced energy consumption and major pollutant emissions to a forefront level around the world. We have been dedicated to providing clean energy by promoting the rapid implementation of natural gas projects, accelerating the development of photovoltaic business based on local conditions, and making steady progress in green hydrogen projects. We designed three hydrogen refueling stations to provide clean energy supplies during the 2022 Beijing Winter Olympics, contributing to the "Green Winter Olympics" initiative. We have proactively improved environmental protection technology, promoted green corporate actions, and effectively reduced pollutant emissions. These practical actions are aimed at safeguarding clean water, blue sky, and pollution-free land.

Our focus on technological progress stays tuned, rewarding us with fruitful achievements. We regard technological progress as a crucial force to support the high-quality development of the industry. To continuously tap deep into the innovation mechanism, we have strived to build an efficient R&D chain that integrates engineering and technology R&D with upstream basic research and downstream customer demand. In this endeavour, we have formed the "innovation consortium" to drive engineering technological innovation. A large number of key scientific and technological research projects in the field of energy and petrochemical industry, represented by 24 national programs, have been proceeding smoothly. Our efforts have been rewarded, as we had won 35 awards for scientific and technological progress at the provincial and ministerial levels and above, and had 543 patents granted throughout the past year. We have completed and put into production a variety of technology research projects in new areas, such as large-tow carbon fibre, and high-purity helium extraction. We focus on the national "carbon peaking and carbon neutrality" strategy of "peaking carbon emissions by 2030 and achieving carbon neutrality by 2060" and make efforts in transformation and reserve. We have reviewed and analysed carbon sources in the petrochemical industry, proposed strategies and implementation paths to achieve carbon neutrality, and organised the work of developing and reserving related technologies in parallel from the source of production, during the process and till the end. We have continued to deepen the application of digital technology and realised digital delivery in nearly 40 large-scale projects, laying a critical foundation for the construction of smart factories.

Our focus on quality and safety remains firm, ensuring our ability to deliver high-quality projects to our customers. We always take the responsibility of creating "model projects" and "high-quality projects." We have constantly improved our project management capabilities, and served every customer with the best technology, the most advanced project management, and the highest-quality equipment. Our goal is to guarantee the delivery quality of every project in all aspects. During the Reporting Period, 4 of our projects won the National Gold Award for Quality Engineering, and 11 of our entities were certified to the ISO9001 quality management system and the ISO45001 occupational health and safety management system.

Our focus on talent development is placed in a long run, and social responsibility has been our continuous commitment. We place a high premium on safeguarding its employees' rights and interests and continues to optimise employee care and welfare. We always pay great attention to the diversity of employees' career options. We help with our employees' career development through our multi-layer talent development approach. and integrate their self-worth with the Company's development. Upholding the concept of cooperation, harmony, mutual benefits, and win-win results, we have actively fulfilled our social responsibility and built a responsibility value chain with our suppliers and subcontractors. To contribute back to society, we have proactively engaged in public welfare by organising activities such as supporting rural revitalization through consumption, educational assistance, and blood donation. We have been also dedicated to driving local economic development and community building in the areas where our domestic and overseas projects operate.

Looking ahead to 2023, we recognize that significant global climate change, energy restructuring in the petrochemical industry, and technological changes are reshaping the competitive and comparative advantages. In light of this, we will focus on building our competitiveness for high-quality development through multiple dimensions, and further improve our comprehensive ESG management capabilities. We will continue to improve our ESG governance mechanism and assessment mechanism, enhance our ESG performance, keep track of feedback from various stakeholders, and fully integrate ESG concepts into our operations. We will continue to strengthen our scientific and technological innovation capabilities, promoting the coordinated development of traditional refining and petrochemical technologies in "three new" areas (new energy, new material, and new business models). We will focus on core carbon reduction, low-carbon, and zero-carbon technologies to deliver green and efficient productivity. Our goal is to ensure that green and low-carbon services are at the core of our competitive advantage, and that low-carbon footprints remain our distinctive feature for high-quality development. We remain steadfast in our commitment to openness, cooperation, and win-win results. We will continue to explore new ESG practices in collaboration with our stakeholders, and to further boost sustainable development. We are committed to continuously promoting talent cultivation, optimizing the talent team structure, and pursuing mutual growth with our employees. Additionally, we will continue to organize public welfare and charity services to fully support regional economic development and rural revitalization.

Dear friends, there is a feedback form in this report. We highly value your precious opinions and suggestions for our high-quality development, and we look forward to working with you to create a new paradigm that integrates the high-quality development of the refining and petrochemical industry with social interests and the ecological environment. Let's work together to make a better future for the Company!

SUN Lili
Chairwoman of the Board
Beijing, the PRC
March 19, 2023

Board of Directors' Statements on ESG Governance

The Board of Directors of Sinopec Engineering (Group) Co., Ltd. promises the Company will strive to follow the requirements of the Environmental, Social and Governance Reporting Guidelines issued by Hong Kong Stock Exchange, and continuously optimise its environmental, social and corporate governance (ESG) mechanism, strengthen the Board's role in supervising and participation on ESG related issues, and vigorously integrate ESG considerations into the Company's major decision-making processes and various business practices.

Board of Directors' Role in ESG Governance

The Board of Directors bears the ultimate responsibility for the Company's ESG governance. The ESG Committee under the Board of Directors is responsible for studying and overseeing the Company's commitment and performance on key ESG issues, coordinating with other committees and functional departments to incorporate ESG factors into internal control, risk management, strategic planning, remuneration and incentives, etc., and reporting ESG performances and major plans to the Board of Directors. The ESG Committee is composed of five directors, with Chairwoman of the Board serves as the chairperson of the Committee. The ESG Committee convenes at least once each year, and can hold ad hoc meetings when necessary. The Committee shall inform the Board on ESG-related issues in a timely manner. In 2022, the ESG Committee under the Board of Directors convened once.

ESG Management Guidelines and Strategies

The Company attaches great importance to the significant impact that ESG risks may have on the Company. Every year, the Company updates its ESG issue database based on ESG risk analysis, macro policies and trends, and feedback from stakeholders and experts. Then the ESG issues are prioritised based on stakeholder surveys and expert evaluation results, providing guidance to prioritise the focus of the Company's ESG governance efforts.

Review of the Progress of ESG Targets

The Company has established a high-quality development target management mechanism, covering major ESG performance indicators such as greenhouse gas emissions, resource consumption, pollutant discharge, occupational health and safety, and anti-corruption, and will regularly review to check whether these indicators meet their targets. The Company also integrates the Company's key ESG performance indicators such as safety, environmental protection, and operation compliance as the KPIs for key management staffs as well as its subsidiaries, so as to contribute to the achievement of its ESG objectives. The Board of Directors regularly reviews and checks the process of its medium-term sustainability targets. In order to ensure the reliability of the Company's key ESG performance indicators, the Company engaged Grant Thornton LLP to conduct an independent assurance on the "Sinopec Engineering (Group) Co., Ltd. 2022 ESG Report" and issued an independent assurance opinion on 16 ESG key performance indicators of the Company.

The Board of Directors of Sinopec Engineering (Group) Co., Ltd.
19 March 2023

About Us

SINOPEC Engineering (Group) Co., Ltd. is a leading energy and petrochemical engineering company in China with strong international competitiveness. We provide both domestic and overseas clients with comprehensive solutions across a range of industry sectors, including petroleum refining, petrochemicals, coal chemicals, natural gas processing, oil and gas storage and transportation, clean energy, environmental protection and energy conservation, inorganic chemicals, and pharmaceutical chemicals. We are an integrated service provider for the entire industry chain and lifecycle in the energy and chemical industry, and can offer end-to-end services, including engineering research, technology licencing, engineering consulting, engineering design, material procurement, equipment manufacturing, engineering construction, project management, and EPC (Engineering, Procurement, and Construction) general contracting.

For over 70 years, the Group has successfully delivered hundreds of high-quality, modern plants on schedule, with complex processes, advanced technology, and enormous investments, to customers in over 20 countries and regions worldwide. Our commitment to providing high-quality, efficient, and all-around services has earned us the trust of our customers, and established the Group as a reputable and influential brand in the industry.

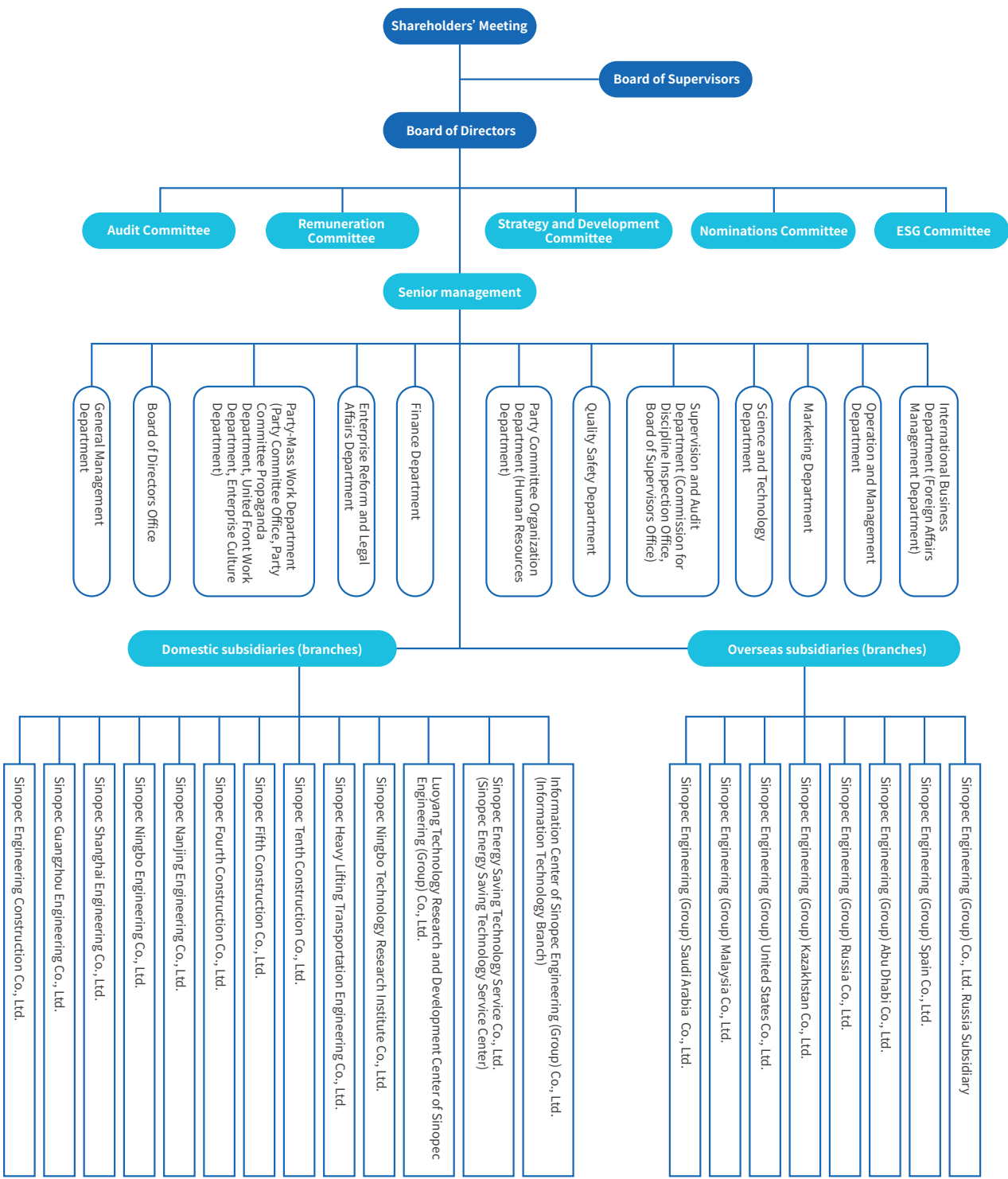
The Group boasts excellent engineering consulting capabilities. We leverage our advantages in system, talent, and experience to provide customers with full-life-cycle services, such as pre-consulting, park planning, energy optimisation, operations, maintenance, engineering optimisation, cloud services, and employee training.

The Group is widely recognised for its robust technological R&D and engineering implementation capabilities. We possess a broad spectrum of core technologies with proprietary intellectual property rights in crucial fields such as petroleum refining, ethylene and its downstream processing, aromatics, coal chemicals, and natural gas processing. As a leading engineering company in China with complete sets of technologies with proprietary intellectual property rights, we have the capability to design and construct refineries with an annual oil capacity of over 10 million tonnes, annual ethylene capacity of over 1 million tonnes, or annual aromatics capacity of over 1 million tonnes.

The Group is a pioneer and leader in the construction of digital intelligence engineering in the petrochemical industry. We have established a cross-disciplinary, integrated, and collaborative design platform, and compiled the national standard for the digital delivery of engineering in the petrochemical industry, alongside its corresponding implementation rules. Moreover, we have successfully achieved the simultaneous construction and delivery of physical and digital plants for domestic refining and petrochemical integration projects, laying a foundation for the extension of digital engineering construction into intelligent plant construction, the creation of a high-level digital engineering value chain, and the realisation of real-time monitoring of equipment manufacturing, visual simulation of construction, and real-time diagnostic intelligent manufacturing of plant operations.

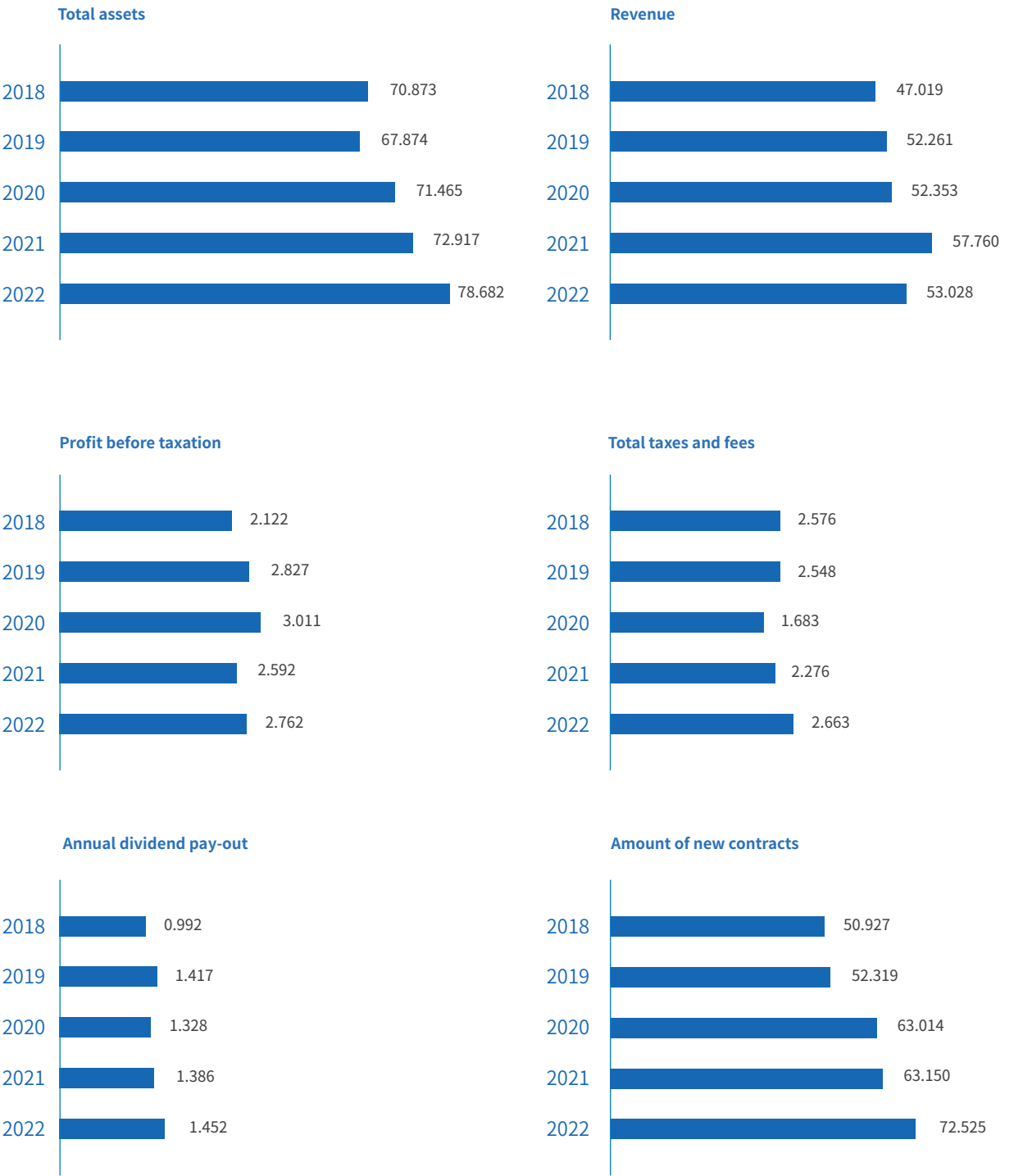
The Group has 11 wholly-owned enterprises in China: SINOPEC Engineering Incorporation Ltd., SINOPEC Guangzhou Engineering Co., Ltd., SINOPEC Shanghai Engineering Co., Ltd., SINOPEC Ningbo Engineering Co., Ltd., SINOPEC Nanjing Engineering Co., Ltd., SINOPEC Fourth Construction Co., Ltd., SINOPEC Fifth Construction Co., Ltd., SINOPEC Tenth Construction Co., Ltd., SINOPEC Heavy Lifting & Transportation Co., Ltd., SINOPEC Energy Conservation Technology Service Co., Ltd., and SINOPEC Ningbo Research Institute Co., Ltd., as well as two branches: Luoyang R&D Centre of SINOPEC Engineering (Group) Co., Ltd., and Information Technology Branch of SINOPEC Engineering (Group) Co., Ltd.

Organisational Structure



Economic Performance

Unit (RMB): Billion





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» Development Strategies

The Company adheres to the development vision of "creating the world's leading technology-oriented engineering company", takes "building an integrated service provider for the whole industry chain and the whole life cycle in the energy and petrochemical industry" as its development orientation, takes "engineering innovation and value creation" as its development engine, comprehensively implements the six development strategies.



Value-Oriented: Maximise the Company's overall value and ensure consistent value for shareholders, customers, society, and employees. Strengthen the integration of external resources and the maximise of internal resources, continuously expand the high-end core links of the energy and chemical industry chain and the engineering service business chain, constantly improve the Company's development quality and efficiency, and enhance shareholders' value. Focus on customer needs, continuously strengthen the one-stop service capacity building throughout the life cycle from project tracking to project operation, provide diversified engineering services with industry-leading performance, create high-end service advantages, and achieve win-win situation along with clients. Serve the society with high-quality projects, green projects and safety projects, and earnestly fulfil our social responsibilities. Provide a platform for employees to realise their own value and enhance employee value.



Innovation-Driven: Put innovation at the core of the Company's overall development, and adhere to the concept of innovation-driven development. Develop new competitive advantages through innovation-driven development, and strengthen the long-term driving force of development. Turn technology into productivity and improve the quality and efficiency of development, use high-tech and advanced applicable technologies to transform and upgrade traditional industries, reduce consumption and pollution, and provide engineering and technical services for changing the development model of excessive consumption of resources and environmental pollution.



Green & Clean: Combined with the strategic demand of the state for the development of energy and chemical industry, and under the goal of "carbon peaking and carbon neutrality" promote the technological innovation and industrialisation development of deep decarbonisation in the industry, formulate low-carbon regulations and relevant technical standards, accelerate the low-carbon transformation of petrochemical industry, and enhance the green and low-carbon competitiveness. Make the traditional energy utilisation process more energy-saving, consumption-reducing, emission-reducing and low-carbon through technologic innovation and engineering innovation so as to contribute to green development. Promote the coupling development of new energy sources such as wind energy, solar energy, geothermal energy and nuclear energy with traditional energy sources, reduce the carbon emissions of the industry while ensuring profitability, and promote the sustainable development of the energy and petrochemical industry. Create green enterprises and green construction sites while helping clients to realise green development.



Talent-Based: Firmly establish the strategic position of talent leading development. Attach equal importance to educational training and hands-on experience, and earnestly strengthen personnel training and echelon construction. Accelerate the market-oriented talent selection and employment mechanism; adhere to the performance-oriented principle, and constantly optimize the evaluation system in line with the characteristics of different types of talents; adhere to the market-oriented reform direction and continuously improve the incentive mechanism of salary distribution; adhere to the talent-oriented concept, and vigorously create a sound and favourable environment to support talent innovation and entrepreneurship. Strengthen the construction of management staff around the "seven abilities". Create a talent team for the high-quality development of the Company.



Globalisation-Targeted: Based on the domestic market, open up the overseas market, coordinate markets and resources at home and abroad, promote each other and develop in a coordinated manner. Focus on the strategic target market and accelerate the formation of the strategic pattern of the Company's global market. Based on system construction and personnel training, accelerate the establishment of a diversified management and standard system to meet the needs of the implementation of international projects, and enhance the internationalisation level of talents and the localised operation capability of projects.



Fusion Symbiosis: Realise integration and symbiosis between projects and nature, integration, and win-win situation for the Company and stakeholders, integration and symbiosis between all subsidiaries of the Company integration and sharing between the Company and its employees, and integrated development of traditional energy business and new energy business. Establish multi-dimensional cooperative relations with clients, research institutes, manufacturers, and other stakeholders, innovate cooperation models, and create a mutually beneficial and win-win business environment. Establish a mechanism of orderly competition and coordinated development featuring both division of labour and cooperation, and create group-based scale advantages and integrated synergy effect. Establish an enterprise ecosystem where employees and the Company are integrated and symbiotic, so that employees and the Company can grow together and benefit from the Company's development achievements.

» Construction of the Board of Directors

To lay a strong foundation for our sustainable development, the Company has made continuous efforts to optimise the composition of the Board of Directors and improve its system and its special committees, as well as adjust and optimise the functions of each committee. We have also placed a greater focus on the role of independent directors. At the Shareholders' Meeting, the adoption of the Articles of Association and the Rules of the Procedure of the Board of Directors was approved. These regulations legally govern the composition, powers and authority, and rules of procedure of the Board of Directors and its committees. In 2022, the Board of Directors established the ESG Committee, and the Fourth session of the Board considered and adopted the Rules of Work of the ESG Committee.

» Effectiveness of the Board of Directors

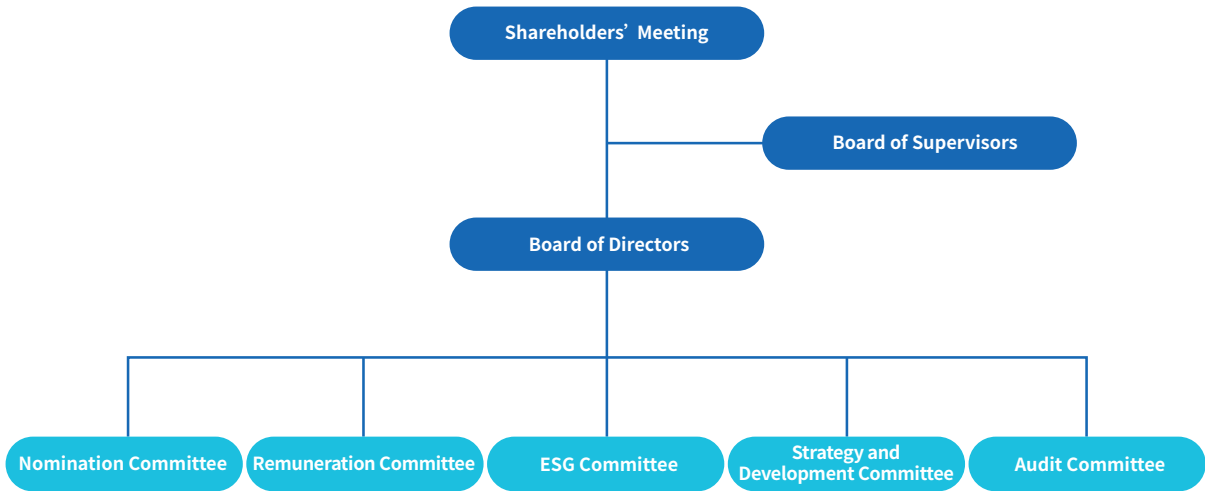
To safeguard the interests of the Company, its shareholders, and other stakeholders, the Board of Directors emphasises the importance of improving systems and working mechanisms, thereby encouraging its members to be more diligent. As part of our commitment to transparency, the Board of Directors regularly compiles reports on its performance, which are then published alongside our annual reports to provide a complete reflection of our activities.

The Company has established the Policy on Diversity of Board Members which stipulates that the nomination and appointment of Board members are based on the skills and experience required for the Board to function as a whole, taking into account the diversity objectives and requirements. Our diversity considerations encompass various factors, including professional experience, skills, knowledge, tenure of service, region, culture, educational background, gender, and age. The current Board members bring diverse industry experiences from China and abroad, including the petroleum, petrochemicals, accounting, and finance sectors. Their diversified backgrounds are conducive to the Board of Directors in making science-based decisions. As of the end of 2022, females accounted for 11% of our Board members.

Female Board members account for



Governance Structure of the Company



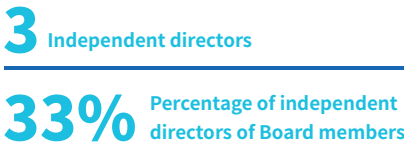
The Board of Directors is the keystone of corporate governance. The Company has been continuously optimising the composition of the Board of Directors, and the system of its Board of Directors and the special committees of the Board, and attaching great importance to the role of independent directors, thus laying a solid foundation for the Company's sustainable development. The Board of Directors is the decision-making body of the Company. In 2022, the Company convened a total of 7 Board meetings, with an overall attendance rate of 100%. The members of the Board of Directors give full play to their professional skills in exercising their authorities as directors, actively promoting the high-quality development of the Company.



» Independence of the Board of Directors

The Company has established a robust independent director system and selected independent directors from domestic and foreign celebrities and industry experts. The selection process strictly adheres to the election procedures and qualifications outlined in the Articles of Association to ensure that independent directors account for no less than 1/3 of the Board members. We require the nominator of an independent director to provide their opinion on the nominee's qualifications and independence to serve as an independent director. Additionally, the nominee must publicly declare the absence of any relationships that could impact their independent and objective judgements with respect to the Company.

As of the end of 2022, the Board of Directors included three independent directors, accounting for 33% of Board members. These independent directors played an active role in the five special committees of the Board of Directors. Additionally, three of them served as chairpersons of the Remuneration Committee, the Audit Committee, and the Nomination Committee, respectively.



Independent directors perform their duties conscientiously in accordance with the Company's Work System for Independent Directors.

They exercise caution and discretion when expressing their independent opinions on corporate affairs, focusing particularly on major related transactions, annual profit distribution plans, appointment and dismissal of senior management personnel, and matters that may harm the interests of medium and small shareholders.

Independent directors are better able to play an independent monitoring role and provide objective advice on corporate decisions because they are independent of the company's management and other interests.

During the Reporting Period, independent directors played an active role in supervising and making suggestions in the formulation and voting process of the continuing connected transactions. Their contributions were instrumental in helping the Company make equitable and reasonable decisions that served the interests of the Company and all shareholders.

Beyond their general functions and powers, independent directors are endowed with special functions and powers under the Articles of Association also to effectively safeguard the legitimate rights and interests of shareholders, especially medium and small shareholders.



» Special Committees of the Board

To effectively exert the functions of the Board of Directors and improve the quality of decision-making of the Board of Directors, the Company has established five special committees under the Board of Directors, namely, the Strategy and Development Committee, the Audit Committee, the Nomination Committee, the Remuneration Committee and the ESG Committee. The members of the Board committees are directors of the Company.

Board Committee	Committee Responsibilities	Activities
Strategy and Development Committee	Be responsible for studying the Company's long-term development strategy, major capital expenditure and investment and financing decisions, etc.	- Consists of 3 executive directors, 3 non-executive directors and 1 independent director. - Convened 1 meeting with full attendance during the Reporting Period.
Audit Committee	- Make suggestions on the employment, renewal, dismissal and audit fees of the independent auditors of the Company; - Review the financial statements that the Company submits to the Board of Directors, and check the Company's financial policies, internal audit system, internal control system, risk management system, etc.	- Consists of 3 independent directors. - Convened 2 meetings with full attendance during the reporting period.
Nomination Committee	Make recommendations to the Board of Directors on the appointment or re-appointment of directors and the succession plan of directors (especially the chairman and general manager of the Company), hunt for people with suitable qualifications to serve as directors, and select and nominate people to serve as directors or offer advice to the Board of directors on this.	- Consists of 2 executive directors and 3 independent directors. - Convened 1 meeting with full attendance as of the date of this report.
Remuneration Committee	Study the remuneration structure and policies of all directors, supervisors and senior management of the Company and make recommendations to the Board of Directors, or determine the remuneration and benefits of individual executive directors and senior management members with the authorisation of the Board of Directors or make recommendations to the Board of Directors. The remuneration of directors shall be determined in accordance with relevant national laws and regulations and the Company's relevant remuneration management regulations.	- Consists of 3 executive directors. - Convened 1 meeting with full attendance during the reporting period.
ESG Committee	- Make recommendations to the Board of Directors on major decisions related to ESG development (including environment, society and governance, etc.); - Supervise the implementation and progress of the Company's ESG development strategy and plan; - Supervise the Company's commitment and performance on key issues such as climate change, ensuring health and safety and fulfilling social responsibilities, and make suggestions to the Board of Directors; - Pay attention to the important information of ESG development related to the Company's business, study ESG development-related issues, and make suggestions to the Board of Directors; - Review the annual ESG report of the Company and make recommendations to the Board of Directors; and - Other ESG related matters authorised by the Board of Directors.	- Consists of 2 executive directors, 1 non-executive director and 2 independent directors. - Convened 1 meeting with full attendance as of the date of this report.

» Prevention of Conflict of Interest

The Company upholds a rigorous standard of ethical conduct for its directors, supervisors, and senior management. In particular, they are expected to strictly adhere to the principle of good faith in the execution of their duties. This entails avoiding any situation that could potentially create a conflict of interest between their personal interests and their corporate responsibilities, exert power beyond their authority, or use the Company's property for personal benefits. Instead, they are required to fully perform their obligations and act in the best interests of the Company.

The Board of Supervisors supervises and inspects the business activities of the Company in accordance with laws and regulations and the Articles of Association, examines the performance of duties and responsibilities of the Board of Directors and the management, and urges the implementation of corrective measures. The Board of Supervisors consists of supervisors elected by the Shareholders' Meeting and democratically elected by our employees.



» Executive Remuneration Management

The Company has formulated and implemented the Management Measures for the Remuneration of Management Team Members of SINOPEC Engineering (Group) Co., Ltd., and the Measures for Performance Evaluation of Management Team Members of SINOPEC Engineering (Group) Co., Ltd. We implement the principle of combining short-term, medium-, and long-term incentives. This enables us to establish a remuneration management mechanism that is closely linked to the performance evaluation results of management team members, and that matches the risks with the responsibilities they undertake. We strengthen positive incentives and ensure that the personal interests of management team members are aligned with the long-term, healthy development of the Company, and build a community of shared interests for both the Company and the management.

We have included a variety of key ESG issues and indicators such as QHSE (Quality, Health, Safety, and Environment) or HSE (Health, Safety, and Environment) system management, security, occupational health and safety, energy saving and environmental protection, quality management, and corporate stability in the managerial assessment indicators to tie the Company's ESG performance to the management's remuneration, and to ensure that the Company's sustainable development management is taken seriously by the management.

In accordance with the Interim Measures on Tenure System and Contractual Management for Management Team Members, we have formulated a remuneration deferral and clawback mechanism for management team members. Under this mechanism, if a major disciplinary incident occurs in the area for which a management team member is accountable during their tenure, resulting in significant economic losses or adverse impacts, any annual performance bonus or tenure incentive income that was cashed out within the corresponding period may be recovered as appropriate.



» Investor Communication Consolidation

We are committed to providing investors with timely and accurate information that is critical for their decision-making. In this regard, we take proactive measures to improve the effectiveness, timeliness, and transparency of our information disclosure practises, and ensure that all investors have equal access to information. We held an online result press conference during the Reporting Period, and also utilised various other communication channels, such as conference calls, in-person meetings, phone calls, and emails, to address concerns raised in the capital market. We received hundreds of investors and analysts from global investment institutions, and enhanced investors' confidence in our sustainable, sound, and high-quality development.



» Compliance Operation

The Company has always adhered to the rule of law, fostering an integrity culture of "keeping promises and operating in compliance", continuously improving the integrity and compliance management capabilities. Our goal is to lay a solid foundation for developing into a world-leading technology-led engineering company.

» Strengthening Compliance Management

During the Reporting Period, we launched comprehensive risk-based, job compliance-based, business-wide and full-process compliance management system improvement and certification efforts. Our efforts culminated in the successful attainment of the ISO 37301 compliance management system certification, becoming among the first listed companies in China and the first company in the petrochemical industry to obtain such certification.

We launched the "Year of Compliance Management Enhancement" activity, and continuously promoted the construction of compliance management system. We compiled regulations and policies such as the Integrity and Compliance Manual of Sinopec Engineering Group (in English and Chinese), the List of Compliance Obligations of Sinopec Engineering Group, the List of Compliance Risks of Sinopec Engineering Group, the Guidelines on Engineering Bidding Compliance Practises of Sinopec Engineering Group, and the Legal Compliance Due Diligence of Sinopec Engineering Group, and the Management Regulations on Business Review Compliance. They provide the institutional basis for orderly compliance management. We also revised the Compliance Management Measures of Sinopec Engineering Group according to the newly promulgated Measures for the Compliance Management of Central Enterprises. We built a "Compliance Management Information Platform" to fully cover areas such as compliance document enquiry, training, commitment letter signing, review, consultation, and event reporting.

Building upon the QHSE management certification accredited to the management system of our headquarters, we formulated the work plan to optimise the management system. To effectively implement the whole-business chain management and penetration management, we updated and released the 2022 version of the management system processes and documents, and successfully passed the review of the third-party certification body. Our goal is to lay a solid foundation for integrating the management system within the Company.



ISO 37301 Compliance Management System Certification

» Anti-Corruption Management

The Company strictly complies with relevant laws and regulations such as the Criminal Law of the People's Republic of China, the Oversight Law of the People's Republic of China, the Anti-Unfair Competition Law of the People's Republic of China, the Company Law of the People's Republic of China, the Interim Provisions on Banning Commercial Bribery and those applicable in the areas where it operates. Our goal is to prevent bribery, extortion, fraud, and anti-money laundering, and opposes all forms of corrupt practises and unfair competition.

The Company has formulated management policies such as the Anti-Fraud Management System of Sinopec Engineering (Group) Co., Ltd., the Implementation Measures for Integrity Risk Prevention and Control of Sinopec Engineering (Group) Co., Ltd., the Compliance Management Guidelines for Business Partners of Sinopec Engineering (Group) Co., Ltd., the Compliance Management Guidelines on Economic Sanctions for Foreign-related Business of Sinopec Engineering (Group) Co., Ltd., the Compliance Management Guidelines on Anti-Corruption Overseas and Anti-Commercial Bribery of Sinopec Engineering (Group) Co., Ltd., and the Management Measures for the Registration and Confiscation of Gifts and Cash Received in Domestic Interactions of Sinopec Engineering (Group) Co., Ltd.

During the Reporting Period, the Company formulated and revised its anti-corruption policies such as the List of Strengthening the Supervisory Responsibility of "Chief Officials" and the Leadership and the List of Matters for Tolerance of Errors and Exemptions for the Leadership. Through these efforts, we seek to continuously improve our anti-corruption management system and effectively create a clear and clean business environment. We continuously improve the internal control system, policy, and mechanism, and prevent and control corruption at their sources by revising the List of "Three Important Matters and One Large Sum" Decision-making Matters of Sinopec Engineering (Group) Co., Ltd. and the Guidelines on Authority of Sinopec Engineering (Group) Co., Ltd.

Indicators	Units	2022
Number of training sessions on anti-corruption and integrity	/	1,194
Among which: Number of online training sessions	/	403
Number of in-person training sessions	/	791
Hours of training on anti-corruption and integrity	Hour	4,373
Number of participants in training on anti-corruption and integrity	Person-time	28,733
Among which: Number of Board member participants	Person-time	23
Number of participants among other management and employees	Person-time	28,710
Among which: Percentage of Board members participants in total	%	0.08
Percentage of participants among other management and employees in total	%	99.92

» Whistleblower Protection

We encourage our employees, suppliers, and subcontractors to report any instances of non-compliance that they encounter at work. We provide a public telephone number and email address for complaints and have installed whistle-blowers' boxes in security camera blind spots to ensure anonymity. In addition, we have established specific requirements for whistle-blower protection in the Integrity and Compliance Manual.

» Business Ethics

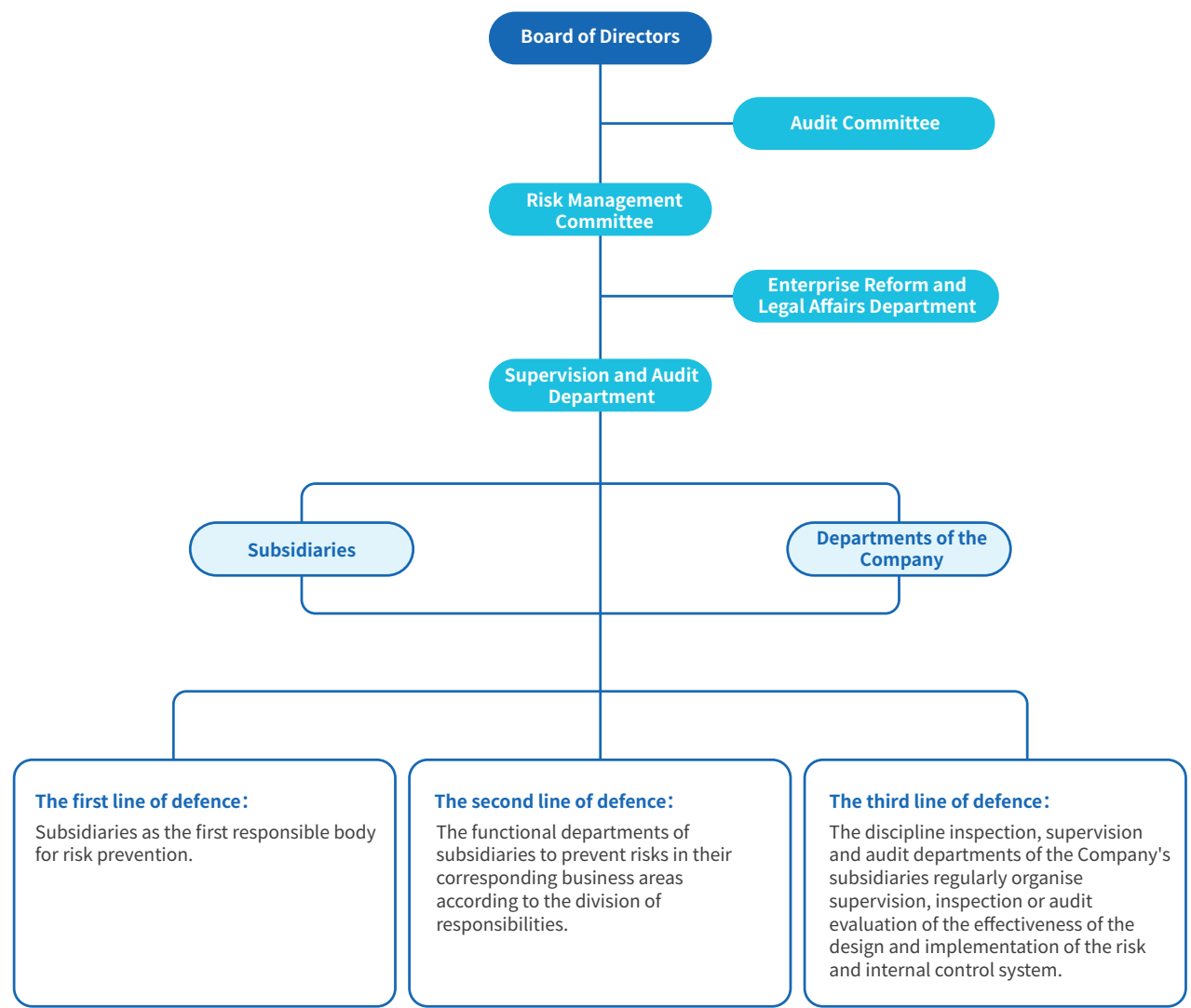
Integrity is the foundation of the enterprise, compliance is the basis of governance, legal compliance, integrity management of the Company is an important basis for the creation of the world's leading technology-oriented engineering company. In 2022, we formulated and released the Integrity and Compliance Manual of Sinopec Engineering Group and the Code of Conduct for Employees in accordance with China's existing laws and regulations, combined with international rules such as the United Nations Convention Against Corruption and the World Bank Group Integrity Compliance Guidelines, as well as the relevant requirements of business ethics, social ethics, and industry guidelines. These efforts are aimed at regulating and managing the conduct of the Company and our employees in conducting business, exercising power and performing duties.

Risk Management

The Company has established a risk management and internal control system, and set up a risk management committee composed of Chairperson, senior management and heads of functional departments. This committee is responsible for constructing and operating the Company's risk internal control management system and making decisions related to significant risk management matters. Subsidiaries have set up comprehensive risk management leading groups that are responsible for ensuring the effectiveness of the risk internal control management system and risk internal control management work, forming risk prevention and management mechanism that runs through our entire organisation, both vertically and horizontally coordinated, and regularly evaluated and monitored its effectiveness to protect the overall interests of the Company and its shareholders and further promote the sustainable development of the Company.

Each functional department of the Company and subsidiaries promptly identify, analyse, and evaluate risk factors and potential risk areas across various professional fields such as safety, quality and anti-corruption in the production and operation process, deeply integrate risk management with the internal control system, QHSE management system, integrity risk prevention and control system and other management systems, put forward countermeasures and solutions, and put them in place in key points of internal control to form a comprehensive risk management system featuring goal setting, risk identification, risk evaluation, risk response, and risk supervision and improvement to ensure that all major risk factors that significantly impact the Company are thoroughly identified, covered, and controlled.

The Company conducts annual risk identification and assessment, and regularly monitors major risks through quarterly checks, special inspections, internal audits, and risk control evaluations. Our primary goal is to ensure the effectiveness of our risk management mechanism, promoting sound decision-making and continual improvement of our risk management practises. The Company incorporates the three lines of defence system, an international best practise in risk management, to ensure the effective operation of the risk management mechanism.



Risk Category	Mitigation Measures
Safety Risks	- Implement dynamic management throughout the whole process. and enable risk identification and control to intersect the whole process of production and operation business such as design, procurement construction, manufacturing, and research and development; - Conduct the hierarchical management of risks based on severity, including major risks, greater risks, general risks, and low risks; - Evaluate the safety risks caused by extreme environmental and extreme weather conditions in the production and operation links; - Include the risk management work in the scope of safety performance assessment of the Company.
Procurement Risks	- Establish procurement risk report and early-warning system, annual risk report, and irregular special risk report system; - Manage the material procurement risks by classification, regularly improve and update the procurement risk list, track and monitor the risk management; - Continuously supervise, inspect and improve the effectiveness and efficiency of procurement risk management.
Overseas Security Risks	- Conduct risk identification, risk analysis, risk evaluation, and risk classification of the public security of countries (regions) where overseas institutions and projects are located; - Inspect the risk assessment of overseas institutions and projects of the units dispatched by the Company on ad hoc basis, and take the inspection results as the basis for year-end performance assessment.
Market Development Risks of Overseas Projects	- Collect and analyse risk events in accordance with economy, culture, laws, security, credit standing of the owner, funds and their sources, requirements of the owner, and bidding methods to determine the risk level of the project; - Carry out project bidding quotation and risk management throughout the whole process of execution stage, and compile project risk assessment reports through identifying, analysing and assessing risks and dealing with results.
Legal Risks	- Formulate the relevant systems, evaluation standards, and assessment methods for the management of legal risks of the Company, and prepare risk management reports; - Establish, update, and maintain the legal risk database; - Identify, evaluate, prevent, and control legal risks, and implement the legal risk responsibility system for key posts related to the business process.
Probity Risks	- Analyse, study, and evaluate the probity risk information, and give "red, yellow and blue" risk early warning for possible corruption; - Sort out the functions and powers of risk-related posts, and study the possible probity risks of the posts; - Propose targeted, operational and practical prevention and control measures, based on the manifestation of integrity risk points, causes and evaluation level; - Adjust and improve the content and level of and measures for probity risks according to the self-examination, inspection and evaluation, and in combination with the adjustment of internal control system, transformation of operation mode, management process reengineering, and change of duties and authority.

» ESG Management

The Company continuously promotes the in-depth integration of ESG and its corporate governance, continuously improves its ESG governance structure, and has formed a top-down sustainability management and practice system.

Integrating the concept of sustainable development into its development strategy and daily operations, the Company has built an ecological value system with the government, shareholders, employees, customers, partners, and other stakeholders to achieve win-win results. The Company continuously strengthens its ESG culture and strives to create economic, social, and environmental value comprehensively.

- The Board of Directors is the highest decision-making body for ESG governance of the Company, and is in charge of the overall planning and coordination of ESG matters.
- The Board of Directors has an ESG Committee, chaired by the Chairperson, to deliberate and make decisions on major ESG matters, review the Group's annual ESG report, and make recommendations to the Board of Directors on the practice of various ESG issues and other decisions of the Group. The ESG Committee consists of five directors and meets at least once a year, with ad hoc meetings held when necessary, and communicates with the Board of Directors on ESG-related issues as appropriate. In addition, the Strategy and Development Committee and the Audit Committee are also involved in the deliberations and decisions on ESG-related issues of the Company.
- The ESG Working Group is responsible for coordinating and ensuring the implementation of ESG related matters, coordinating with relevant departments and subsidiaries and ensuring the implementation of key ESG topics.
- The subsidiaries of the Company are responsible for carrying out comprehensive ESG practices within their respective areas of work.

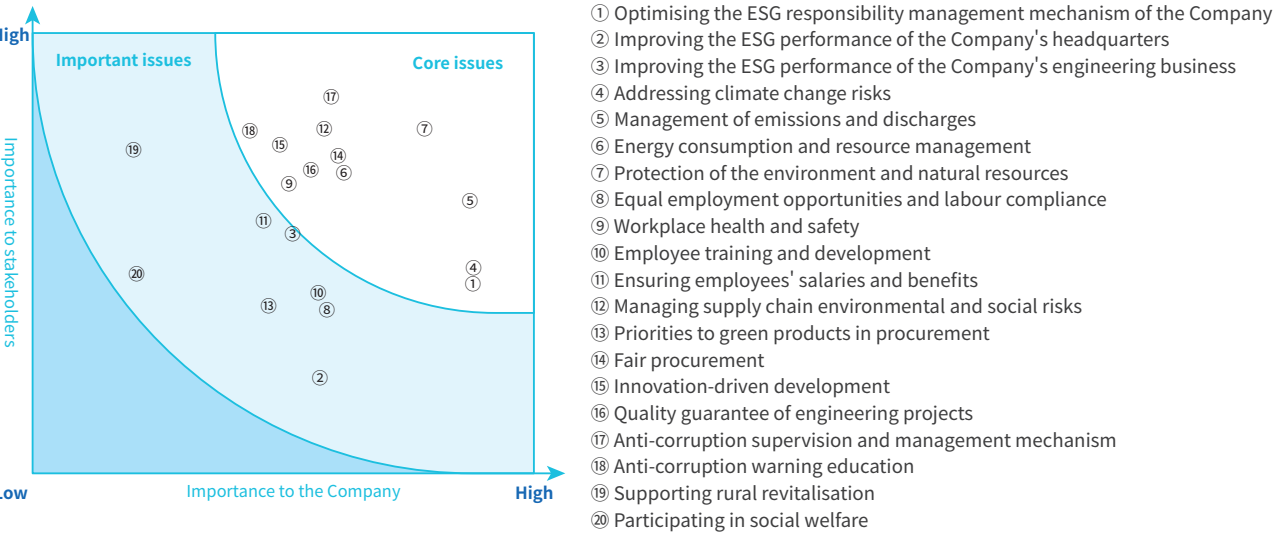
During the Reporting Period, the Company further optimised the reporting mechanism of ESG information and strengthened its collaboration with subsidiaries, effectively improved its ESG management and information disclosure with standardised ESG information collection and reporting tools and ESG themed trainings for its subsidiaries.

» Identification of Material Issues

In accordance with the Appendix 27 Environmental, Social and Governance Reporting Guide of the Listing Rules and other international standards, the Company assesses the important environmental, social and governance topics which related to our business from the two aspects of the importance of such topics to its stakeholders and to the Company respectively, based on communication with stakeholders and the actual situation of the Company, and forms a matrix of key topics based on the screening result, which serves as the basis of the Company's ESG priorities and disclosure.

The Company has established a fundamental approach to analyse the significance of major sustainability issues, to identify, evaluation and screen out its material issues that have both high relevance to or impact on the Company and vice versa, which will be disclosed and discussed in detail in this Report. The material issues of the Company remain virtually unchanged compared with those in 2021.

Identify	Evaluate	Screen
By drawing reference to the national macro policies, industry trends, sustainability practice benchmarking against industry peers, as well as the Company's development strategy and plans, we clarified the policy trends and development opportunities of the refining engineering industry, as well as the focus of its operations, and identified 20 sustainability issues that are material to both the Company and its stakeholders.	We invited investor representatives, sustainability experts, and representatives of other stakeholder groups to evaluate the importance of identified issues, which is used in combination with the evaluation of these issues' importance to the Company made by its employees, to determine the ratings of their respective importance in two dimensions.	A matrix of material issues was constructed by ranking these issues. The issues that rated as high-materiality issues will be covered in detail in this Report.



» Stakeholder Communication

The Company has actively identified its various stakeholders, made clear the expectations and demands of 10 key categories of stakeholders through effective communication, and turned the relevant demands into sustainable development actions and plans, and effectively strengthened its own capacity building so as to ensure that the development of the enterprise can be more fruitful and more inclusive.

Stakeholder	Expectations and Appeals	Communication and Response
Government and Regulatory Authorities	Serve national development strategy Compliance with laws and regulations by laws Preserve and increase the value of state-owned assets Taxation compliance	Actively implement national development strategy Ensure operation compliance and stable business growth Growth in tax contribution
Business Partners	Business integrity & fulfil contractual obligations Prevent and control risks Achieve win-win cooperation Grow together	Strengthen management of operational risks Strengthen strategic partnership Close partnership Smooth communication channels Respecting cooperation agreement
Investors/Shareholders	Satisfactory returns Stringent risk control Good credit rating Open communication	Operate with prudence and improve operation performance Sound corporate governance and compliance Outstanding investor relationship management Adequate and timely communication
Sustainability Experts	Outstanding safety and quality of engineering projects Green and low-carbon development Drive industry transformation and upgrading	Implement stringent safety management Establish green plant
Clients	Business integrity & fulfil contractual obligations Transparency Privacy protection Outstanding products High-quality services	Promotional campaign Customer service hotline Questionnaire survey Official website, WeChat communication
Employees	Employee rights protection Growing together with employees Salary and benefits Health and safety Caring for employees	Fair hiring policy Sound compensation scheme Comprehensive employee training Diverse career development platform Healthy workplace environment Considerate employee care
Environment Regulators	Environmental protection GHG emissions Waste disposal Efficient use of resources Conservation of natural resources	Strengthening energy conservation and emissions reduction management Innovate on environmental protection technology Implement the Green Enterprise Action Plan
Communities	Drive local economic development Infrastructure construction Job creation Support charity Community engagement	Community support and advocacy Community engagement activities Poverty alleviation and relief activities Charitable donations Volunteer activities Public Open Day
General Public and Media	Open disclosure and transparency Maintain good public relations	Open communication through press release & announcement Open communication channels with the public and the media
NGOs	Support and collaboration of NGOs Harmonious partnerships	Support NGO activities Enhance engagement with NGOs



02 Green & Low Carbon

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» Environmental Management

» Environmental Management Structure

The Company sets up the HSE Management Committee, which is led by the Chairwoman and composed of one board director, four senior executives, and the heads of each subsidiary. As the primary decision-making body for environmental protection policies, the HSE Management Committee is responsible for reviewing and approving the Company's environmental development plans and relevant regulations, resolving environmental issues, coordinating environmental protection responsibilities, and overseeing their fulfilment.

Adhering to the road of green and low-carbon development, the Company has constantly improved our environmental management system. We have identified and adhered to relevant laws, regulations, standards, and norms for ecological protection, energy conservation, water conservation, low carbon, and environmental protection. We have also formulated system documents that comply with the realities and meet the actual requirements. including environmental management systems and environmental technology systems. We have also constantly carried out system audits and formulated the Detailed Rules of Sinopec Engineering Group for Environmental Audit of the HSE System, covering the whole process of leadership, commitment and responsibility, planning, support, operation, performance evaluation and improvement. We actively carry out external management system certification and audit to ensure that the company's environmental management system meets the standards. By the end of 2022, a total of 11 units of the Group have passed ISO14001 environmental management system certification.

Board level	The ESG Committee is established to oversee and manage significant environmental issues and collaborate with other board committees to incorporate environmental concerns into other decision-making references of the board, ensuring top-level supervision of environmental issues.
Management level	Our HSE Management Committee is responsible for reviewing and approving the Company's environmental development plan and relevant rules and regulations, coordinating and addressing environmental concerns, and ensuring the fulfilment of environmental protection duties.
Executive level	At the executive level, a three-level framework of "QS Department of the Company - Environmental Protection Management Department - head in charge of environmental protection of the Project Department" has been established. The QS Department is responsible for overall planning, coordination and supervision. The Enterprise Environmental Protection Management Department and the head in charge of environmental protection of the Project Department are responsible for carrying out environmental protection of the unit's projects.

» Building of Environmental Awareness

We believe that building green concepts and good environmental awareness by instilling environmental awareness in our employees is an effective way to ensure the long-term sustainable green development of the Company from the source.

Culture publicity	A dedicated column on HSE culture construction is established to publicize national and Sinopec's deployment requirements for green enterprise initiatives and report specific measures for the Company's green enterprise initiative timely.
Activities	Organise various activities, such as green culture building activities, green public welfare activities, tree planting activities, etc.
Training publicity and implementation	Motivate employees to read and learn articles published on the official account named "Advancing Sinopec - Green Sinopec" to raise their awareness of green development.

» Addressing Climate Change

Climate change is a shared responsibility and challenge that requires global collaboration. With the announcement of the "carbon peaking and carbon neutrality" goal, the petrochemical industry's roadmap and timeline for green development have become more evident. It is explicitly requested in the Action Plan for Carbon Dioxide Peaking Before 2030 released by the State Council that promoting carbon dioxide peaking in the petrochemical and chemical industry is imperative. As an important engineering service provider and technology patents provider in this industry, we attach great importance to the impact of climate change and are actively engaged in efforts related to "carbon peaking and carbon neutrality".

The Board of Directors of the Company is responsible for supervising and managing climate-related issues and efforts, and the ESG Committee is responsible for identifying climate-related issues and providing recommendations to the Board of Directors on climate-related issues, and supervising the implementation of the Company's climate change response plans. To identify and address climate-related risks and opportunities, the Company refers to the recommendations provided by the Task Force on Climate-Related Financial Disclosure (TCFD) and reports on key risks faced by the Company in the context of climate change. Moreover, the Company is committed to developing further ESG-related action plans to address environmental climate risks in the future.

Risk Type	Climate-related Risks and Impacts	Countermeasures
Physical risks	Short-term risks The increased frequency of extreme weather such as rainstorms, floods and typhoons may cause disruptions to project construction and result in damage to project materials leading to delays in delivery and extending the project completion timeline. This could result in financial and performance risks for the project.	Actively carry out various emergency drills and continuously improve emergency drill plans. Continuously optimise supply chain management to improve the resilience of the supply chain against extreme weather events.
	Long-term risks The gradual and long-term effects of climate change, such as rising sea levels and increased water scarcity, may pose a threat to the safety and maintenance costs of the Company's completed or ongoing projects.	Take proactive measures during project design and construction to address the potential impacts of long-term climate change on its projects. The Company has developed plans and designs to enhance the future adaptation capability of its projects and improve their intrinsic safety level, ultimately reducing the potential financial costs associated with climate change.
Transition risks	Policies and laws The implementation of a quota system for carbon emissions in China may result in an increase in the Company's carbon emission compliance costs if it is identified as a key emitter and included in the national carbon trading market.	Actively carry out research on carbon trading and improve internal carbon mapping to prepare for the coverage of the national carbon emission trading market.
	Reputation Stakeholders becoming increasingly concerned about the Company's response to climate change, consumption of natural resources, etc. If the Company's efforts and results in these areas do not meet stakeholder expectations in terms of energy efficiency and environmental protection, it may negatively affect the Company's reputation and image.	The Company continuously strengthens its research on energy-saving and environmental protection technologies, sets internal management targets for various environmental issues, and supervises and manages them through the QS Department to minimise the occurrence of negative incidents. The Company closely monitors regulatory websites for any negative environmental incidents and learns from them. In the event of such incidents, the Investor Relations Department and Publicity are responsible for promptly communicating with investors and the public to mitigate any negative impact on public opinion.
	Market Due to the pressure from the Paris Agreement and the goals of carbon dioxide peaking and carbon neutrality, the consumption of fossil energy is gradually declining, leading to potential market risks for the rapid reduction of traditional business operations.	The Company is actively expanding its new energy business, conducting an in-depth analysis of emerging markets and new technologies, and integrating traditional refining technology with new energy sources. The Company is also implementing energy-saving measures, reducing carbon emissions during project construction, and increasing transparency in its communication to build market confidence.

In 2022, the Group's total energy consumption was 46,475.05 tonnes of standard coal, a year-on-year decrease of 8.9%; Greenhouse gas emissions were 105,229.85 tons of CO₂, a year-on-year decrease of 5.9%.



» Energy Consumption Performance

Indicators	Unit	2022	2021	2020
Direct energy consumption				
Consumption of diesel	Tonne	9,967.21	9,425.57	10,566.18
Consumption of gasoline	Tonne	3,062.78	3,337.56	3,032.37
Consumption of natural gas	Cubic metre	584,582.15	455,314.89	325,463.98
Consumption of liquefied petroleum gas	Tonne	336.65	337.42	1,711.38
Consumption of acetylene	Tonne	1,650.32	2,473.22	1,423.87
Consumption of propane	Tonne	137.66	304.00	132.35
Indirect energy consumption				
Consumption of purchased electricity	MWH	93,476.26	95,247.97	92,107.93
Consumption of purchased heat	MKJ	22,756.31 ^{Note 1}	63,833.22	63,830.09
Consumption of integrated energy converting to standard coal	Tonne of standard coal	46,475.05	51,006.33	47,360.45
Integrated energy consumption intensity per revenue	Tonne of standard coal/RMB 100 m	87.64	88.31	90.46

Note 1: During the year, the Group improved and adjusted the calculation mode of purchased heat in accordance with the heat supply value specified in the Design Standard for Energy Efficiency of Residential Buildings in Severe Cold and Cold Zones, resulting in significant change of the figures.

» Greenhouse Gas Emissions Performance

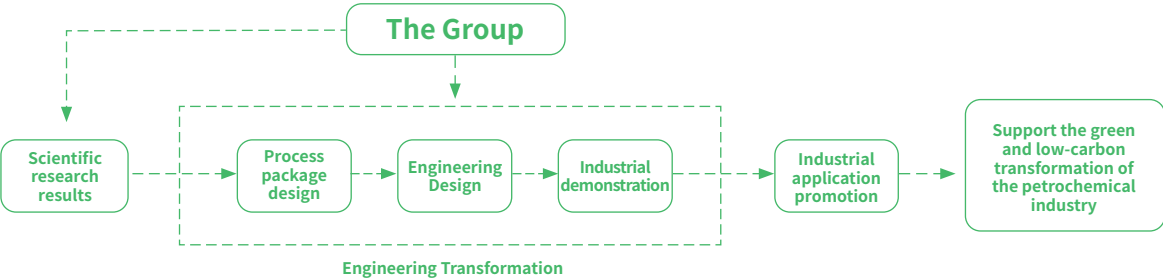
Indicator	Unit	2022	2021	2020
Total GHG emissions	Tonne CO ₂ e	105,229.85	111,873.76	115,798.39
Scope 1 emissions	Tonne CO ₂ e	48,357.30	46,848.89	52,728.27
Scope 2 emissions	Tonne CO ₂ e	56,872.55	65,024.87	63,070.12
GHG emissions per unit revenue	Tonne CO ₂ e/RMB100m	198.44	193.69	221.19



» Focusing on Green Low-Carbon Technology Innovation

Our Company actively addresses the challenges of climate change, considers technological innovation as an important force to support the high-quality development of the industry, provides high-level think tank support for the green, clean, and efficient development of the industry, and helps refining and chemical enterprises enhance their green and low-carbon competitiveness. In addition, we participate in promoting the development of clean and low-carbon energy structures, researching strategies, targets, roadmaps, and safeguards for the petrochemical industry to achieve peak carbon and carbon neutrality, and actively contributing to the fight against climate change.

Taking scientific and technological innovation as a development engine, we are actively engaged in the development of new refining and chemical technologies that are intrinsically low-carbon. Our efforts are aimed at promoting energy conservation and emission reduction from technology. Through the tireless efforts of our R&D and engineering technology teams, the energy consumption and pollutant emission levels of our new-generation clean oil product technology, ethylene technology and aromatics technology have been significantly dropped, reaching internationally advanced levels. These achievements have enabled enterprises and plants that have adopted these technologies to realise significant benefits in terms of green and low-carbon development, has promoted the overall emission reduction and low carbon of the petrochemical industry.



Case

Clean technologies assist pollutant emission reduction from the source

A series of advanced technologies of Sinopec Engineering Incorporation Ltd., a subsidiary of the Company, represented by FCC Gasoline Adsorbing Desulfurisation (S Zorb) technology and high-efficiency and environmental-friendly Paraxylene complete-set technology, have achieved clean process, pollutant emission reduction and environmental friendliness from the source, providing a solid guarantee for the whole petrochemical industry chain to realise the goal of green and environmental protection. At present, the total processing capacity of S Zorb units built in China exceeds 52.3 million tonnes per year. According to calculation, the technology helps reduce SO2 emissions by more than 30,000 tonnes and CO₂ emissions by about 2.1 million tonnes per year. In June 2022, Paraxylene Complex with production capacity of 890,000 tonnes per year of Sinopec Jiujiang Company was put into operation successfully and produced qualified products. This aromatics technology pioneered to develop a new green process for raw material refining, reducing solid waste emissions by 98%. With the pioneering new technology of Paraxylene Complex for deep integration of energy, per unit product of comprehensive energy consumption has been reduced by 28%, and the carbon emissions were reduced by 470,000 tonnes/year.

Developing a new green and clean production process for epichlorohydrin

For a long time, epichlorohydrin has been industrially produced by chlorohydrin method or glycerol method, both of which need to go through two processes of chlorohydrination and saponification, producing massive chlorine-containing wastewater and calcium chloride residue. Shanghai Engineering Co., Ltd., one of the Company's subsidiaries, developed a new green and clean production process of environmentally friendly epichlorohydrin, and formed a 50,000 tonnes/year environmentally-friendly epichlorohydrin process package. It had been applied industrially in Sinopec Baling Petrochemical Co., Ltd. This process could reduce more than 90% of wastewater discharge, completely overcome the difficulty of discharging calcium chloride, and lower the consumption of raw materials, making it a green and efficient new technology.

Taking an active part in the construction of biodegradable PBST project

Polybutylene succinate-co-terephthalate (PBST) exhibits good biodegradability, conforming to the development trends of low carbon and environmental protection; moreover, featured by excellent mechanical strength, heat resistance, and water resistance, it can be widely used in agriculture and forestry, electronic and electrical industries, medical and health industries, etc.

As the EPC general contractor, our subsidiary Shanghai Engineering Co., Ltd. has actively participated in the construction of 60,000 tonnes/year PBST continuous polymerisation project of Sinopec (Hainan) Polyester New Materials Co., Ltd., which is scheduled to be completed and put into operation by the end of 2023. In addition, this project meets Sinopec's green, low-carbon, differentiated, and market-oriented development strategies and scientific and technological planning requirements. It is believed that the promotion of these achievements can greatly increase the high added value of Sinopec's polyester products and enhance their competitiveness and technical level.

Proactively Participated in the Construction of 1,000,000 tonnes/year Gulei Ethylene Plant in Gulei Refining and Petrochemical Integration Project

Gulei Refinery and Petrochemical Integration Project is the largest petrochemical cooperation project between the two sides of the Taiwan Straits. As the main plant of this project, the 1,000,000 tonnes/year Gulei Ethylene Plant adopted the CBL cracking technology and LECT technology independently developed by Sinopec Engineering Group, as well as new burner, all-gas phase ethylene delivery, low temperature raw material cold recovery and process water extraction and many other new technologies. The energy consumption is as low as 554kg standard oil per tonne ethylene, and the NO_x emission is as low as 80mg/Nm³.

Since being put into operation, the plant has achieved overall stable operations, with the "diene" yield and performance assessment indicators reaching the advanced levels of the industry. By the end of 2022, the plant has produced 1.03 million tonnes of ethylene and 1.42 million tonnes of other products. In November 2021, Gulei Petrochemical Company officially opened up the whole process of ethylene sales in Taiwan. At present, the sales of ethylene monomer in Taiwan area have exceeded 85,000 tonnes, achieving a good start of "promoting integration with smooth channels, mutual benefits, and sincere emotions", and making important contributions to the development of Cross-Strait industrial integration.

» Supporting Clean Energy

We actively support the development of clean energy, have constructed a large number of new energy facilities, contributing to energy supply guarantee, green development and energy transformation.

» LNG

LNG (liquefied natural gas) is considered a clean and highly efficient energy source and plays a crucial role in optimising our energy consumption structure. Guided by a technology-led philosophy, we possess a range of patents and proprietary technologies in constructing LNG receiving stations, LNG production and natural gas purification. During the Reporting Period, we undertook and built various projects, including Shandong LNG (Phase III), Tianjin LNG (Phase II), Longkou LNG, Wenzhou LNG receiving station and storage tanks project, the desulfurisation station project of Leikoupo Formation Project in West Sichuan Gas Field, as well as the natural gas purification of Yuanba gas field project, etc. Specifically, the Shandong LNG (Phase III) led by our subsidiary Sinopec Engineering Incorporation had a storage tank capacity of 270,000 m³, so it is the largest LNG storage tank and the first and largest low-temperature storage tank designed and built in China.



The desulfurisation station project of Leikoupo Formation Project in West Sichuan Gas Field



Sinopec Tianjin liquefied natural gas (LNG) project



Sinopec Shandong liquefied natural gas (LNG) project

Hydrogen Energy

In pursuit of the clean and low-carbon transformation of the global energy structure, hydrogen energy has emerged as a promising alternative. During the Reporting Period, we made strides in advancing hydrogen chain technologies, implementing green hydrogen demonstration projects, and conducting research and engineering preparations for numerous wind and solar green hydrogen projects. Three hydrogen stations designed by us participated in the hydrogen supply for the Beijing Winter Olympics, igniting the main torch with high-purity hydrogen, and providing a clean energy guarantee for the "Green Winter Olympics".

Case

China's First 10,000-tonne Photovoltaic Green Hydrogen Demonstration Project

The green hydrogen demonstration project designed by our subsidiary Guangzhou Engineering Co., Ltd. is the largest photovoltaic green hydrogen production project under construction across the world, as well as the first large-scale domestic project directly using photovoltaic power generation for hydrogen production in China and the first typical demonstration project of Sinopec that runs through the whole process of green hydrogen production and utilisation, including photovoltaic power generation, green power transmission, green power-based hydrogen production, hydrogen storage, hydrogen transportation and green hydrogen refining. The installed capacity of the project is 300MW, and the average annual power generation of the photovoltaic power station is about 620 million kWh. The green hydrogen output is 20,000 tonnes per year. After completion, it will be the largest industrial intelligent green hydrogen plant with full-process information-based automation control in the world, reducing carbon emissions by about 500,000 tonnes per year (by green hydrogen).

300 MW
Installed capacity for PV power generation

620 Million kWh
Annual power generation of the PV power station

20,000 Tonnes per year
Green hydrogen output

500,000 Tonnes per year
Carbon emissions reduction



Hydrogen balloon tanks of the green hydrogen demonstration project

Case

Carbon Emission Reduction of Ordos Wind and Solar Green Power Hydrogen Production Project

During the Reporting Period, our subsidiary Sinopec Engineering Incorporation actively undertook the preliminary work of the Ordos Wind and Solar Green Power Hydrogen Production Project. The project made full use of the abundant wind and solar energy resources in Ordos to generate green power and produce hydrogen for Phase 2.5 Coal Chemical Coupling Project at ZTHC Energy Co., Ltd. (hereinafter referred to as "ZTHC"). Green hydrogen refers to the hydrogen obtained by decomposing water through renewable energy. As a new green energy source, green hydrogen can achieve zero emission of carbon dioxide from the source and reduce environmental pollution. The green power hydrogen production technology helps to realise the complementation of hydrogen energy and new energy, and the coordinated development of green hydrogen coal chemical industry. After completion, the project will boast an annual output of green hydrogen of 30,000 tonnes, an annual output of green oxygen of 240,000 tonnes, carbon emission reduction of about 1,331,200 tonnes/year (by green electricity), and standard coal savings of 529,000 tonnes/year.

30,000 Tonnes
Green hydrogen output

240,000 Tonnes
Green oxygen output

1,331,200 Tonnes
Carbon emission reduction per year

Building the First Integrated Energy Service Station in Henan Province Successfully

Under the background of low-carbon transformation, the demand for integrated energy service stations providing diversified services has also increased synchronously. In December 2022, Sinopec Henan Luoyang Hongshan Energy Station, the first comprehensive energy service station in Henan Province contracted by our subsidiary Guangzhou Engineering Co., Ltd., was officially put into operations, which integrated refuelling, hydrogen fuelling, electric charging, PV, convenience stores, urea and gas filling, providing convenient clean energy services for local residents.

The First
comprehensive energy service station

Building Hydrogen Fuelling Stations for Winter Olympics and People's Livelihood

In order to facilitate a green Winter Olympics, our subsidiary Sinopec Engineering Incorporation undertook the engineering design of three hydrogen fuelling stations at Qingyuan Street, Wangquanying, and Xiwanzi in Beijing, and successfully guaranteed the hydrogen supply of 435 hydrogen vehicles related to the Winter Olympics. After the event, Qingyuan Street Hydrogen Fuelling Station and Wangquanying Hydrogen Fuelling Station in Yanqing were successfully transferred into public utilities for filling hydrogen into hydrogen fuel cell vehicles for urban buses in Yanqing.

435
hydrogen vehicles' hydrogen supply guarantee



Sinopec Engineering Incorporation built Xiwanzi Winter Olympics Hydrogen Fuelling Station

» PV

Based on the principle of the photovoltaic effect, solar energy is directly converted into electricity using solar cells to meet stable energy demands. During the Reporting Period, we took an active part in the construction of photovoltaic power generation projects.

Case

Proactively Participating in the Construction of Photovoltaic Projects

Our subsidiary Ningbo Engineering Co., Ltd. proactively participated in the construction of photovoltaic projects, and successively undertook the planning and feasibility studies of Yueyang 100MW photovoltaic power generation project for directly supplying power for Baling Petrochemical Project and Sinopec Hainan Dongfang 500 MW photovoltaic power generation project. We also completed the engineering design of a series of projects such as the 5.5MW PV project of Sinopec Catalyst Co., Ltd., the 9.85MW distributed PV power generation project of Sinopec Zhongyuan Oilfield, the 3.66MW PV power generation project for megawatt water electrolysis hydrogen production and the 30MW distributed PV power generation project.

By the end of 2022, our subsidiary Ningbo Engineering Co., Ltd. was responsible for the design of the 3.66 MW PV power generation subproject under Sinopec's first megawatt green power hydrogen production project to achieve full capacity on-grid power generation.

3.66_{MW}
PV power generation realise full-capacity
grid-connected power generation



The PV Power Generation Subproject for Megawatt Water Electrolysis Hydrogen Production



PV Power Generation Project of Sinopec Catalyst Co., Ltd.

» Reducing Pollutant Discharge

We strictly comply with national and local laws and regulations in the PRC, including the Environmental Protection Law of the People's Republic of China, the Atmospheric Pollution Prevention and Control Law of the People's Republic of China, the Water Pollution Prevention and Control Law of the People's Republic of China, the Law of the People's Republic of China on the Prevention and Control of Environmental Pollution Caused by Solid Waste, and the Law of the People's Republic of China on Prevention and Control of Pollution from Environmental Noise, as well as relevant national laws and regulations in overseas countries where our projects are located.

To regulate the emission management of air pollutants, waste, wastewater and greenhouse gases, we have formulated a series of mechanisms, such as the Management Regulations of Sinopec Engineering Group on Environmental Protection, the Management Regulations of Sinopec Engineering Group on Environmental Information and Environmental Statistics, and the Guidelines of Sinopec Engineering Group on the Environmental Management of Solid Wastes in Engineering Projects (Trial). Moreover, we're committed to reducing the emission of pollutants in the operation process, and comprehensively managing our own environmental footprint.

We have innovated a series of environmental protection technologies. During the Reporting Period, new chemical material wastewater treatment technology, PTA wastewater anaerobic-expansion granular sludge blanket technology and WAO-treated waste lye freezing crystallisation technology were applied in Zhenhai Phase II, the 3 million tonnes/year PTA of Yizheng Chemical Fibre, Nangang Ethylene, and other projects.



New chemical material
wastewater treatment
technology

- The Zhenhai Phase II Expansion Project was the first project to integrate 7 high-end synthetic new material units within Sinopec. Specifically, the project faced a major challenge in treating wastewater discharged from phenol acetone, bisphenol A, acrylonitrile, isononyl alcohol, CHPPO, and other high-end material units due to its high salt content, poor biochemical performance, and complex organic pollutants, posing a severe challenge to the standard discharge and long-term stable operation of the wastewater treatment plant.
- Therefore, we implemented the "pretreatment-biochemical treatment-advanced treatment" process, and pretreated special wastewater pertinently. We also conducted a comprehensive optimisation of the overall water volume of the wastewater treatment plant, allowing us to ensure stable and standard discharge through our overall process flow.



PTA wastewater anaerobic-
expansion granular sludge
blanket (EGSB) technology

- The EGSB technology, a third-generation anaerobic bioreactor developed based on the upflow anaerobic sludge blanket (UASB) reactor, has been applied in the supporting wastewater treatment plant of 3 million tonnes/year PTA project of Sinopec Yizheng Chemical Fibre.
- The EGSB technology is particularly suitable for treating wastewater with high COD concentrations by adopting a higher external circulation reflux ratio. It enables high load operation, strong impact resistance, strong toxicity resistance and low maintenance cost within a wide range of temperatures. This technology utilizes microorganisms to degrade organic pollutants in wastewater, converting them into biogas for resource recovery and utilisation, while inhibiting odour emission. It ensures the long-term and stable operation of the wastewater treatment device.



WAO-treated waste lye
freezing crystallisation
technology

- The WAO-treated waste lye freezing crystallisation technology is a desalination and resource treatment technology for ethylene waste lye jointly developed by our subsidiary Sinopec Engineering Incorporation and Sinopec Dalian Research Institute of Petroleum and Petrochemicals with independent intellectual property rights. It has been industrially applied for the first time in the Nangang Ethylene Project of Sinopec Tianjin Company. The technology aims to solve the residual COD of about 2,500 mg/L and the salt content of 100,000 - 200,000 mg/L after wet oxidation treatment of waste lye discharged from the ethylene plant. To achieve this, we developed a complete set of desalination and resource utilisation technologies of "neutralisation and decarbonisation pretreatment - evaporation and concentration - freezing crystallisation - nitrate evaporation and recrystallisation - mixed salt crystallisation and drying". The technology can realise zero discharge of waste lye and resource recovery of anhydrous sodium sulphate (the quality of the by-product industrial sodium sulphate meets the requirements of Grade A first-class products specified in the Industrial Sodium Sulphate as the Coal Chemical By-product (T/CCT001-2019)), achieving the long-term, stable, and efficient operations of the plant.

Case

Nanjing Engineering Co., Ltd. Launched the "Yangtze River Protection" Action

Nanjing Engineering Co., Ltd., a subsidiary of Sinopec Engineering Group, actively contributed to the "Yangtze River Protection". In terms of wastewater treatment, we have successively provided and implemented solutions for comprehensive wastewater treatment, water conservation and emission reduction of recycling water and wastewater, and wastewater treatment of difficult units for enterprises along the Yangtze River such as Sinopec Baling Petrochemical, Sinopec Jiujiang Company, Sinopec Yangzi Petrochemical, and Sinopec Nanjing Chemical Industries. The contents of pollutants such as COD, ammonia nitrogen and phosphorus in the drainage were lower than the national discharge standards. For VOCs treatment, we developed the technology of VOCs tail gas treatment with high chlorine content, which solved the problem of tail gas treatment in Sinopec Baling Petrochemical Resin Division. In terms of solid waste treatment, Sinopec Yangzi Petrochemical Hazardous Waste Reduction and Harmless Green Utilisation Project was being implemented to turn waste into treasure by synergistic ceramsite production process.

Application of Ethylene Waste Lye Oxidation Technology at Sinopec Zhenhai Refining & Chemical Company

The wet oxidation treatment technology of sulphur-containing waste lye jointly developed by our subsidiary Sinopec Engineering Incorporation, Sinopec Dalian Research Institute of Petroleum and Petrochemicals, and Sinopec Zhenhai Refining & Chemical Company was applied to the first domestic wet oxidation treatment unit of sulphur-containing waste lye for one million tonnes of ethylene project. The unit was successfully put into operation at Sinopec Zhenhai Refining & Chemical Company, and the calibration was successfully completed during the Reporting Period. This technology solves the problems of sulphur-containing waste lye difficult to discharge and easy to cause environmental pollution, and is featured by small investment, low operation cost, high treatment efficiency, and high automation degree compared with the similar technologies, thereby yielding remarkable environmental benefits.



The performance calibration of the first domestic large-scale waste lye wet oxidation unit was successfully completed

In the meantime, we take different measures against environmental pollutants during construction to reduce environmental pollution.

Type of emission	Emission reduction measures
Wastes	Prioritize solid waste management as a daily focus of our environmental supervision efforts, strengthen the effectiveness of corrective measures and establish a long-term management and control mechanism to avoid the re-occurrence of similar problems, aiming at outstanding problems such as open storage of hazardous wastes, mixed storage of solid wastes and hazardous wastes, random disposal of construction wastes, incomplete and nonstandard ledgers, and non-standardised labelling.
Air pollutants	- Adopt centralized prefabrication on the project site, strengthen the management of dust prevention and control, purify and discharge VOCs and welding fume and adopt low VOCs coatings for open-air painting; - In order to guarantee the air quality during the Winter Olympic Games, safeguard measures will be prepared for projects in key areas, and safeguard measures and emergency plans will be implemented in strict accordance with the division of safeguard periods and safeguard areas. It is suggested to take strong measures to control dust by 100% fencing around construction sites, 100% covering of bare soil and material piles, 100% washing of incoming and outgoing vehicles, 100% hardening of construction site roads, 100% wet operation of earth excavation, and 100% closed transportation of dirt vehicles.
Wastewater	Dispose and recover all wastewater from chemical cleaning and other operations at the project site according to law, and discharge the sewage from construction projects in a unified manner according to the location and manner specified by the proprietor.
Noise	- Make a reasonable layout of the construction site and reasonable arrangement of operation time; - Adopt low-noise and environment-friendly construction machines and tools, and take effective measures to reduce the noise in the construction process. Units involved in noise at the factory boundary should carry out noise monitoring as required to ensure that the noise at the factory boundary meets the standards.
Radioactive pollution	Implement the radiation safety license filing system according to the requirements of the state, strengthen the management of storage and use, and strictly manage the whole process of radioactive wastes so as to ensure that no environmental emergencies of radioactive pollution occur.

In 2022, the Group carried out the statistics of air pollutant emissions for the first time. On this basis, we continued to promote the reduction of air pollutants.

95.06tonnes	2,012.14tonnes	2,181.62tonnes
SO _x	NO _x	VOCs

Indicator	Unit	2022	2021	2020
Amount of hazardous waste produced ^{Note1}	Tonne	784.92	982.64	879.10
Among which: Amount recycled ^{Note2}	Tonne	665.97	-	-
Amount disposed by qualified third-parties ^{Note3}	Tonne	118.95	-	-
Intensity of hazardous waste	Tonne / RMB100m	1.48	1.70	1.68
Disposal rate of hazardous waste	%	100	100	100

Note 1: All hazardous wastes generated by the production and operation of the Group are entrusted to qualified third-parties for disposal. The two sub-items of this indicator are based on whether the hazardous waste materials are recycled.

Note 2: Handled and recycled by third-parties.

Note 3: Handled by third-parties, but no enough information on whether the waste materials are recycled or not.

Indicator	Unit	2022	2021	2020
Amount of non-hazardous waste produced	Tonne	87,834.91	51,314.78	62,267.67
Among which: Amount recycled	Tonne	12,118.91	-	-
Amount disposed by qualified third-parties	Tonne	75,715.92	-	-
Intensity of non-hazardous waste	Tonne / RMB100m	165.64	88.84	118.94
Disposal rate of non-hazardous waste	%	100	100	100

Case: Wastewater Discharge

In the Refining Structure Adjustment Project of Nanjing Yangzi Petrochemical Co., Ltd., which was undertaken by our subsidiary Sinopec Tenth Construction Co. Ltd., we implemented rigorous measures to control the generation and disposal of construction wastewater. To this end, we constructed a substantial number of sedimentation tanks to ensure the proper collection, recycling and reusing of the wastewater, achieving a 100% standardisation rate for collection and compliant disposal. This approach effectively prevented any adverse impact on the surrounding water resources and ecological protection areas.



Sedimentation tanks were built to reduce wastewater discharge

Case: Noise Pollution

Our subsidiary Sinopec Fourth Construction Co., Ltd. has developed an efficient hot wire argon arc welding automation technology for the longitudinal seam of LNG storage tanks. Through the successful implementation of this technology, we have achieved seamless longitudinal seam welding and significantly reduced noise generation.

Our subsidiary Sinopec Tenth Construction Co., Ltd. has adopted a fully enclosed prefabricated site at the Nanjing Yangzi Petrochemical Green Site Construction Project to reduce noise pollution.



Fully Enclosed Prefabrication Plant of Nanjing Engineering Project
Department of Sinopec Tenth Construction Co., Ltd.

Case: Exhaust Emission

- Our subsidiary, Ningbo Engineering Co., Ltd., has successfully adopted a variety of comprehensive utilisation technologies to classify chemical tail gas based on its composition, calorific value, and recovery pressure, resulting in a significant decrease in exhaust emissions.
- Our subsidiary, Nanjing Engineering Co., Ltd., has provided an environmental monitoring system, flue gas collection, VOCs, and other environmental protection equipment to reduce the direct emission of waste gas in the relatively densely staffed prefabrication site. In addition, the designed low-emission sulphur recovery engineering technology effectively reduces the concentration of sulphur dioxide emissions.
- Sinopec Fifth Construction Co., Ltd., a subsidiary of Sinopec Engineering Group, has purchased VOCs waste gas treatment equipment for spraying operation in the green site project, strengthening the waste gas collection measures, and effectively reducing the concentration of waste gas emissions.
- Sinopec Tenth Construction Co., Ltd., a subsidiary of Sinopec Engineering Group, has established a standardised fully enclosed anti-corrosion prefabrication site, which is equipped with key VOCs treatment facilities, effectively controlling the emission of waste gas pollutants during the spraying construction of the prefabrication site.



A variety of comprehensive utilisation technologies for chemical tail gas have been successfully applied at the boiler of Sinopec Zhenhai Base Phase I Power Centre.



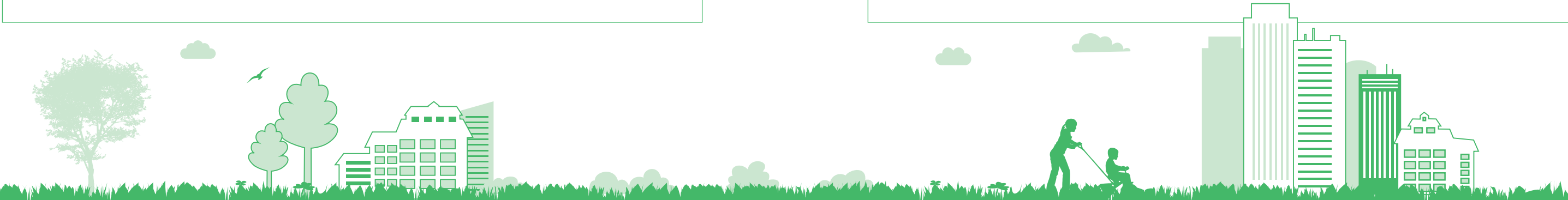
The 180 KT/a sulphur recovery unit with low emission sulphur recovery engineering design technology at Fujian Refining & Ethylene Project (FREP)



The prefabrication site equipped with mobile welding fume collector and other waste collection and treatment equipment.



VOCs treatment facility of Shenghong Petrochemical Engineering Project
Department of Sinopec Tenth Construction Co., Ltd.



» Green Enterprise Initiative

» Green Operations

We have always adhered to Green Operation, established a complete environmental protection management structure, constantly improved system construction, and carry out comprehensive process innovation and technical optimisation from various environmental protection control dimensions of engineering construction. In addition, we actively participated in the establishment of Green Enterprises and green construction sites.



Green Design

- Promote the green design concept, tap the resource recycling potential from the whole process flow in the design stage of the construction project, adopt new process, new technology and new equipment based on the principle of "the optimal energy consumption , realise the waste heat recovery and the cascaded utilisation of residual pressure, maximise the utilisation rate of resources and energy, and reduce the consumption of water, electricity and other resources;
- Carry out technical transformation of old devices to improve the energy-saving and consumption-reducing capacity of in-service devices;
- Select environment-friendly and efficient catalysts to improve the efficiency of reaction;
- Design supporting solid waste reduction devices and waste water and waste gas treatment devices to reduce the discharge of "three wastes" from the source;
- Promote the engineering application of the complete-set zero emission technology of waste water and significantly reduce the consumption of fresh water;
- Utilize renewable resources to develop and optimise the industrialized production technology of fuel ethanol to reduce production costs and improve competitiveness and economic efficiency.



Green Construction

- Establish a sound management mechanism of energy resources at the construction site, and standardise the use quantity of materials and the scope of transportation to save resources;
- Implement recycling, such as efficient usage of unpolluted industrial waste water;
- Repair the old and utilize the waste, reduce transshipment, and reuse the temporary facilities on the construction site, such as material warehouses, tool boxes and board rooms;
- Effectively dispose of recyclable materials, such as scrap metal, wood, plastic, cardboard, etc.;
- Give priority to energy-saving, efficient and environment-friendly construction facilities and machines recommended by the state and industry;
- Eliminate backward facilities and equipment on schedule, and maintain energy-consuming equipment and machines in time;
- Call on subcontractors to participate in the "Four-Saving" activity, i.e., saving energy, saving water, saving materials and saving land.



Green Office

- Use water-saving appliances to avoid unnecessary waste;
- Turn off the lights and computers before leaving, and set the air conditioning temperature properly;
- Recycle the cooling capacity and heat of air conditioning in office areas;
- Carry out energy-saving renovation of lighting fixtures in office areas;
- Promote the application of OA system;
- Promote the application of teleconferencing system;
- Advocate the use of durable goods and double-sided printing, and minimise the purchase of disposable products.



Green Life

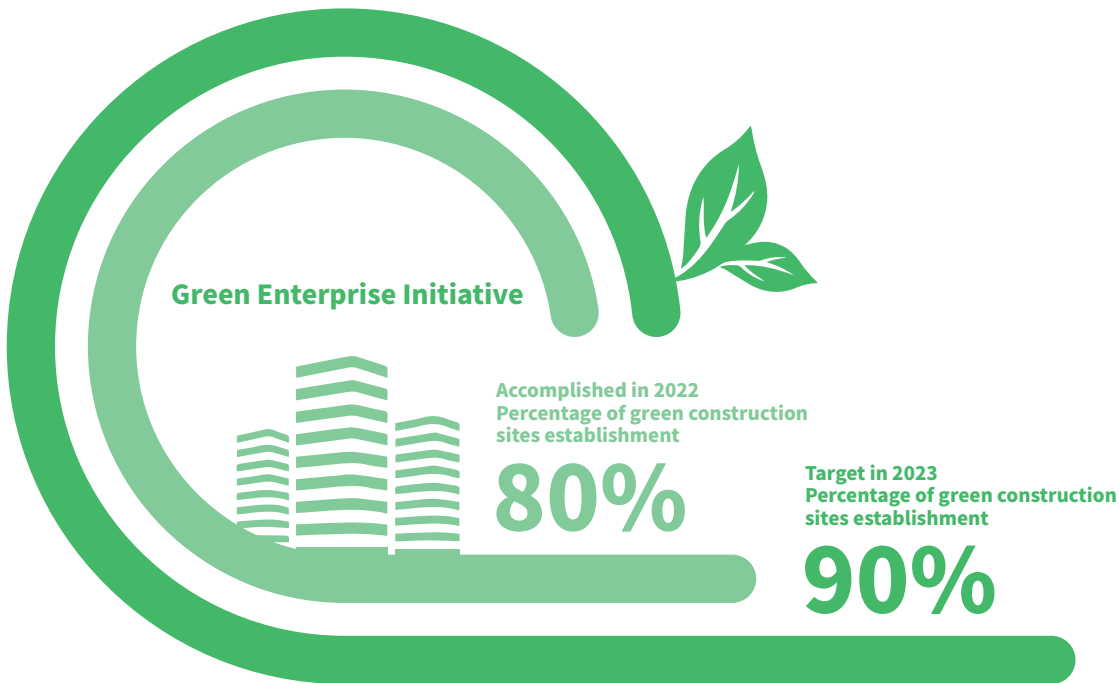
- Advocate green travel, standardise bus management, and advocate the concept of the multi-use of one vehicle;
- Advocate the "Plate-clearing Campaign" to save food resources;
- Carry out voluntary tree-planting activities to strengthen employees' eco-environmental awareness of "planting trees, protecting trees and loving a green life";
- Cultivate green culture, carry out green theme learning activities, hold environment-related quizzes, and publicize energy conservation and carbon reduction through banners to reduce carbon emissions.

» Green Enterprise Initiative

The Company has actively carried out the "Green Enterprise Initiative", fully implementing the concept of green development. By the end of the Reporting Period, a total of 9 subsidiaries were awarded the title of "Green Enterprises", of which 4 were rated as A-grade green enterprises; 3 factories were awarded the title of Green Factory.

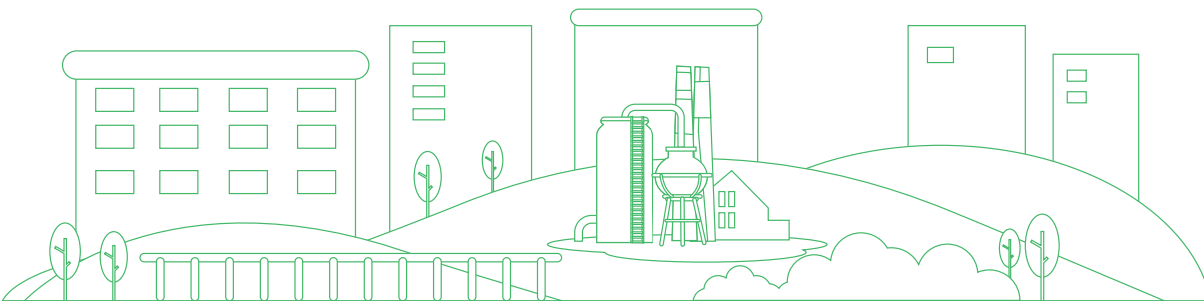
Starting with the establishment of green construction sites, the Company has continued to carry out the prevention and control of solid waste, air pollution, water pollution and noise pollution and radioactive pollution. Green construction sites are subject to three levels of management and control, i.e., self-assessment, assessment by subsidiaries, and random inspection by the Company for verifying the assessment results. The establishment of even construction sites has progressed steadily, and various environmental protection work has effectively been implemented. During the Reporting Period, the Company established a total of 70 green construction sites.

70
green construction sites



Content:

- Six 100%: 100% enclosure around the construction site, 100% coverage of bare soil and material stack, 100% washing of vehicles in and out, 100% hardening of roads on construction site, 100% wet process for earth-rock excavation and 100% airtight transportation of slag cars;
- Reduced discharge of solid wastes: 100% compliance disposal rate of general solid wastes and hazardous wastes;
- Compliance treatment or standardised discharge of production and domestic waste water;
- Build green and digital factories to reach the domestic first-class environmental protection level in the petrochemical engineering industry and build an environmental protection benchmarking enterprise of Sinopec.



» Bio-diversity Protection

The Company strictly abides by the Environmental Protection Law of the People's Republic of China and relevant environmental laws and regulations of the operation place of the project, actively performs its environmental responsibilities at home and abroad, strictly adheres to the ecological red line and the environmental safety bottom line, takes into full consideration the possible impacts on biodiversity and natural resources during the project construction process, takes effective measures to implement ecological protection and soil and water conservation, and strengthens vegetation protection and restoration so as to minimise the impacts on the project operation place. At the same time, the Company also makes great efforts to innovate ecological restoration technology and promote soil restoration and biodiversity protection to make its due contributions to global ecological governance.

Carry out the identification of environmental factors and impact assessment.	Strictly abide by the national ecological red line system, the policy of intensive and economical use of land and marine functional zoning, identify environmental factors and evaluate the impact of construction areas, office areas and other activity areas, and ensure that the conclusion of the assessment of environmental impact is correct and reasonable.
Minimise the impact of the project on the environment.	During construction, priority is given to wasteland and inferior land to improve the efficiency of land use without occupying the farmland and affecting community crowds and wildlife habitats. Attention is paid to prevent the leakage of glare, fuel and mud, Efforts are made to strengthen environmental protection and ecological restoration during pipeline construction.
Restore the damaged ecosystem.	For the environmental damage caused during construction, the Company restored it to its original state after construction, including vegetation restoration, soil and water conservation, etc.
Wildlife protection.	During the construction period, it is strictly prohibited to destroy animal nests, hunt, feed and intentionally harass wild animals. Trapped wild animals must be rescued in time.
Strengthen the research & development of soil and groundwater remediation technology and its reserve.	The Company has actively promoted the development and reserve of soil remediation technology and formed a complete site technology system, including bioremediation and phytoremediation, so as to advocate the application of NBS (nature-based solution) and promote the construction of "clear water, blue sky and pure land".



Case

Undertaking the First Ecological Wetland Protection and Restoration Project in China

The Dahuangbao Wetland is one of four designated wetland nature reserves in Tianjin. Situated in a critical passage for bird migration in China. The wetland serves as a vital habitat for various rare and endangered bird species. However, in recent years, the reserve has suffered from significant environmental degradation due to human activity and the impact of climate change. The reserve has been facing prominent problems such as wetland degradation, water shortage, and imperfect ecosystem in key areas.

During the Reporting Period, our subsidiary Sinopec Fifth Construction Co., Ltd. undertook the remediation project of contaminated soil and groundwater of Tianjin Yingli Co., Ltd. in this area. As the first ecological wetland protection and remediation project in China, Sinopec Fifth Construction Co., Ltd. conducted a thorough scientific analysis of rare migratory bird migration, the connection of remediation processes, the construction of barrier junction parts, and potentially hazardous wastes. The Company employed a variety of technical coupling remediation schemes to carry out precise remediation, while minimizing any potential ecological impacts and successfully controlling all kinds of pollutants.

Launching the "Pure Land Defence War" with Concerted Efforts

The Joint R&D Centre of Green Technology of Carbon Neutrality and Sinopec Fifth Construction Company remained committed to the development and application of efficient green site pollution remediation technology and the development of site pollution remediation projects through concerted efforts. Sinopec Fifth Construction Co., Ltd. undertook the national key special sub-project "Research and Integrated Demonstration of Pollution Control Technology for Petrochemical Sites in the Yangtze River Economic Zone", along with over 10 provincial and ministerial scientific research projects, and obtained more than 20 national authorized patents. Especially, the project "Efficient Gradual Degradation and Absorption Treatment Technology for Organic Contaminated Soil" won the second prize of Engineering Construction Science and Technology Progress of China Association of Construction Enterprise Management.

Restoring the Polyether Site of Sinopec Tianjin Petrochemical Company

Our subsidiary, Sinopec Fifth Construction Co., Ltd., has successfully implemented seven ex-situ remediation technologies for the Polyether Site of Sinopec Tianjin Petrochemical Co., Ltd. These technologies include room temperature analysis, biological treatment, chemical oxidation, microwave heating, thermal desorption of electric/gas reactors, thermal desorption of rotary kilns and thermal cracking. Moreover, it has also adopted six treatment technologies, including biological enhancement, aeration enhancement, hot air enhancement, chemical oxidation enhancement, electric heating enhancement and fracturing enhanced multiphase extraction, for precise remediation, treating a total of 926,000 m³ contaminated soil and 146,000 m³ underground water. The remediated soil met the requirements of Class I construction land specified in the Soil Pollution Risk Control Standard for Soil Environmental Quality Construction Land (Trial) (GB36600-2018), and would be transferred for commercial and residential development.

Treat contaminated soil

926,000
m³

Treat contaminated underground water

146,000
m³



03 Technological Improvement

3.1 Innovation Driven	48
3.2 Digital Empowerment	50



» Innovation Driven

» Protection of Intellectual Property Rights

The Company attaches great importance to the protection of intellectual property rights. We strictly follow the Patent Law of the People's Republic of China, the Copyright Law of the People's Republic of China, and other local laws and regulations related to intellectual property protection. We continuously improve the management system for the protection of intellectual property rights. To this end, we have formulated and implemented management regulations such as the Management Regulations of Sinopec Engineering Group on Intellectual Property Protection, the Patent Management Regulations of Sinopec Engineering Group, the Management Regulations of Sinopec Engineering Group on Proprietary Technologies, and the Management Regulations of Sinopec Engineering Group on Technical Confidentiality Agreements. During the Reporting Period, we revised the Management Regulations of Sinopec Engineering Group on Intellectual Property Protection in accordance with the requirements of the Rules on Risk Management of Overseas Intellectual Property Rights of Sinopec Engineering Group (for Trial Implementation) by improving overseas intellectual property management. In 2022, we had no infringement lawsuits.

During the Reporting Period, the Group completed 771 new patent applications, including 540 invention patents, accounting for 70% of the total. A total of 543 patents were granted, including 284 invention patents. The quality of patents continuously improved. As of the end of 2022, we owned a total of 4,118 valid patents in aggregate.

4,118

Valid patents in aggregate

771

Annual new patent applications

543

Granted patents this year

» Working Mechanism Innovation

The Company vigorously implements an innovation-driven strategy, drives development with innovation, actively improve the technology and innovation system, and builds a more energetic science and technology innovation platform. During the Reporting Period, we established the third session of Science and Technology Committee of Sinopec Engineering Group and revised the Working Rules of the Science and Technology Committee of Sinopec Engineering Group to continuously strengthen the top-level design of technological innovation. We implemented an open competition mechanism to select the most qualified candidates for key projects and actively released the first batch of projects for candidates to apply and compete. Our goal is to invigorate innovative efforts through an openness-driven approach, unleash maximum potential, and enhance innovation efficiency.

Case

Innovation in flexible working mode to ensure continuous operations of scientific research and the innovation system

Sinopec Engineering Incorporation, a member enterprise, with overwhelmed engineering design tasks and inadequate full-time employees, have created a more humanised technical R&D innovation management system by adopting the iterative R&D idea of "engineering practise + simulation calculation + test verification." They have established a flexible working mode that emphasises "decentralised personnel, centralised projects, complementary specialities, and collaborative research". By the end of 2022, the flexible working mode had functioned well, effectively stimulating the vitality of scientific research and innovation.

Establishment of employees' innovation studios to provide a platform for communications in science and innovation

Guangzhou Engineering Co., Ltd., a member enterprise, actively responds to the innovation-driven development strategy of the Company, deepens scientific and technological innovation reform, takes the initiative to establish employees' innovation studios. It has established a 3D design software secondary development innovation studio, an environmental protection innovation studio, a hydrogen energy innovation studio, and a digital 3D design and development innovation studio. It is dedicated to providing robust platforms for workers' technological innovation, achievement transformation, and experience exchange. In 2022, the 3D design software secondary development innovation studio was awarded the "Innovation Studio of Model Workers and Craftsmen Talent" by the Committee on Industries of Guangdong to encourage the model workers and craftsmen talent to give full play to their demonstration and leading roles.



Employees' Innovation Studios

» Scientific and Technological Innovation Achievements

The Company continues to intensify scientific and technological research efforts, leveraging its professional expertise, and actively participating in major national science and technology projects, as well as key science and technology projects of Sinopec Group, driving the industry forward. During the Reporting Period, we successfully carried out 24 national-level projects, 31 key projects, and 20 major projects of Sinopec Group. Our innovative achievements were recognised with 62 scientific and technological progress awards and excellent design and excellent engineering awards at the provincial and ministerial levels and above, and the 8 First Prizes, 7 Second Prizes, and 5 Third Prizes of the National Scientific and Technological Progress Awards.



24

national-level projects

20

major projects of Sinopec Group

31

key projects

8

Sinopec Scientific and Technological Progress Award



» Sinopec Group's First Prize of the National Scientific and Technological Progress Award Winning Projects

Awarded Project	Awarded Company
Technology development and industrial application of the complete sets of refined ethylene oxide with a production capacity of 200,000 tonnes per year	Sinopec Engineering Incorporation, and Shanghai Engineering Co., Ltd.
Technology development of the complete sets of propylene oxide produced by hydrogen peroxide with a production capacity of 100,000 tonnes per year	Shanghai Engineering Co., Ltd.
Development and application of the residue-to-chemicals (RTC) technology for heavy oil	Sinopec Engineering Incorporation
Zero discharge treatment of high-content salt water and utilisation of salt water resources	Sinopec Engineering Incorporation
Development of key technology routes and core technologies to support Sinopec Group's continuous upgrading of gasoline quality	Guangzhou Engineering Co., Ltd., and Sinopec Engineering Incorporation
The complete-set high-flux plasma VOCs treatment technology	Guangzhou Engineering Co., Ltd.

» Digital Empowerment

To capitalize on the opportunities presented by intelligent manufacturing in the petrochemical industry, we are proactively accelerating our digitalisation efforts with a focus on digital engineering. This approach spans all stages, including technological research, plant planning, engineering design, engineering construction, and project delivery to plant operation, and implemented the new model of "data + platform + application", thereby providing important technical support for our digital transformation and intelligent development.

During the Reporting Period, we successfully completed the digital delivery of nearly 40 large-scale projects, which served as a solid foundation for the construction of intelligent factories. With the aim of leading the industry in digital engineering capabilities, we continued to promote the application of digital technologies, paid close attention to the execution needs of projects at home and abroad, established and improved basic system platforms and integrated design platforms, and enhanced the efficiency and quality of engineering design. Responding to the increasing demand for digital delivery and intelligent management from our clients, we developed an integrated platform for delivery and application based on the industrial Internet. This integration enabled us to integrate design, construction, delivery, intelligent factory construction and production consulting services, empowering factory operation and maintenance, and promoting the extension of digital engineering construction to intelligent factories.

During the Reporting Period, we made constant strides in improving the top-level design of digital work. Based on our "14th Five-Year Plan" for informatisation, we compiled the Refining and Chemical Engineering Business Domain Planning and Design Scheme and Work Guide, the Refining and Chemical Engineering Business Domain Application Architecture and Function Description, and the Evaluation Indicators for the Work of the Refining and Chemical Engineering Business Domain Leader within the Responsibility System. We continuously optimised the information-based management and control organisation system, adjusted the structure of internal leading groups, and optimised the management of business authority related to the internal control system for ensuring the efficient operations of the organisation. By standardising business procedures, we established a basic database covering 479 sub-businesses in the refining and chemical engineering domains, and conducted a thorough check of the data assets of operation management subjects in these domains. Furthermore, we promoted data governance and "cloud application, and platform development", and launched the management platform based on Sinopec Intelligent Cloud. Specifically, four subsidiaries implemented the integration of digitalized and intelligent management systems.

40
large-scale projects' digital delivery

479
sub-businesses
established a basic database covering the refining and chemical engineering domains, and conducted a thorough check of the data assets of operation management subjects in these domains.

Case

Taking the lead in compiling the national standard the Digital Delivery Standard for the Petrochemical Engineering on digital delivery

Our subsidiary Sinopec Engineering Incorporation spearheaded the compilation of the national standard for Digital Delivery Standard for Petrochemical Engineering (GB/T 51296), which has addressed the lack of a digital delivery standard in the domestic petrochemical industry. This standard has guided and standardised the implementation of more than ten digital delivery of large-scale integrated refining and chemical projects, improved the quality of delivery information, enhanced the utilisation value of delivery information, and laid the foundation for digital operation and maintenance of factories and construction of intelligent factories.

Supporting digital delivery services empowered by digital engineering

To address the challenges of managing complex information, diverse varieties, and high confidentiality requirements of the documents from suppliers, our subsidiary Sinopec Engineering Incorporation has developed a supplier digital management platform/cloud three-dimensional collaborative modelling platform with proprietary technology. This secure system allows us to manage data, models and documents from suppliers across countries, cities and regions in a secure system environment. By avoiding the inefficiencies of reviewing and modifying traditional paper documents, this platform greatly improves the quality, efficiency, and management of supplier information delivery.

Meanwhile, to address challenges with supplier modelling and factory model maintenance following digital delivery, we have developed a cloud native three-dimensional collaborative modelling platform with our partners, which provides lightweight modelling tools for suppliers and corporate producers, and continuously accumulates standard modules on the platform, greatly improving the efficiency of modelling, reducing the cost of modelling, and providing technical support for the construction of digital twin factories.

Case

Digital archives construction pilot project passed the acceptance of the government

The digital archives construction pilot project undertaken by our subsidiary Sinopec Engineering Incorporation has taken the lead in passing the national acceptance, fully realizing the electronic document filing and electronic archives management of engineering design technical data, compiling archives data standards, with a digitisation rate of more than 90%. Through dynamic views, The project also established archives data standards and developed over 500 thematic databases covering various professional standard maps of refining and chemical engineering design and engineering projects based on plant objects. With over 20 TB/300,000 pieces of digital resources, these archives cover Sinopec and most of the domestic refining and chemical plants. The digital archives have provided comprehensive support for technological development, reconstruction and expansion projects, emergency disposal of owner enterprises, and compliance investigation of old devices, enabling the intelligent development of enterprises.

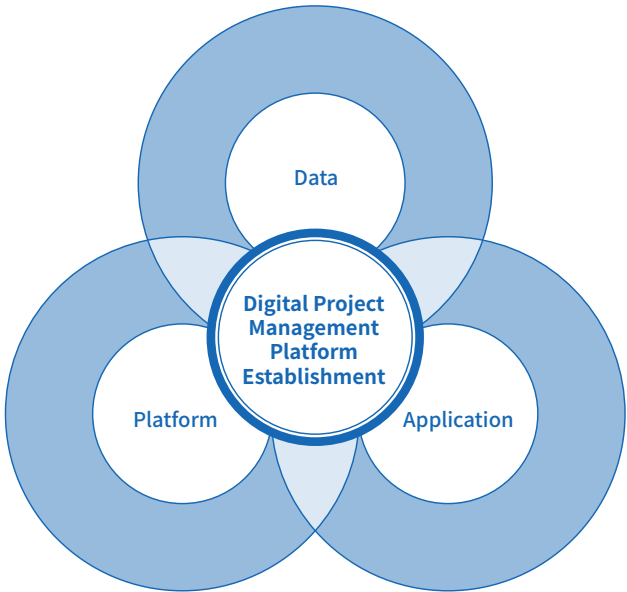
Improving efficiency through the pipeline welding management system

Our subsidiary Sinopec Engineering Incorporation joined hands with Sinopec Fourth Construction Co., Ltd. to improve the pipeline welding management system by utilizing advanced pipeline deepening design tools and improving pipeline construction management. This system has been successfully implemented in projects across several cities, including Zhenhai, Anqing, Tianjin, and other cities, improving the efficiency of the construction process, saving a lot of manpower, and yielding direct economic benefits. It also lays a solid foundation for building green and intelligent construction sites.

The pipeline construction management system combines digital delivery and production operation requirements, with pipeline welding quality and progress control at its core. It enables visual management of the whole process, with full range and multi-device collaboration of pipeline construction. The application of deepening design software has greatly improved the efficiency of material and data statistics and secondary drawing, increased the proportion of prefabricated welding, and reduced the intensity of on-site welding work. The use of QR code and imaging technology has facilitated the efficient circulation of process handover and quality inspection information, while maintaining traceability throughout the process. This has greatly improved the accuracy and timeliness of construction information, making the whole process of construction controllable and traceable. Moreover, it has improved the quality of construction, eliminated potential safety hazards such as non-welding qualification, and promoted efficient synergy between operating units on the construction site.

A digital management platform for engineering projects was established

In accordance with the new mode of "data + platform + application", our subsidiary Sinopec Fourth Construction Co., Ltd. developed a "digital integrated business management" platform based on business management and a "digital project management" platform based on construction process management to speed up its digital transformation practices. In this way, the company achieved the top-level design featuring an integrated data pool (resource pool), integrated management platform, and professional command system. Supported by professional site management software such as pipeline construction management, material acceptance, inspection, and storage, welding material management, quality management, erection management, and vehicle management, the company ushered in the double cycle of top-down management empowerment and bottom-up data accumulation.



Case

Tianjin and Zhenhai Intelligent Plant Projects Helped to Realise the Construction and Intelligent Operation of Digital Plants

In the projects of Tianjin and Zhenhai Intelligent Plants, our subsidiary Sinopec Engineering Incorporation focused on the six business areas of "supply chain management, production control, equipment management, energy control, safety control, and environmental protection control" of petrochemical plants. Taking plant-wide optimisation and device intellectualisation as the breakthrough point, with the "state perception, data analysis, model optimisation, system integration" as the design support, we implemented plant planning, process, instrumentation, electrical, telecommunications, dynamic equipment, static equipment, safety, environmental protection, information technology and other professional design to enhance the plant's capabilities of "comprehensive perception, collaborative optimisation, forecasting and early warning, scientific decision-making", thus advancing the pace of digital plant construction.

With digital transformation as the driving force to promote value enhancement, we built a digital plant characterized by "digitalized physical factory, visualized on-site management, and intelligent production and operation". To enhance operational efficiency, we have created digital twins for process control, enabling optimal production process control, and ensuring that the device is "safe, stable, full and excellent". With the new mode of digital plant construction integrated with design and operation, with efficiency, safety and green as the core, we deeply explored the intelligent application scenarios to help the intelligent operation of petrochemical enterprises.



Comparison of digital and real scenes



Smart factory schematic

Case

The complete technology of large-flux low-temperature plasma treatment of VOCs achieved industrial application

The treatment of VOCs (Volatile Organic Compounds) is a crucial yet challenging issue in the petrochemical industry. Our subsidiary Guangzhou Engineering Co., Ltd. played a key role in the research and development of a complete high-flux plasma VOCs treatment technology. This technology was first applied to the treatment of organic waste gas in the Sinopec Jingmen Petrochemical Wastewater Treatment Plant, with a waste gas treatment scale of 12,000 Nm³/H, significantly improving the disposal efficiency of low-temperature plasma VOCs treatment technology. After three months of smooth operation, the plant has successfully achieved the standard discharge of VOCs exhaust gas on-site, effectively addressing the challenge of treating large flux and low concentration VOCs. It has now become a "sharp weapon" to efficiently treat low concentration VOCs and improve atmospheric environmental quality.

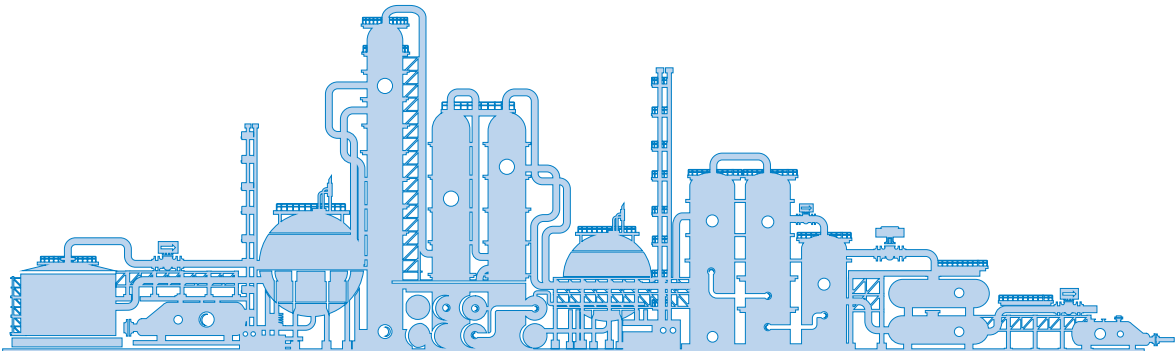
The Low-cost Ethane Cracking Gas to Ethylbenzene/Styrene Project was put into operation

The Low-cost Ethane Cracking Gas to Ethylbenzene/Styrene Project was one of Sinopec's key scientific and technological projects. It was equipped with a core plant, namely, 400,000 tonnes/year Cracking Gas to Ethylbenzene Plant, whose process package and engineering design was undertaken by Guangzhou Engineering Co., Ltd., one of the Company's subsidiaries. The production of ethylbenzene from cracking gas expanded the source of ethylene and improved the flexibility and economy of ethylbenzene/styrene producers.

In May 2022, 400,000 tonnes/year industrial demonstration plant of Sinopec Maoming Petrochemical Company was completed and put into operation, marking the first successful industrial application of low-cost ethane cracking gas to ethylbenzene/styrene technology, and providing a new technical route for refining and chemical enterprises to further broaden and improve the efficient value-added utilisation of ethane resources.



Low-cost Ethane Cracking Gas to Styrene Project of Sinopec Maoming Petrochemical Company





04 Quality & Safety

- 4.1 Occupational Health and Safety Management
- 4.2 Quality Management
- 4.3 Delivering Sincere Services

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» Occupational Health and Safety Management

We have established a three-level safety management structure of "ESG Committee of the Board - HSE Committee of the Management - Executives". Through this structure, we constantly improve our safety management and safe production management system, with a focus on revising and promulgating the Regulations on the Safety Management Regulations of Sinopec Engineering Group for High-risk Operations. Our efforts led to the formulation of more stringent rules for 17 high-risk operations in direct operation links, thereby enhancing the safety management and control of high-risk operations in these links.

Board level	The Company pays attention to major safety issues, and incorporated safety considerations into other decision-making processes of the Board of Directors, in collaboration with other committees under the Board.
Management	The Company established the HSE Management Committee responsible for making decisions on major HSE issues of the Sinopec Engineering Group. The Committee has an office as a permanent body to carry out its daily work. The office is responsible for examining and approving the Company's HSE related rules and regulations, and supervising the performance of HSE duties.
Execution layer	At the executive level, the Company has established a three-level structure of "Quality and Safety Department of the Company - Various Departments of the Subsidiary - Head of the Project Department". The Quality and Safety Department of the Company is responsible for overall planning, coordination, and supervision, while the Occupational Health and Safety Management Department of the Subsidiary and the Occupational Health and Safety Head of the Project Department are responsible for implementing environmental protection work for their respective projects.

Responsibilities of the HSE Management Committee of the Company

- Implement the HSE guidelines, policies, laws, regulations, standards, norms and provisions of the state and local governments and Sinopec, and organise the implementation through functional departments and subsidiaries.
- Organise the formulation of the Company's HSE policy, objectives and HSE management standards, and supervise the implementation of HSE responsibility system.
- Study and decide the major decisions of the Company's HSE work, organise the assessment of major hidden dangers, and urge special personnel to have a project registered for rectification.
- Review the emergency rescue plan for major emergencies, organise and coordinate the HSE inspection, organise, coordinate and guide special personnel in investigating and handling safety accidents.
- Hold working meetings of the committee on a regular basis, review and approve the annual or stage HSE work plan of the Company, discuss and decide the major issues in HSE management and measures that should be taken, and decide the annual HSE work deployment.
- Review and approve advanced units, collectives and workers in safety production, occupational health and environmental protection, and decide on matters of commendation and punishment.
- Guide, supervise and coordinate the HSE Management Committee of subsidiaries in carrying out work.
- Set up the Company's safety technical expert group.

» HSE Management System

The Company has established an HSE management system with the characteristics of refining and chemical engineering to strengthen information collection, transmission and analysis, to implement the PDCA cycle of system operation, to reinforce the process assessment of each link, and to improve the management effectiveness. We actively carry out external management system certification and audit. By the end of 2022, a total of 11 units of the Group have passed the Occupational Health and Safety Management System (ISO 45001) certification, achieving 250 million continuous safe working hours.



Identify safety risks

- Establish a dual prevention mechanism of layered management and control of HSE risks and investigation and management of hidden dangers, clarify the responsibility of risk identification and dynamic management and control requirements, and establish a risk list database.
- Implement operation permit management for high-risk operations, apply risk analysis tools, standardise the identification, management and control of HSE risks in the production process, and the investigation and management of hidden dangers, so as to prevent and reduce accidents and improve the intrinsic safety level.
- Keep an eye on the safety risks brought by new energy business such as hydrogen energy, wind power and PV, and continue to pay attention to the intrinsic safety risks in the process of "oil conversion" and "special oil".

Major production safety contracting system

- Strengthen leadership of the leaders, which puts forward the principles and requirements for the management, and make the "safety observation card" which is used as the basis for safety observation of contact points and risk contracting points.
- The management implements "Four Ones" for major risk contracting points, i.e., at least inspecting the site once, holding one special meeting, listening to one special report and solving one problem.

Carry out project safety supervision

- Adopting on-site, online, self-inspection, mutual inspection and other forms and starting with the "Inspection and Confirmation Form of Safety Management in the Whole Process of Maintenance Projects", we strengthened maintenance safety supervision and completed the full-coverage supervision of multiple large maintenance projects.
- Formulate the Promotion Plan of Major Business Risk Management and Control System Construction Based on the Whole Life Cycle of Project Contract, and conduct safety inspection of HSE management system audit for major risk management and control projects;
- Set up safety and quality supervision teams in key projects, and dispatch safety and quality experts to the site for supervision and inspection. At the same time, strengthen the safety supervision of projects in construction peaks.

- Implement system revision and management system audit
- Review the HSE management system in an all-round way, improve 9 occupational health and safety management systems, and revise and promulgate the Management Regulations of Sinopec Engineering Group on the Safety of High-Risk Operations, which contains 17 safety management procedures for high-risk direct operation links such as high-altitude operation, steel grating operation, and confined space operation, so as to provide a system foundation for high-risk operations in on-site direct operation links.
 - Audit the HSE management system in 9 units, 122 management departments, and 21 project departments to promote the deep integration of professional management and safety management.

- Attach importance to overseas operation safety
- Strictly abide by the Management Regulations of Sinopec Group on Overseas Public Safety, the Code of Sinopec Group for Risk Assessment of Overseas Security (Trial) and other management regulations, as well as the safety-related laws and regulations in the place where the project is located.
 - Establish HSE management mechanism for overseas projects, set up HSE committee, define the responsibilities and working mechanism of the committee, and coordinate the safety management of overseas projects.
 - Create a whole-process and whole-system project risk prevention and control mechanism. Carry out risk identification, analysis and quantitative evaluation of important projects implemented overseas, and incorporate sand table deduction based on game theory into the projects.

Occupational Health and Safety Management Policies of the Company (Examples)

- Safety management
- Regulations of Sinopec Engineering Group on Emergency Management
Management Regulations of Sinopec Engineering Group on HSE Risk Control and Hidden Danger Investigation (Trial)
Safety Management Regulations of Sinopec Engineering Group on High-risk Operations
Regulations on Emergency Management
Management Regulations for Production Safety Accidents (Events)
Safety Management Regulations for Production Change
- Occupational health
- Management Measures of Sinopec Engineering Group for Employee's Health
Management Regulations of Sinopec Engineering Group on Labour Protection Fees
Management Regulations of Sinopec Engineering Group on Personal Labour Protection Articles
Management Regulations of Sinopec Engineering Group on Labour Protection Articles on Construction Sites



Occupational Health and Safety Management of Subcontractors

We attach great importance to the safety management of subcontractors, and ensure they are subject to unified safety management practices. Moreover, we provide safety training and supervision to our contractors and subcontractors, ensuring that they are held to the same high standards as our employees. By doing so, we aim to continuously improve their safety awareness, strengthen the management of subcontracting business, and promote the contractors to improve their safety management level and ultimately prevent safety accidents.

We proactively supervise and assess the occupational health and safety practices of our subcontractors, including strategic subcontractor system checks, first-responsible person contracting, routine inspections and supervisions, safety scoring, etc. We implement a mechanism of assessment and accountability, combining rewards and punishments for subcontractors. In 2022, We recognised over 14,000 person-times of the employees of our subcontractors for their safety practices, effectively regulating their on-site safety measures and ensuring a secure working environment.

Safety (and Occupational Health) Management Mechanism for Subcontractors

- The heads of Sinopec, its subsidiaries or project departments are responsible for contracting the safety risks of subcontractors;
- Quantitative indicators include key factors such as the allocation rate of key personnel (project leader, construction leader, technical leader, safety leader, and team leader) of the subcontractors, the interview rate, the organisational rate of the subcontractor team, and the allocation rate of safety personnel in any shift for precision management;
- Subcontractors are included in the scope of our general health management, and are managed to the same standards as our employees. The three-inspection system for the occupational health of the subcontractor's employees is implemented, and the occupational hazards are fully notified;
- The HSE system of strategic subcontractors is thoroughly checked every three years.

Engaging in Safety Training and Publicity

The Company continues to strengthen the construction of a safe production culture, by creating a positive safety culture atmosphere and providing ongoing publicity, education, and training to improve the safety skills of employees. We combine supervision and training through our "One Training Following One Supervision" approach. During the supervision process, we focus on training key project managers, shift leaders and operators to improve their skills through safety calls, morning meetings, and special warning education; compile professional teaching materials, distribute 1+7 pocketbooks for guardians, and produce 18 online video courses for learning; organise practical training, improve the quality and ability of personnel, hold more than 30 practical training courses, and educate and train more than 30,000 on-site personnel through sending QHSE training to the project, mobile safety practice island, safety night school, multimedia training toolbox, employee lecture hall, safety competition and other ways, to enhance safety awareness and business capabilities. During the Reporting Period, the Company organised 308 safety training sessions, with a total of 31,000 attendances and 64,000 hours of safety training.

308

safety training sessions

64,000

safety trainings hours

Indicators	Unit	2022	2021
Number of production safety training participants	10,000 attendances	3.1	1.02
Number of production safety trainings	training	308	106
Duration of production safety trainings	10,000 hours	6.4	4.7
Number of safety trainings for subcontractors	training	210	-

Case

Participating in consulting project research to promote the safe development of the industry

Our subsidiary, Sinopec Engineering Incorporation Ltd., has been actively involved in several key consulting projects established by the Chinese Academy of Engineering, including the "Strategic Research on the Modernisation of Hazardous Chemicals Safety Management System and Regulatory Capacity". Our contributions to this project have played an instrumental role in promoting the management of hazardous chemicals in China's engineering industry. As part of this project, we formulated a proposal titled Suggestions on Improving the Hazardous Chemicals Management and Supervision System and Mechanism in China. This proposal was successfully reported to higher-level authorities. Our efforts have contributed significantly to the promotion of a scientific, authoritative, and systematic hazardous chemicals management system and supervision capacity in China.

Leading the revision of two technical standards on anti-explosion design and oil & gas recovery and treatment facilities

In 2022, our subsidiary Guangzhou Engineering Co., Ltd. successfully revised two important technical standards. These include The Technical Standards on Oil and Gas Recovery and Treatment Facilities and the Standards on Anti-explosion Design of Petrochemical Buildings (GB/T50779-2022). These revised standards cover applicable buildings and anti-explosion design requirements including relevant content on anti-explosion design for existing buildings, filling in a gap in China's national standards for the design of oil storage systems, loading systems, shipping facilities, and oil and gas recovery and treatment facilities.

Independently-developed intelligent seat belt was put into use smoothly

The R&D team of the Safety Technology Centre of the Sinopec Fifth Construction Co., Ltd., one of the Company's subsidiaries, has developed an intelligent seat belt. This innovative product offers a range of features including real-time positioning, trajectory and dangerous area determination, wearing and hanging status determination, height determination, voice prompt, wireless transmission, etc. Designed to ensure operator compliance with safety protocols in high-risk areas, the intelligent seat belt can detect whether an operator is wearing or fastening their safety belt correctly. In the event of a violation, the host will automatically issue a voice prompt and send an alarm record to relevant management personnel. In 2022, the intelligent seat belt has been successfully deployed across multiple projects. Its adoption has significantly improved pre-risk management and helped reduce the rate of accidents caused by falling from high places.



Intelligent seat belt

Improving basic equipment standards, and enhancing the status of safety management

To ensure the safe operations of the project and improve the safety management status, the Huizhou Ethylene Project Department of Sinopec Tenth Construction Co., Ltd., one of our subsidiaries, has purchased a large number of lightweight finished ladders. These ladders were used to replace commonly-used scaffolding, resulting in improved efficiency and increased safety during high-altitude operations.

Protecting Employee's Health

We strictly abide by the relevant occupational health laws and regulations of the country and region where our projects are located, and actively implement the employee health management mode in accordance with the Management Regulations of Sinopec Group on Employee's Health. The Company has formulated management systems and guidelines such as the Management Regulations of Sinopec Engineering Group on Employee's Health, the Management Regulations of Sinopec Engineering Group on the Health of Overseas Employees, the Guidelines for the Health Risk Assessment of Overseas Employees, and the Guidelines for the Prevention and Control of Cardiovascular and Cerebrovascular Diseases of Overseas Employees. Furthermore, the Company has clearly defined the competent department for health management to form a comprehensive employee's health management system.

By the end of 2022, a total of 11 units of the Group have passed the occupational health and safety management system certification.

Capacity building	Organise on-site first aid training, and focus on the use of defibrillator (AED), CPR theory and practice, and office health care skills.
Platform construction	Continue to promote "Shengli Xiangjian" employee health services, and provide employees with video consultation, Beijing referral and appointment of famous doctors and other services.
Service and care	- Strengthen the Employee Assistance Program (EAP), and offer humanistic care to increasingly protect the health of employees. - Formulate customised physical examination programs for different age groups, establish a list of high-risk personnel for physical examination, and fully implement the health examination and assessment of employees before going abroad.

Case

Establishing an EAP psychological counselling room to provide on-site EAP counselling

Our subsidiary Sinopec Engineering Incorporation is concerned about the mental health of employees, and establishes the Employee Assistance Program (EAP) psychological counselling room to continuously consolidate the EAP service module and system, providing more than 200 psychological counselling services.



Onsite EAP Consulting of Sinopec Engineering Incorporation

» Quality Management

As an engineering construction enterprise, quality management not only provides quality assurance services, but also one of the key tasks to ensure the safety of employees. We put quality management at the top of our agenda. We have established a project quality management responsibility system that spans all levels of our subsidiaries. We conduct regular management system certifications and audits to ensure that our quality management system adheres to the highest standards. As of the end of 2022, a total of 11 units of the Group have successfully obtained certification for the quality management system (ISO 9001).

Subcontractors are the basic force of our project quality assurance. We have realized the integration of subcontractor management into the whole process of our quality management system, and the system audit with full coverage of strategic subcontractors is conducted by the Group every three years.

Improve the operational efficiency of quality management system	- Enhance the audit quality of quality management system. - Optimise the quality management system documents of the Project Department on time according to the changes of relevant requirements. - Integrate the subcontractor management into the whole process of quality management system.
Carry out quality goal management	Formulate the Quality Goal Management Methods to strengthen the project quality management, and in combination with the requirements of the project contract and project characteristics, develop the documented quality control plan and project quality management regulations and regularly inspect the completion of these goals.
Deepen the construction of quality management system	- Formulate the Quality Management Measures of Sinopec Engineering Group, the Implementation Measures of Quality Management System of Sinopec Engineering Group, the Management Measures of Sinopec Engineering Group on Construction Procedures of Engineering Projects, the Construction Standards and Norms Management Measures, and the International Project Management Manual to further deepen the quality management systems. - Revise and improve the Regulations on the Management of Welding Procedure Qualification Reports for Overseas Engineering Projects of Sinopec Engineering Group (Trial), and revised two systems of the Regulations on Quality Management of Sinopec Engineering Group and the Regulations on Quality Accident Management of Sinopec Engineering Group.
Establish a database of quality management experts	Establish and publish the database of quality management experts in all major disciplines of refining and chemical engineering construction.
Strengthen the quality management of on-site project	Prepare the implementation rules such as the Practical Series of Quality Inspection of Petrochemical Engineering Projects, the Checklist of Project Quality Control Points, the Management Measures for Quality Patrol Inspection and the Checklist of Sub-project Patrol Inspection to further standardise the construction level, construction process and construction process in accordance with the key nodes of engineering project management.
Improve the handling mechanism of engineering quality problems	- Formulate management methods and control procedures such as the Management Measures of Sinopec Engineering Group on Quality Accidents, the Management Regulations of Sinopec Engineering Group on Welding Quality Flight Inspection (Trial), the Management Regulations of Sinopec Engineering Group on Quality Supervision and Inspection of Construction Projects (Trial), the Control Procedures for Unqualified Products, and the Management Procedures for Corrective Measures. - Set project quality complaint management objectives, establish a hierarchical handling mechanism to supervise and solve complaints, formulate special rectification measures and corrective and preventive measures for repeated problems in the project, and publicize and study the construction personnel and technical personnel, so as to avoid repeated recurrence of these problems.

Strengthen the process control of design quality	Prepare the Design Quality Control Procedures to define the quality requirements for design planning, design input, design control, design output and design change.
Improve the handling mechanism of engineering quality problems	- Formulate management methods and control procedures such as the Management Measures of Sinopec Engineering Group on Quality Accidents, the Management Regulations of Sinopec Engineering Group on Welding Quality Flight Inspection (Trial), the Management Regulations of Sinopec Engineering Group on Quality Supervision and Inspection of Construction Projects (Trial), the Control Procedures for Unqualified Products, and the Management Procedures for Corrective Measures. - Set project quality complaint management objectives, establish a hierarchical handling mechanism to supervise and solve complaints, formulate special rectification measures and corrective and preventive measures for repeated problems in the project, and publicize and study the construction personnel and technical personnel, so as to avoid repeated recurrence of these problems.
Promote continuous quality improvement	Formulate the Continuous Improvement Work Procedures, and develop improvement measures from the aspects of work objectives, measure cost, systematicness and contingency, improved performance, customer satisfaction and reputation.
Take special actions	- Take three-year special actions against "low standards, old weaknesses, and bad habits" that lead to poor quality management. - Continue to "take special actions for internal cleaning of pipelines and equipment". - Continue to take actions for improving the quality of key construction links such as welding and heat treatment.
Promote technological innovations	- Strengthen the professional development and project application of 3D collaborative design technology. - Make an effective use of the newly-built "Welding Procedure Qualification Report (PQR) Information System for Overseas Engineering Projects". - Actively encourage the establishment and development of key quality projects.
Initiate supervision and inspection	- Promote comprehensive quality supervision and inspection in conjunction with random inspection. - Create a case library of typical quality problems from supervision and inspection results, and organise subsidiaries to receive trainings in this regard. - In the form of on-site, online, self-inspection and mutual inspection, Complete the full-coverage quality inspection of 10 large-scale maintenance projects through onsite inspection, online inspection, self-inspection, and mutual inspection, investigate and deal with 4,525 problems around the difficult work, and take corrective measures for the problems identified.
Human capacity building	- Improve and open up the promotion channel of quality-related professional skills. - Develop diversified trainings and vocational skill competitions for operators. - The company's quality management expert database Fully guide the whole process quality work based on our quality management expert database.
Total life cycle management	- Fully consider the client's wishes in the implementation stage of the project. - Rectify quality problems in a timely manner in the stage of "three inspections and four confirmations" before the delivery of the project. - Do a good job of client call-back in the operation stage of the plant.
Publicity and awareness building	- Actively organise publicity activities such as "Sinopec Quality Day" and "National Quality Month" - Create a quality-oriented culture atmosphere through quality appraisals and competitions.

» Delivering Sincere Services

The Company regards the creation of "model projects" and "quality projects" as its own responsibility, continuously improving the level of project management, to serve every owner with the best technology and advanced equipment, ensuring the delivery quality of each project in an all-round way. We have built a large number of key projects for the state and group companies, and established a good brand image and market reputation.

During the Reporting Period, 4 projects undertaken by the Group won the Gold Award of National Quality Project; 1 projects won the Silver Award of National Quality Project; 11 projects won the Provincial and Ministerial Quality Project Award; 2 projects won Sinopec Quality Project Award; 4 projects won National Excellent Design Award; 3 projects won the Provincial and Ministerial Excellent Design Award .

4 projects
won the National Gold Award
for Quality Engineering

11 projects
won quality engineering
awards at the provincial
and ministerial levels

Case

Signing a strategic cooperation agreement with CNOOC Refining and Chemical Co., Ltd. to actively build a win-win cooperative relationship

In October 2022, the Company and CNOOC Refining and Chemical Co., Ltd. (Hereinafter referred to as "CNOOC Refining and Chemical") entered into a strategic cooperation agreement. The signing of the strategic cooperation further deepened the cooperative relationship between the parent companies of both parties, Sinopec and CNOOC, in the field of energy and chemical engineering. Through this agreement, the Company aims to leverage its resource advantages alongside CNOOC Refining and Chemical to further strengthen cooperation in various dimensions such as energy transformation, industrial structure adjustment and high-quality development, and further strengthen cooperation in industrial planning, project consultation, innovative development, technology application, engineering construction and factory services, to make greater contributions to national energy security and economic and social development.

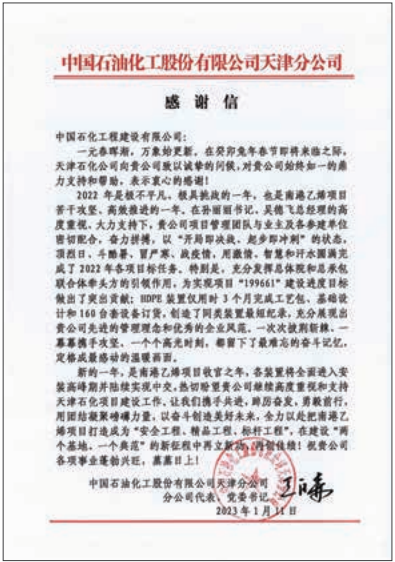


Case

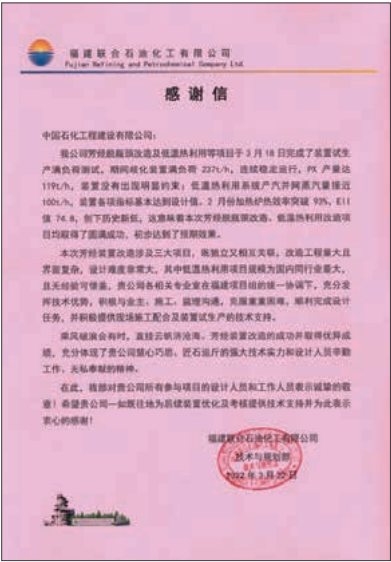
High-quality services have won praise from many owners

We actively provide professional services for the global petrochemical industry. In 2022, we signed cooperation agreements with a number of petrochemical enterprises outside the Sinopec system. During the Reporting Period, our subsidiary, Sinopec Engineering Incorporation, has signed large-scale project engineering design contracts with many domestic partners such as PetroChina Jilin Chemical, North Huajin Chemical Industries, and CNOOC Huizhou Refining and Chemical. These contracts cover diversified and one-stop services such as feasibility study, overall design and engineering design, and have resulted in many thank-you letters from our satisfied clients.

Sinopec Engineering Incorporation plays a leading role in the new project management mode of Nangang Ethylene Project. Combined with the onsite construction needs, the Incorporation coordinated with the manufacturer for the return of capital, optimised the design and drawing schedule, increased coordination, delivery, and transportation of key equipment. Striving for the completion of the project steadfastly, Sinopec Engineering Incorporation made outstanding contributions to the realisation of phased goals of the project. The owner even sent a thank-you letter for the efficient progress of the project.



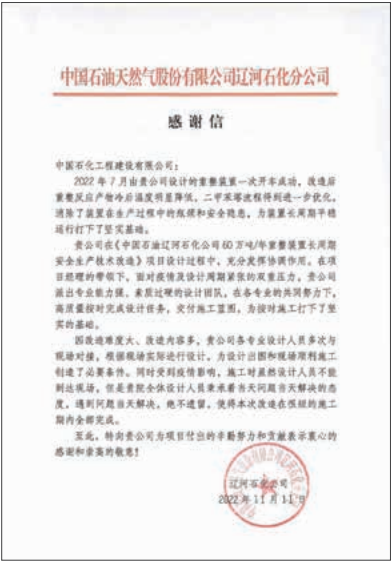
Thank you letter from Sinopec
Tianjin Petrochemical Company



Thank you letter from FREP



Thank you letter from Zhong'an
United Coal Chemical



Thank you letter from PetroChina
Liaohe Petrochemical Company



05 Talent Development



- 5.1 Protection of Rights and Interests
- 5.2 Talent Growth
- 5.3 Employee Care

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» Protection of Rights and Interests

In strict accordance with the laws and regulations such as the Labour Law of the People’s Republic of China, the Labour Contract Law of the People’s Republic of China, and the Law of the People’s Republic of China on the Protection of Women’s Rights and Interests, we have formulated and implemented systems including the Regulations for the Management of Employment contracts of Sinopec Engineering Group, the Regulations for the Management of Employee Training of Sinopec Engineering Group, the Regulations for Benefits Management of Sinopec Engineering Group, the Regulations for Salary Management of Sinopec Engineering Group, and the Regulations for Attendance Management of Sinopec Engineering Group to fully protect the rights and interests of employees.

» Protection of Labours' Rights and Interests

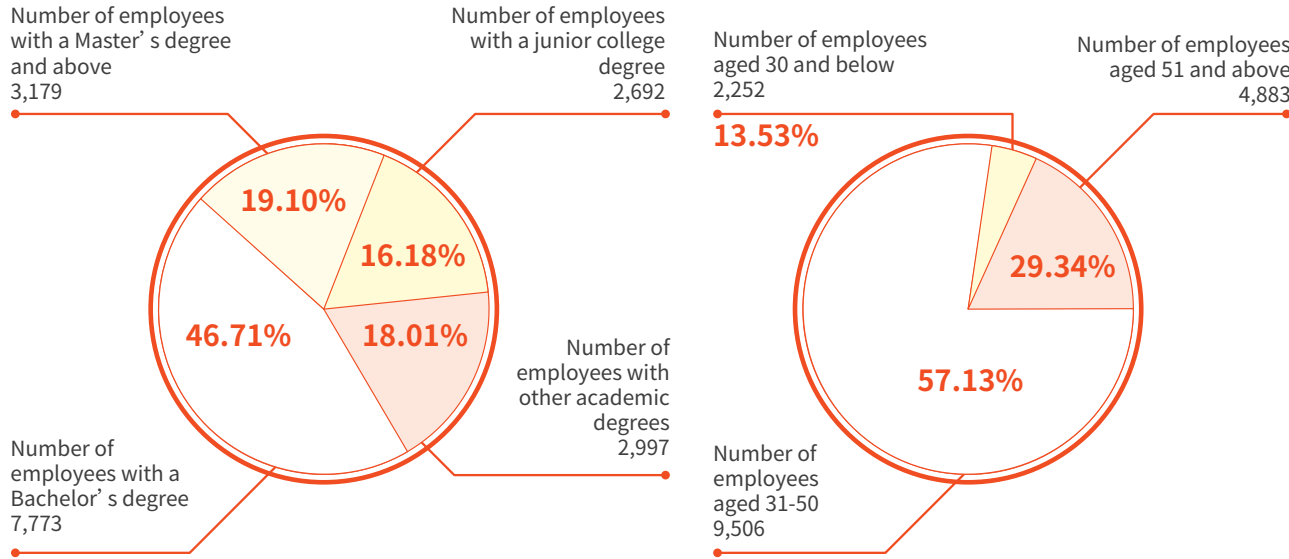
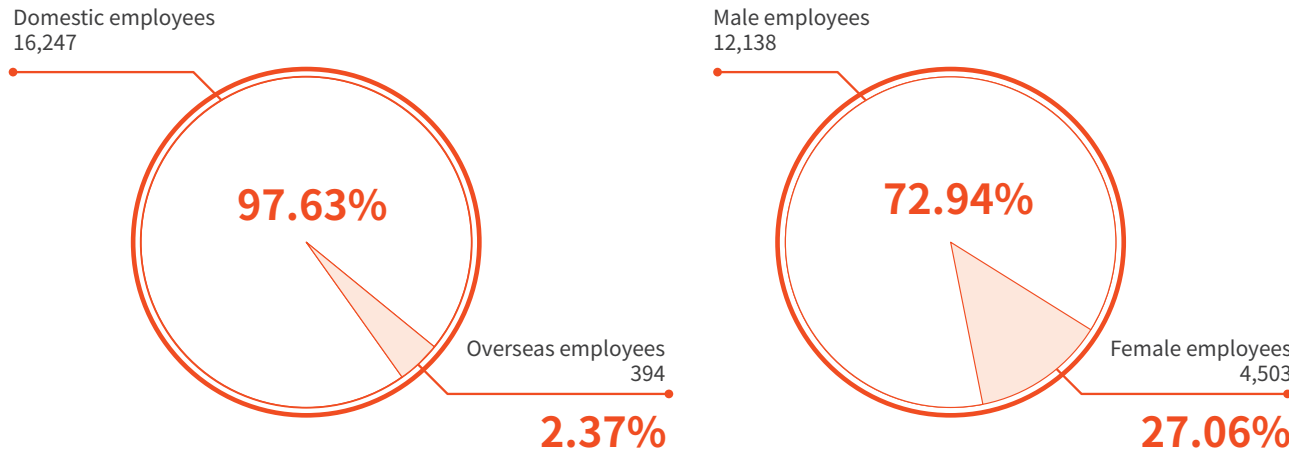
We have ensured that all our employees have signed employment contracts in compliance with relevant regulations. These contracts specify the working hours of our employees. Any work that exceeds the national statutory working hours is compensated with overtime wages, in accordance with regulations.

We have established a complete employee benefits system based on the principle of "compliance with laws and regulations, fairness and universal benefit". We fulfil our obligation to pay social insurance and housing provident funds for our employees every month in accordance with applicable laws and regulations. On this basis, we also provide an additional welfare security system to our employees. Our subsidiaries provide practical and specific subsidies to employees based on their cost-effectiveness covering various aspects such as food, clothing, housing and transportation to family care. We are committed to continuously improving employee welfare and care, and fulfilling our corporate social responsibilities.



» Diversity and Equal Access to Opportunities

We recognise that a diverse workforce can bring new perspectives and ideas to the growth of our enterprise, and we are committed to promoting diversity and inclusivity among our employees. As of the end of 2022, our total workforce comprised of 16,641 individuals, with female employees representing 27.06% of our staff, which is relatively high compared to other engineering and construction companies.



We are committed to promoting equal employment and ensuring that all candidates are treated fairly throughout the recruitment, promotion, and assessment process. We strongly oppose discrimination based on factors such as skin colour, nationality, language, race, belief, physical disability, and any other inappropriate reasons.

» Talent Growth

We adhere to the talent development-oriented strategy, and formulate targeted talent training plans based on the development needs of talents at different stages. his approach has resulted in the formation of five professional categories: scientific research technology, professional management, emerging business, skill operation and international business. Moreover, through multi-level talent training methods, we help employees grow rapidly and broaden their career development space, resulting in the integrated development of personal value and the Company.

As of the end of 2022, the Group boasted three academicians of the Chinese Academy of Engineering, one academician of the Chinese Academy of Sciences, one national expert with outstanding contributions, nine national survey and design masters, one national candidate of the "Millions of Talents Project", and 5,777 people with professional and technical qualifications above senior level.

During the Reporting Period, the Group implemented the "Talent Seedling Program", to enhance the professional level and overall management ability of the cadre and talent team. This program promoted the implementation of multi-position exchange training for young cadres and talents within and between units, providing them with broader training opportunities.

We strengthen professional quality training, improve the comprehensive quality and ability of cadres and employees, and provide better human resources guarantees for the development of subsidiaries. During the Reporting Period, our employees received 670,000 hours of training in total, with the total training investment reaching RMB 32.61 million, and the average training hours of employees reaching 50 hours.

Enrich training resources	- Strengthen the capacity building from the source, organise the internal teaching and training centre to match the teaching concept and service experience of the Management College of the Sinopec Group, and optimise and enhance the capacity of the internal teaching and training centre with practical experience. - Carry out various forms of training from the output end, and improve the flexibility, effectiveness and timeliness of training through "online + in-person training".
Improve the training level	- Carry out the annual key training projects "Project Manager Ability Promotion Course" and "Youth Business Backbone Training Course" to improve the capacity building of the project management team. - Improve the training courses for young backbone employees, aiming at improving the practicability and applicability of training, and optimise the content, time and mode of training courses. - Hold a number of professional skills training courses, such as "Electrical Technician Training Course for Skilled Operators" and "Online Continuing Education Training Course for Safety Management Personnel".

Indicator name	Unit	2022	2021	2020
Total number of employees participating in training	attendance	28,378	35,898	36,555
Employee training				
Of which: proportion of senior manager training attendances	%	19	21	20
Proportion of middle-level manager training attendances	%	26	35	33
Proportion of grass-roots employee training attendance	%	55	44	47
Of which: Proportion of male employee training attendances	%	66	57	61
Proportion of female employee training attendances	%	34	43	39

Improve the system of personnel selection and employment

- Implement the Regulations on the Management of Expert Bank of Sinopec Engineering Group and the Regulations on the Management of Talents Training of Sinopec Engineering Group, to better play the supporting and guaranteeing role of various experts in their work, strengthen the source construction of young cadres, and train a team of talents with excellent quality and optimised structure.

Improve the evaluation system of talent standards

- Publish "Professional Classification of Technical Sequences of Sinopec Engineering Group" and "Classification of Skill Operation Sequences of Sinopec Engineering Group", and on the basis of professional (type of work) classification, complete the "Qualification Evaluation Criteria for Talents Channel" of major specialties (type of work), and standardise the knowledge that the incumbents at different levels should possess. It provides a standard for talent selection and training;
- Establish the International Talent Evaluation Standard System by combining quantitative and qualitative methods, including three dimensions of ability evaluation indicators, namely, basic quality, professional quality and management quality, to evaluate the international talent team.

Open up the channel of talent promotion

- Formulate the Measures for Position Management of the Headquarters of Sinopec Engineering Group (Trial), optimise the conditions for talent selection, improve the relevant systems and methods for talent growth channels, form management systems such as expert management, performance appraisal and talent growth, and realise the cross-promotion and horizontal connection of talents among the three sequences of management, professional technology and skill operation, thus further broadening the career development space of employees.

Implement an employee rotation system

- Promote employee rotation, expand employee career width, and realise the training of high-quality compound talents.

Establish the mechanism of "teachers and apprentices" to train talents

- Speed up the training of young talents and the inheritance of excellent style, experience and techniques, and promote the success of employees.

Implement the training mechanism of overseas talent projects

- Select excellent employees to be stationed in overseas construction projects to help employees further familiarize themselves with international business processes and improve their cross-cultural communication skills, so as to achieve the international talent training goal of "proficient in technology, business, foreign languages and management".

Case

"Talent Seedling Program" was successfully launched

In June 2022, the "Talent Seedling Program" of Sinopec Engineering Group was successfully launched, with 34 young cadres participating in a one-year work exchange in the first phase. The project aimed to provide a more diversified learning and training platform for young cadres. In the future, we will continue to improve the tracking and training mechanism for young cadres, and provide a more perfect and sound training and management mechanism for the development of our reserve talents.



» Employee Care

We attach great importance to employee communication and participation, and continuously enhance our trade union and employee representative system, as well as our employee complaint mechanism, to ensure that employees' needs are promptly conveyed. We will also continue to improve our employee care mechanism by offering diverse options for leisure activities and providing assistance, visits, and other forms of support for employees facing difficulties, with the goal of providing a caring and supportive workplace.

» Employee Communication and Participation

Mechanism of Workers' Congress

We have established and maintained a well-operated Workers' Congress I and actively listen to the voices of workers. In 2022, through the combination of "online + offline" mode, we convened the "Double Congress" (that is, the Workers' Congress and the Trade Union Members' Congress) to review the relevant reports and proposals such as the Company's Annual Work Report, Production and Operation Report, Trade Union Work Report and Employee Representative Proposal Report. Employee representatives were organised to evaluate the construction of trade unions, and the satisfaction rate of workers and the masses reached 100%.

Open mechanism of factory-related matters

Trade unions of subsidiaries have formulated and issued the Detailed Rules for the Implementation of Factory Affairs Publicity. This document comprehensively standardises the content, procedures, requirements, and responsible departments for factory affairs publicity, providing institutional guarantees for the democratic supervision of various units. Through special working meetings, open columns of factory affairs, OA information platform and other forms, each unit effectively publicizes the major decisions and implementation of the Company, important issues of production and operation management, the Company's financial situation, matters related to the vital interests of employees, the construction of Party conduct and clean government and the honest employment of leading cadres, and constantly improves the democratic management system of the Company.

100% employee participation in trade union

Opinion collection mechanism

Every year, we conduct employee satisfaction surveys, set up suggestion boxes, provide complaint channels for work objections, and provide communication windows for employees to express their thoughts and suggestions. The Human Resources Department strictly adheres to the company's confidentiality system and keeps the personal information of all opinion providers confidential, protecting the rights and interests of employees. We classify and summarize the problems investigated and understood, and form a list of problems raised by employees and apparent contradictions annually. The Human Resources Department analyses and summarizes these issues and presents them to relevant departments as a critical basis for work improvement in the following year.

Labour dispute settlement

We have established a complete labour dispute settlement process to handle any disputes that may arise during employment and after the termination and dissolution of the labour contract. Employees may apply to the Human Resources Department for the settlement of labour disputes by telephone, email, interview, written form, etc.; the Human Resources Department determines whether to accept such application and notify the employee within five working days. Within 15 working days of acceptance, the Human Resources Department sorts out the disputes in accordance with laws, regulations and relevant rules and regulations and in combination with the actual situation, puts forward suggestions for handling the disputes, and develops a dispute handling plan after approval by the person in charge of the HR Department. During the Reporting Period, the Group had no labour disputes.

In addition, we attach great importance to communication with employees' families. We recognise that a healthy work-life balance requires a mutual understanding of family and work. Therefore, we organise various family day activities to provide opportunities for employees' families to learn about their loved ones' careers, and to actively solicit their opinions and suggestions about the company.

Case

Holding the Second Public Open Day Was Successfully for Family Members of Employees to Participate in Communication

Our subsidiary Shanghai Engineering Co., Ltd. organised the second public open day in August 2022, gathering with employees and their families in the Galaxy Building, perceiving each other from zero distance, exploring the mysteries of chemical engineering and sharing the Company's development achievements. Through the public open day, the family members of employees knew that Shanghai Engineering Co., Ltd. had actively explored and tackled key scientific and technological problems in the fields of traditional petrochemical industry, biomedicine and new materials and new energy in the past 20 years since its reorganisation, and had made outstanding contributions to the development of China's petrochemical, chemical and pharmaceutical industries.



The Second Public Open Day of Shanghai Engineering Co., Ltd.

» Care for Employees in an All-round Way

We actively provide diversified recreational activities for employees, provide care for temporary/retired employees, employees and their families in need, and improve humanistic care with practical measures.

Case

Enriching employee activities to provide professional interest circle support for employees

Our subsidiary Sinopec Engineering Incorporation extensively carries out various cultural and sports activities. During the Reporting Period, the company launched the activity of "Striving to be a Professional Health Expert", successfully held the art, calligraphy and photography exhibition of "Embarking on a New Journey and Building a New Era of Success" and the 17th Table Tennis League, and created the aerobics MV works of "Winter Olympics Hydrogen Fire for Burning Youth". At the same time, we regularly open multi-functional halls, gymnasiums and other fitness venues, support football associations to carry out activities, advocate the development of workshop gymnastics, walking, interesting fitness and other activities, and concentrate on sports activities.



The Second "Shenjiang Cup" Employee Bridge Competition



Group Photo of Table Tennis League Champions

Case

Taking multiple measures to care for retired workers

Sinopec Fourth Construction Co., Ltd provided care and "Four Ones" services for retired employees, including a farewell ceremony, a thank-you letter, a souvenir and a service card indicating the relevant service items after retirement.

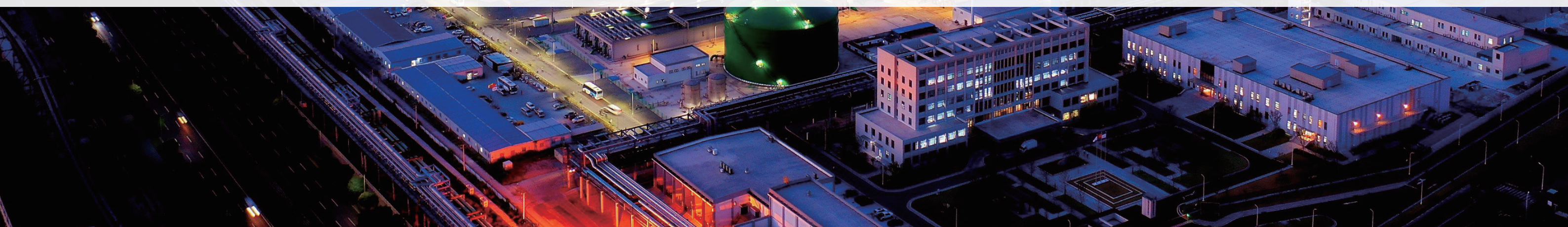


Sinopec Fourth Construction Co., Ltd. provided care for retired workers in the form of "Four Ones".



06 Social Responsibilities

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» Responsible Value Chain

We are committed to building the value chain of responsibility. With regards to owner services, we take the responsibility of creating "model projects" and "quality projects" and continuously enhancing our project management capabilities. We strive to provide owners with the best technology and the most advanced equipment, offering high-value services that cater to their green transformation, emission reduction, and carbon reduction needs. This guarantees the delivery quality of each project comprehensively. In terms of supplier management, we adhere to the principle of fair procurement to ensure compliance, transparency, fairness, and impartiality of the procurement process. We have established and continue to improve the supplier evaluation and access system, strictly controlling the fairness of supply chain partner selection processes., and continuously promoting procurement standardisation and information construction. In terms of subcontractor management, to ensure the smooth development of subcontracting management work, we establish a strategic subcontractor management mechanism which follows the unified QHSE management and adopts the same level of training and supervision.

With regard to services for owners, please refer to the " Delivering Sincere Services" section.

» Supplier Management

The Supplier management work is carried out strictly by the Company. During the access phase, we strictly control the supplier access mechanism to ensure the quality and reputation of suppliers. During the selection phase, suppliers are guided to sign green procurement service agreements or letters of commitment that outline their responsibilities in environmental protection, resource conservation, social responsibility, and other aspects of trading activities, to prevent ESG risks at the supply chain level. The supplier qualification review takes into consideration sustainable development practices such as QHSE management, quality system establishment, green product certification, social responsibility performance and punishment for energy conservation and environmental protection violation, etc.

We focus on supplier integrity and compliance management, strictly implement the Management Regulations of Sinopec Group on the Bidding and Tendering for Materials Procurement, and adopt fair, open and transparent procurement methods and standardised bidding systems and processes to prevent corruption. Our procurement management and operation platform is continuously optimised and improved to achieve full online procurement of all kinds of materials and services within the Company. We also open the procurement process data for real-time audit and review by the supervision department, enhancing transparency. We compile and issue the Interim Measures for Credit Risk Management in accordance with the Six Ban on Commercial Bribery in the Sinopec Material Supply System. Such provisions stipulating suppliers' code of conduct have been included in Material Supply Management, Measures for Material Procurement and Supply Resource to provide guidance for the integrity of suppliers and anti-corruption regulations. We also sign Letters of Responsibility for Integrity with suppliers and subcontractors with whom we have established cooperative relations to prevent commercial bribery, standardise trading behaviours, maintain fair competition, and form a transparent material supply ecosystem.

We actively engage in supplier communication and feedback to better understand their needs. Throughout the Reporting Period, we regularly organised and held supplier meetings to recognise and commend excellent suppliers based on their comprehensive strength, including their basic qualifications, production and operational status, credit rating, equipment capability, quality assurance system, performance, and cooperative attitude.

In 2022, 179 new suppliers had established service relationships with the Group, making the total number reach 3,220.



» Subcontractor Management

Adhering to the concept of cooperation, harmony, mutual benefit and win-win, the Company integrates subcontractors into its integrated management, adheres to the same training, inspection, assessment and management of subsidiaries and subcontractors. It continuously strengthens the management of subcontractors QHSE system management, strictly implements the rules of contracting risks taken by "top leaders" of contractors, and effectively reduces all kinds of potential risks in project contracting.

Improve system construction	- Establish the strategic subcontractor management mechanism, and determine the unified ideas and approaches of cultivating strategic subcontractors at the company level from the aspects of contracting task planning, process management, assessment and evaluation, and promotion management. - Implement unified management standards and unified work procedures, achieved the unified establishment of resource pools and the unified appraisal and evaluation in accordance with the Management Regulations of Sinopec on the Subcontracting and Awarding of Construction Projects, the Measures of Sinopec Engineering Group on Subcontracting Management, the Regulations of Sinopec Engineering Group on Subcontracting and Awarding Management, the Management Regulations of Sinopec Engineering Group on Subcontractor Appraisal and Evaluation, the Regulations of Sinopec Engineering Group on Onsite Management of Subcontractors, the Regulations of Sinopec Engineering Group on the Management of Subcontractor Resource Pools, and the Measures of Sinopec Engineering Group on the Management of Strategic Subcontractors, so as to unify management standards, work procedures, the establishment of resource pools and evaluation, thus further standardise subcontracting management behaviour and promoting the fulfilment of responsibilities by subcontractors, so as to further standardise the subcontracting management behaviours and promote the subcontractors to fulfil responsibilities.
Strengthen capability training	- Strengthen the quality and ability construction of subcontractors. We have made 24 security video courseware, and conducted online training for enterprise leaders, project managers and full-time security personnel within the Company and among subcontractors. - Participate in the training courses preparation for key personnel of Sinopec Group's subcontracting projects concerning three aspects of safety, environmental protection, and corporate culture. The subsidiaries shall participate business trainings on a regular basis, integrate key subcontractor personnel into integrated trainings, provide and expand business training opportunities, and enhance the management level of subcontractors. - Interview contractors' key personnel before admission to ensure that they are qualified to fulfil their duties.
Manage assessment and inspection	- Carry out the annual comprehensive assessment of subcontractors, with a total of 772 subcontractors and 971 specialties comprehensively assessed. According to the assessment results and the promotion and demotion management methods, promote or demote the subcontractors, implement dynamic management, and optimise subcontracting resources. - Strengthen the management of strategic subcontractors of key projects in the system, strengthen process control and inspection, and dynamically optimise the unqualified subcontractors in time.
Organise system audit	- Carry out QHSE system audit on 95 subcontractors according to the Guideline for QHSE Management System Construction and Operation Evaluation on Strategic Subcontractors and the Quantitative Evaluation Form of the QHSE System. - According to the inspection results, mobilize the subcontractors to carry out continuous improvement for their alignments with the unified QHSE management system, therefore improving their QHSE performance.
Exchange and sharing	- During the Reporting Period, the Company organised special meetings on subcontracting management, share and exchange the experience of subcontracting management, listen to the safety management and team construction experience shared by excellent subcontractors, thus the weak point of subcontractors been found and the self-supervision ability of subcontractors been strengthened. - The Company integrates subcontractors into integrated management, adheres to the same training, inspection, assessment and management of subsidiaries and subcontractors. It continuously strengthens the management of subcontractors QHSE system management, strictly implements the rules of contracting risks taken by "top leaders" of contractors, and effectively reduces all kinds of potential risks in project contracting.

Certification	2022
Number of subcontractors passing environmental management system certification	722
Proportion (%) of subcontractors passing environmental management system certification	100
Number of subcontractors passing quality management system certification	722
Proportion (%) of subcontractors passing quality management system certification	100
Number of subcontractors passing occupational health safety management system certification	722
Proportion (%) of subcontractors passing occupational health safety management system certification	100
Number of audits made by the Company on the QHSE system of strategic subcontractors	95
Proportion (%) of audits made by the Company on the QHSE system of strategic subcontractors	100

» Social Services

With a sense of gratitude, we are actively engaged in social welfare and charitable undertaking, and have carried out social public welfare activities to give back to society, such as Rural revitalisation and consumption assistance, education support and blood donation. We strive to promote the volunteer spirit of "dedication, friendship, mutual assistance and progress", and actively encourage staff volunteers to make their own contribution to society. During the Reporting Period, a total of 547 employees of the Company participated in volunteer activities, with a total duration of 3,644 hours.

We systematically make donations to help those in need. Under the policy requirements of the Public Welfare Donation Law of the People's Republic of China, the Notice of the State-owned Assets Supervision and Administration Commission of the State Council on Strengthening the Administration of Donations by Central Enterprises, and the Supplementary Notice on the Administration of Donations by Central Enterprises, and in accordance with the Management Regulations of Sinopec Group on Donations, we have improved the Company's donation system, strengthened the management of donation projects, and strictly implemented the approval process of donations. During the Reporting Period, our donations totalled RMB1,345,000, including supporting the development of education and medical care in areas with rural revitalisation. The success of this project has strengthened the relationship between the enterprise and local governments while demonstrating our commitment to social responsibility.

547 employees participated in volunteer activities

3,644 hours volunteer activities duration

1,345,000 donations totalled RMB

Case

Voluntary blood donation and dedication of love

In 2022, Ningbo Engineering Co., Ltd. organised 130 employees to participate in the annual employee blood donation without compensation, with a total amount of blood donation of about 43,500 ml. Since 1997, when it first organised employees to participate in the voluntary blood donation activity in Ningbo, Ningbo Engineering Co., Ltd. has organised activities for 26 consecutive years, with the total amount of blood donation exceeding 780,000 ml.



Ningbo Engineering Co., Ltd. mobilized employees to donate blood

Consumption assistance to help rural revitalisation

During the Reporting Period, the Company actively responded to the call of the State-owned Assets Supervision and Administration Commission (SASAC) on poverty alleviation and rural revitalisation. It took part in the activity of Week for Central Enterprises to help Farms and the call of Central Enterprises to assist Xinjiang by Consumption. For example, throughout the year, Sinopec Engineering Incorporation Ltd., a member company of the Company purchased 8,203 jin (4,101.5 kg) of Dongxiang quinoa, a farmer assistance product, helping Sinopec to build s demonstration project of "one country, one chain" in practicing its social responsibility. Its subsidiary Ningbo Engineering Co., Ltd. purchased cow milk from Zeku, Qinghai province, and edible fungi from Yuexi, Anhui province, which were distributed to the employees as holiday comfort products.



Central enterprises promote rural revitalisation

Promoting the revitalisation of education in Miaowan Village

Since 2014, Guangzhou Engineering Co., Ltd., a subsidiary of Sinopec, has established a partnership with Miaowan Village in Ruyang County. After Miaowan Village was fully lifted out of poverty, Guangzhou Engineering Co., Ltd. actively supported the local education revitalisation and donated RMB 50,000 of special fund for local students to support local education revitalisation.

» Community Relations

The Company always adheres to the rule of giving back to society and dedicates to building and sharing a harmonious community by utilizing its own resources and strength. In our project construction sites, we prioritize recruiting locally and actively promote the training and development of local employees, providing more job opportunities for the local community. We also respect the cultural customs and habits of the local residents and strictly comply with international environmental conventions to protect the local environment. Through our efforts, we aim to improve the living conditions of the residents around our projects and work together to build a better home. During the Reporting Period, we employed 625 people, indirectly promoting the economic development of the resident communities of various enterprises.

During our overseas operations, we always adhere to the concept of "people-oriented, develop based on respect". We attach great importance to overseas safety management and protect the lives of our employees. We achieve harmonious operation of projects by respecting local culture and adopting effective communication mechanisms. We actively promote local economic development and community construction through recruitment and donation.

Safety management

We have continuously established and improved our overseas Security management system, and carried out Security assessments for all new projects in accordance with the Regulations of Sinopec Overseas Security Risk Assessment. In 2022, we organise regular monthly meetings on overseas public security, and compile and publish weekly reports on overseas public security information. During the Reporting Period, there were no major safety accidents that occurred in our overseas operation projects.

Community relations

We set up overseas GRO (geographical relations officer) positions and recruit personnel who are familiar with local culture and responsible for collecting feedback and opinions from local community residents. Internally, GROs provide training to staff to improve their knowledge of local culture and operating mechanisms. This helps to reduce the difficulties encountered during overseas project operations caused by cultural differences or ineffective communication.

Culture respect

During our overseas operations, we highly respect the cultural customs and needs of employees from all over the world. We arrange suitable holiday activities for the main staff of the project team taking their nationality, religion and other background factors into consideration.

Community donation

We actively integrate into the overseas community environment, take social responsibilities and actively participate in various local charity activities. During the Reporting Period, the subsidiary in Saudi Arabia donated 500,000 Saudi Riyal to local charities.

Local employment

We strictly follow all relevant laws and regulations on the operation of the project and requirements of the local labour supervision department on employee visa applications, labour contract relationships, etc. In addition, we actively develop local employment which can not only increase local employment and promote local economic development and also make our internal culture more diverse.

Case

Subsidiary in Saudi Arabia held "Ramadan Love Action" charity activities

During Ramadan, Muslims fast from sunrise to sunset according to religious requirements, and the first meal daily at sunset is called a "fast meal". Sinopec's subsidiary in Saudi Arabia launched a charity campaign called "Ramadan Love Action" at the Abdulaziz Bin Baz Mosque in Kuba, handing out gifts to nearly 200 Muslim brothers in Ramadan. This charity activity not only has a festive atmosphere, but also represents good deeds and a sense of social responsibility, which further deepens the cultural exchanges between China and Saudi Arabia and narrowed the distance with the resident community.



Saudi Arabia's "Ramadan Love Action" charity activities

"Imitation real operation" safety education base trains thousands of primary and middle school students for free every year

Fifth Construction Co., Ltd., a subsidiary of Sinopec, actively undertakes social responsibilities and cooperates with many local schools in Guangzhou, where the enterprise is located. It makes full use of the resources of its own safety education base to launch the "imitation real operation" safety education and learning activity, training thousands of primary and middle school students for free every year which effectively enhanced the children's safety awareness.

Adopting modern new technology, the base has developed and built five functional areas, such as "theoretical training area", "practical operation training area" and "Practical training area for site simulation", with more than 30 types of training modules, such as high-altitude work, lifting and limited space, etc. The trainees can experience immersive education and training through physical operation and display, simulation of field operation, accident experience, virtual simulation training and other ways, so as to further deepen the understanding of safety knowledge and the perceptual understanding of accident lessons, which can improve the students' safety awareness, safety operation and management skills.



Guangzhou Safety Skills Training Base

Environmental Performance

A1 Emissions

General Disclosure

The Group strictly abides by law and regulations of China and where its projects operate, including the Environmental Protection Law of the People's Republic of China, the Law of the People's Republic of China on the Prevention and Control of Air Pollution, the Law of the People's Republic of China on the Prevention and Control of Water Pollution, the Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste, and the Law of the People's Republic of China on the Prevention and Control of Environmental Noise Pollution.

The Group has formulated a number of policies to regulate its management of air pollutants, waste, discharges and greenhouse gases, such as the SEG Regulations on Environmental Protection Management, SEG Regulations on Environmental Information and Environmental Protection Statistics Management, and the SEG Guidelines on Environmental Protection Management of Solid Waste of Engineering Projects (Trial), aiming at reducing pollutant emissions during operation and comprehensively managing its own environmental footprint.

During the Reporting Period, the Group revised and optimised two policies, including the SEG Regulations on Environmental Protection Management and the SEG Regulations on Environmental Information and Environmental Protection Statistics Management.

A1.1 The types of emissions and respective emissions data.

During the Reporting Period, the Group emitted 2,181.62 tonnes of VOCs. The air pollutants generated by the Group's operations mainly include dust and VOCs. Dust mainly comes from the operations of shot blasting, sand blasting and rust removal, as well as welding, grinding and cutting. The Group adopts source control measures to control dust pollution, including setting up closed workshops in the prefabrication plant for shot blasting and throwing operations and strictly forbidding sand blasting and shot blasting operations in open-air. In addition, ventilation and dust removal equipment and adsorption equipment are installed in the prefabrication plant to absorb dust generated by operations, and the discharge rate and concentration of the discharge ports of the ventilation and dust removal equipment are regularly monitored. VOCs come from the volatilisation of paint in anti-corrosion and coating operations. To control its VOCs pollution, the Group adopts strict control measures of its operations and carry out paint preparation, spraying, drying and other painting and anti-corrosion operations in closed spaces whenever is possible. In addition, the Group installed VOCs collection and treatment facilities to collect and treat the VOCs generated in operations with the combustion treatment method, ensuring the treated VOCs meet emission standards.

During the Reporting Period, the Group emitted 95.06 tonnes of SO_x and 2,012.14 tonnes of NO_x. The Group's emission of SO_x and NO_x mainly come from exhausts of vehicles and other operating machinery and equipment. The SO_x and NO_x data in this Report only covers vehicle exhausts, and gas fuel combustion. In the future, the Group will continue to improve its data collection to gradually cover air pollutants generated by external subcontractors and rental vehicles and equipment.

A1.2 Greenhouse gas emissions (in tonnes) and, where appropriate, intensity (e.g., per unit of production volume, per facility).

Indicator	Unit	2022	2021	2020
Total GHG emissions	Tonne CO ₂ e	105,229.85	111,873.76	115,798.39
Scope 1 emissions	Tonne CO ₂ e	48,357.30	46,848.89	52,728.27
Scope 2 emissions	Tonne CO ₂ e	56,872.55	65,024.87	63,070.12
GHG emissions per unit revenue	Tonne CO ₂ e/RMB100m	198.44	193.69	221.19

The sources of GHG emissions directly generated by the Group's operations mainly come from the consumption of natural resources and energy such as diesel, gasoline, natural gas, liquefied petroleum gas, acetylene and propane, which is reported as the Group's direct GHG emissions under the indicator "Scope 1 GHG emissions". For the indirect GHG emissions generated by the Group's operations, which mainly come from purchased electricity and heat, is reported under the indicator "Scope 2 GHG emissions. Due to the large number of projects involved in the Group's industrial chain, the Group has not started collecting data on Scope 3 GHG emissions, which will be gradually improved in the future.

A1.3 Total hazardous waste produced (in tonnes) and, where appropriate, intensity (e.g., per unit of production volume, per facility).

During the Reporting Period, The Group has improved the statistics on the amount of hazardous waste produced. The total amount of hazardous waste produced was 784.92 tonnes ^{Note 1}, of which 665.97 tonnes were recycled ^{Note 2} and 118.95 tonnes were disposed by qualified third-parties ^{Note 3}.

Indicator	Unit	2022	2021	2020
Amount of hazardous waste produced ^{Note 1}	Tonne	784.92	982.64	879.10
1.48100Intensity of hazardous waste	Tonne / RMB100m	1.48	1.70	1.68
Disposal rate of hazardous waste	%	100	100	100

Note 1: All hazardous wastes generated by the production and operation of the Group are entrusted to qualified third-parties for disposal. The two sub-items of this indicator are based on whether the hazardous waste materials are recycled.

Note 2: Handled and recycled by third-parties.

Note 3: Handled by third-parties, but no enough information on whether the waste materials are recycled or not.

The Group defines hazardous wastes as materials that exhibit dangerous or potentially harmful properties, as listed in the National Directory of Hazardous Wastes or identified through national identification standards and methods. Major wastes generated during business operations include paint contaminants like paint containers and paint waste, toner cartridges, fluorescent tubes, etc. To ensure proper handling and disposal, the Group works with qualified third-party service providers to either recycle or safely treat these hazardous materials.

To abide by waste discharge management policies, the Group classifies and dispose of hazardous wastes, which is a key aspect of daily environmental protection supervision work. It also eliminates issues like outdoor storage of hazardous wastes and mixed storage of solid and hazardous wastes by adopting corrective measures and establishing long-term management and control mechanisms.

A1.4 Total non-hazardous waste produced (in tonnes) and, where appropriate, intensity (e.g., per unit of production volume, per facility).

During the Reporting Period, The Group has improved the statistics on the amount of non-hazardous waste produced. The total amount of non-hazardous waste produced was 87,834.91 tonnes ^{Note 1}, of which 12,118.98 tonnes were recycled ^{Note 2} and 75,715.92 tonnes were disposed by qualified third-parties ^{Note 3}.

Indicator	Unit	2022	2021	2020
Amount of non-hazardous waste produced	Tonne	87,834.91	51,314.78	62,267.67
Intensity of non-hazardous waste	Tonne / RMB100m	165.64	88.84	118.94
Disposal rate of non-hazardous waste	%	100	100	100

Note 1: All non-hazardous wastes generated by the production and operation of the Group are entrusted to qualified third-parties for disposal. The two sub-items of this indicator are based on whether the hazardous waste materials are recycled.

Note 2: Handled and recycled by third-parties.

Note 3: Handled by third-parties, but no enough information on whether the waste materials are recycled or not.

Non-hazardous wastes generated during business operation of the Group mainly include discarded wood products, waste paper, waste plastic products, waste composite packaging products, waste iron and steel, waste non-ferrous metals, waste machinery products, waste transportation equipment, waste batteries, waste electrical and electronic products, construction waste and household waste. These wastes are generated primarily during the construction, renovation, expansion, and demolition of buildings, structures, and pipeline networks, etc. The Group recycles and reuses waste materials that it can handle, such as construction waste like discarded wood products, waste iron and steel, and discarded soil and materials. For other non-hazardous waste that cannot be handled by the Group, it entrusts a qualified third-party to dispose of it, some of which is recycled and reused while the rest is disposed of appropriately.

The Group strictly abides by waste discharge management policies, and handles and stores non-hazardous waste in an appropriate manner, making it a priority in daily environmental protection supervision. It selects appropriate disposal methods for stored construction waste, works to standardise record-keeping, implements standardised waste separation signage, and establishes long-term management and control systems.

A1.5 Description of emissions target(s) set and steps taken to achieve them.

Targets	Detailed Description	Countermeasures
Target for greenhouse gas emission reduction	- During the 14th Five-Year Plan (2021-2025) period, the Group strives to reduce greenhouse gas emission reduction intensity by 5.7%. - The baseline data for greenhouse gas reduction (CO₂) is 193.69 tonnes/RMB100 million (2021). Emission reduction entities include the Group business as well as related construction projects of the Group. The target is set voluntarily by the Group and is not a mandatory regulatory requirement.	Optimise energy consumption structure during the process of project construction and handling of Group business, actively carry out research on carbon reduction and carbon trading.

To achieve emission reduction targets set, the Group mainly abides by related systems and measures developed by Sinopec, including the Sinopec Management Measures for Water Resources Conservation, the Sinopec Management Measures for Contractual Energy Management Projects, and the Sinopec Management Measures for Carbon Emission, takes various actions and provides energy conservation and consumption reduction and clean production services. Target for greenhouse emission reduction is mainly set for resource consumption during project construction.

A1.6 Description of how hazardous and non-hazardous wastes are handled, and a description of reduction target(s) set and steps taken to achieve them.

Targets	Detailed Description	Countermeasures
Target for emission reduction of wastes	- During the 14th Five-Year Plan (2021-2025) period, the Group strives to reduce non-hazardous waste emission by 11% per revenue (RMB100 million). - The baseline data for solid waste emission reduction is 1.7 tonnes/RMB100 million (2021). Emission reduction entities include the Group offices as well as its related construction projects. The target is set voluntarily by the Group and is not a mandatory regulatory requirement.	Waste reduction devices are designed and used to minimise waste emissions at source.
Target for disposal volume of hazardous wastes	- During the 14th Five-Year Plan (2021-2025) period, the Group strives to reduce disposal volume of hazardous wastes by 8% per RMB100 million of revenue. - The baseline data for solid waste entrusted for process and disposal is 1.7 tonnes/RMB100 million (2021). The entities covered by the reduction of solid waste entrusted for process and disposal include the Group office as well as its related construction projects. The target is set voluntarily by the Group and is not a mandatory regulatory requirement.	Actively promote project construction management level, strive to reduce the generation of hazardous wastes.



A2 Use of Resources

General Disclosure

The Group strictly abides by the Energy Conservation Law of the People's Republic of China, the Law of the People's Republic of China on Promoting Clean Production, the Regulations on Energy Saving for Civil Buildings and other relative laws and regulations. It has formulated a series of internal management regulations and systems such as the SEG Management Regulations on Environmental Protection, the SEG Management Regulations on Environmental Information and Environmental Protection Statistics and the SEG Management Measures for Contracted Energy Management Projects. Meanwhile, the Group also abides by the Sinopec Management Measures for Contractual Energy Management Projects and, the Sinopec Management Measures for Water Resources Conservation and the Sinopec Management Measures for Sinopec Carbon Emission formulated by Sinopec, our parent Group, and strives to realise economical use of resources during operation of the Group.

Leveraging its advantages of the complete industrial chain of project construction, the Group actively promotes the development and application of new energy, new technology and new equipment, strives to construct green projects and plants, and meanwhile takes measures to optimise energy use structure, eliminates coal-fired boilers, and promotes the use of clean and efficient gas-fired boilers.

During the Reporting Period, the Group revised and improved the SEG Management Regulations on Environmental Protection, the SEG Management Regulations on Environmental Information and Environmental Protection Statistics.

A2.1 Direct and/or indirect energy consumption by type (e.g., electricity, gas or oil) in total (kWh in 1,000s) and intensity (e.g., per unit of production volume, per facility).

Indicators	Unit	2022	2021	2020
Direct energy consumption				
Consumption of diesel	Tonne	9,967.21	9,425.57	10,566.18
Consumption of gasoline	Tonne	3,062.78	3,337.56	3,032.37
Consumption of natural gas	Cubic metre	584,582.15	455,314.89	325,463.98
Consumption of liquefied petroleum gas	Tonne	336.65	337.42	1,711.38
Consumption of acetylene	Tonne	1,650.32	2,473.22	1,423.87
Consumption of propane	Tonne	137.66	304.00	132.35
Indirect energy consumption				
Consumption of purchased electricity	MWH	93,476.26	95,247.97	92,107.93
Consumption of purchased heat	MKJ	22,756.31 ^{Note 1}	63,833.22	63,830.09
Consumption of integrated energy converting to standard coal	Tonne of standard coal	46,475.05	51,006.33	47,360.45
Integrated energy consumption intensity per revenue	Tonne of standard coal/RMB 100 m	87.64	88.31	90.46

Note 1: During the year, the Group improved and adjusted the calculation mode of purchased heat in accordance with the heat supply value specified in the Design Standard for Energy Efficiency of Residential Buildings in Severe Cold and Cold Zones, resulting in significant change of the figures.

A2.2 Water consumption in total and intensity (e.g., per unit of production volume, per facility).

During the Reporting Period, the Group's water consumption in total was 3,630,557.43 tonnes, of which the office water consumption in total was 1,174,291.76 tonnes, the fresh water consumption in total during project construction was 2,004,596.79 tonnes, and the other types of water consumption in total was 451,668.88 tonnes. The Group's water sources can be mainly divided into four categories, of which groundwater consumption is 392,898.7 tonnes^{Note 1}, surface water consumption is 11,570.5 tonnes^{Note 2}, seawater consumption is 500,042 tonnes^{Note 3}, and third-party water supply (Municipal water supply)consumption is 2,726,046.23 tonnes^{Note 4}.

Indicators	Unit	2022	2021	2020
Water consumption in total	Tonne	3,630,557.43	6,226,047.49	5,129,561.71
Consumption intensity	Tonne / RMB100 m	6,846.49	10,779.17	9,798.03

Note 1: All water used by the Group is provided by the third party. The data reported in this part is that the source of the third party's water supply is groundwater.

Note 2: All water used by the Group is provided by the third party. The data reported in this part is that the source of the third party's water supply is surface water.

Note 3: The source of water intake provided by the third party is seawater.

Note 4: The third party provides municipal water supply.

A2.3 Description of energy use efficiency target(s) set and steps taken to achieve them.

The Group has not yet set energy use efficiency targets and will improve the setting of relevant targets in the future.

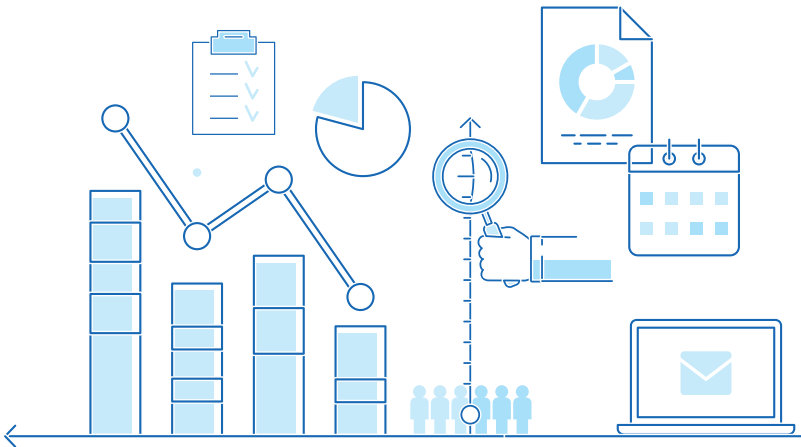
A2.4 Description of whether there is any issue in sourcing water that is fit for purpose, water efficiency target(s) set and steps taken to achieve them.

No issues regarding to sourcing water that is fit for purpose during this Reporting Period.

Targets	Detailed Description	Countermeasures
Management of water use	Improve water use efficiency actively	- Promote the engineering application of complete sets of technologies of zero discharge of wastewater to reduce the consumption of fresh water significantly. Use water saving devices to eliminate water flows. Carry out cyclic utilisation of unpolluted industrial wastewater. - Call on subcontractors to participate in water saving activities.

A2.5 Total packaging material used for finished products (in tonnes) and, if applicable, with reference to per unit produced.

The Group's operation does not involve the consumption of packaging materials for finished products.



A3 The Environment and Natural Resources

General Disclosure

In strict compliance with the Environmental Protection Law of the People's Republic of China and related environmental protection laws and regulations formulated in countries and regions where our projects operate, the Group actively fulfils its responsibilities to protect the environment and natural resources both at home and abroad, strictly adheres to the ecological red line and the bottom line of environmental safety, and fully considers the possible impact on biodiversity and natural resources during project construction. To reduce the impact on ecological environment, the Group has formulated a series of methods and measures, such as the SEG Management Regulations on Environmental Protection, the SEG Management Regulations on Environmental Information and Environmental Protection Statistics, the SEG Management Regulations on HSE Risk Control and Hidden Danger Investigation of SEG (Trial), the SEG Environmental Management Guidelines for Prefabrication Yards for Engineering Projects (Trial), the Management Measures for the Identification, Risk Evaluation and Control of Environmental Factors. It also abides by the Sinopec Management Measures for Radiation (Trial), the Sinopec Management Regulations on Greening, the Sinopec Management Measures for Ecological and Environmental Incidents, the Sinopec Management Measures for Sinopec Ecological and Environmental Incident Accountability, the Measures of Sinopec Corp. for the Identification, Evaluation and Control Management of Environmental Factors and the Sinopec Management Measures for Environmental Incident Risk and Emergency, so as to regulate the implementation of relevant work.

A3.1 Description of the significant impacts of activities on the environment and natural resources and the actions taken to manage them.

The Group has developed a complete environmental management system with a three-tiered structure consisting of the "ESG Committee at the Board level - HSE Committee at the management level - QS Department at Functional Department Level". In the event of business or related operation and management activities that have a significant impact on the environment and natural resources, the QS Department is responsible for managing the specific risk and reporting it to the HSE Committee for review. The ESG Committee at the Board level is responsible for overseeing the process.

The Group implements the environmental management system certification to promote the standardised construction of its environmental management system. By the end of 2022, 11 units of the Group had passed the ISO 14001 Environmental Management System certification, accounting for 100% of the Group's operating revenue.

Types of potential environmental and natural resource impacts	Countermeasures
Destruction of ecological environment	Carry out no construction on World Heritage sites or any areas where development is prohibited by ecological red lines. Respect all internationally regulated legal protected areas, including those classified as Ia, Ib, II, III, IV, V and VI protected areas regulated by the International Union for Conservation of Nature (IUCN). For construction in environmentally sensitive areas and areas with high surface destruction, strictly follow internal environmental protection measures and soil erosion prevention measures.
Soil degradation or cultivated land pollution	The construction of long-distance pipelines may cause soil degradation. The Group exercises strict control over the construction area, implements hydraulic protection measures, and restores the landform promptly. These actions effectively prevent pollution of cultivated land and forest land.
Pollution of rivers and waters neighbouring the projects	Ensures that all wastewater generated during construction, including drainage from foundation pits, tunnel construction wastewater, site flushing water, and wastewater generated from pressure tests, is properly managed. The wastewater is either reused for road watering or discharged to designated locations, following the requirements outlined in the contract or by the owner. Properly sedimented the wastewater before reuse or discharge to minimise pollution to rivers and surrounding waters.



A4 Climate Change

General Disclosure

The State Council's Action Plan for Carbon Dioxide Peaking before 2030 calls for the promotion of carbon dioxide peaking in the petrochemical and chemical industry. As a leading engineering service provider and technology patent holder in the industry, the Group recognises the impact of climate change and collaborates with Sinopec Group to achieve carbon dioxide peaking and carbon neutrality. The Group fully supports the Declaration on Carbon Dioxide Peaking and Carbon Neutrality in China's Petroleum and Chemical Industry issued by Sinopec, and aligns with the Action Plan for Carbon Dioxide Peaking before 2030 to proactively deploy relevant work of the Group, participates in promoting a clean and low-carbon energy structure. The Group is committed to Sinopec's strategies, targets, roadmaps, and supporting measures for carbon dioxide peaking and carbon neutrality, and making a positive contribution to climate change governance.

A4.1 Description of the significant climate-related issues which have impacted, and those which may impact, the issuer, and the actions taken to manage them.

The Board of Directors of the Group is responsible for supervising and managing climate-related issues and efforts. The ESG Committee is responsible for identifying climate-related issues and making recommendations to the Board of Directors on to address these issues, and supervising the implementation of the Group's climate change response plans.

The Group identifies and reports on the key climate change risks faced by the Group with reference to the relevant recommendations given by the Task Force on Climate-Related Financial Disclosure (TCFD). It will develop further ESG-related action plans to respond to environmental climate risks in the future.

Risk Type	Climate-related Risks and Impacts	Countermeasures
Physical risks	Short-term risks The increased frequency of extreme weather such as rainstorms, floods and typhoons may cause disruptions to project construction and result in damage to project materials leading to delays in delivery and extending the project completion timeline. This could result in financial and performance risks for the project.	Actively carry out various emergency drills and continuously improve emergency drill plans. Continuously optimise supply chain management to improve the resilience of the supply chain against extreme weather events.
	Long-term risks The gradual and long-term effects of climate change, such as rising sea levels and increased water scarcity, may pose a threat to the safety and maintenance costs of the Group's completed or ongoing projects.	Take proactive measures during project design and construction to address the potential impacts of long-term climate change on its projects. The Group has developed plans and designs to enhance the future adaptation capability of its projects and improve their intrinsic safety level, ultimately reducing the potential financial costs associated with climate change.
Transition risks	Policies and laws The implementation of a quota system for carbon emissions in China may result in an increase in the Group's carbon emission compliance costs if it is identified as a key emitter and included in the national carbon trading market.	Actively carry out research on carbon trading and improve internal carbon mapping to prepare for the coverage of the national carbon emission trading market.
	Reputation Stakeholders becoming increasingly concerned about the Group's response to climate change, consumption of natural resources, etc. If the Group's efforts and results in these areas do not meet stakeholder expectations in terms of energy efficiency and environmental protection, it may negatively affect the Group's reputation and image.	The Group continuously strengthens its research on energy-saving and environmental protection technologies, sets internal management targets for various environmental issues, and supervises and manages them through the QS Department to minimise the occurrence of negative incidents. The Group closely monitors regulatory websites for any negative environmental incidents and learns from them. In the event of such incidents, the Investor Relations and Publicity Departments are responsible for promptly communicating with investors and the public to mitigate any negative impact on public opinion.
	Market Due to the pressure from the Paris Agreement and the goals of carbon dioxide peaking and carbon neutrality, the consumption of fossil energy is gradually declining, leading to potential market risks for the rapid reduction of traditional business operations.	The Group is actively expanding its new energy business, conducting an in-depth analysis of emerging markets and new technologies, and integrating traditional refining technology with new energy sources. The Group is also implementing energy-saving measures, reducing carbon emissions during project construction, and increasing transparency in its communication to build market confidence.

Social Performance

B1 Employment

General Disclosure

The Group strictly abides by laws and regulations like the Labour Law of the People's Republic of China, the Labour Contract Law of the People's Republic of China, and actively fulfils the National Human Rights Action Plan of China and the International Covenant on Civil and Political Rights (ICCPR) and the International Covenant on Economic, Social and Cultural Rights (ICESCR). In its overseas operations, the Group also strictly complies with relevant local labour laws and regulations, such as the Labour Law and other relevant laws and regulations issued by the Kingdom of Saudi Arabia.

The Group has formulated a number of methods and systems to protect the rights of its employees and to build harmonious labour relations. This includes the Management Methods for the Management of Labour Contracts, the Management Methods for Employee Training, the Management Methods for Welfare, the Management Methods for Salary, and the Management Methods for Attendance. The Group ensures the rights and interests of its employees through formal labour contracts and collective bargaining agreements, covering aspects such as basic compensation, hiring and termination, advancement, working hours, leave, equal opportunities, diversity, and anti-discrimination. In addition, the Group also actively safeguards and protects the rights of the employees to know, participate, express and supervise through the Employees' representative meetings, labour union, disclosure mechanism for corporate affairs, employee complaint mechanism, etc.

The Group properly deals with employee labour disputes, and has formulated the SEG Headquarters Management Measures for Labour Disputes. During the Reporting Period, the Group was not involved in any labour dispute.

B1.1 Total workforce by gender, employment type (for example, full- or part- time), age group and geographical region.

Indicators	Unit	2022	2021	2020
Total employees	Person	16,641	16,973	17,301
Domestic employees	Person	16,247	16,428	16,778
Overseas employees	Person	394	545	523
Male employees	Person	12,138	12,436	12,698
Female employees	Person	4,503	4,537	4,603
Employees below 30 years of age	Person	2,252	1,995	1,955
Employees between 31 and 50 years of age	Person	9,506	10,191	10,846
Employees over 51 years of age	Person	4,883	4,787	4,500
Employees with master's degree	Person	3,179	2,987	2,798
Employees with bachelor's degree	Person	7,773	7,807	7,930
Employees with associate college degree	Person	2,692	2,849	2,928
Employees with other degrees	Person	2,997	3,330	3,645

Note: Employees disclosed by the Group include regular employees of the Group only. It's difficult to count the number of employees of subcontractors due to large changes in the employees of external contractors or subcontractors, and no statistical indicator of employees of subcontractors has been set up for the time being.

B1.2 Employee turnover rate by gender, age group and geographical region.

During the Reporting Period, the Group's employee turnover rate was 1.33%. Among them, the turnover rate of employees below 30 years of age was 0.69%, the turnover rate of employees between 31 and 50 years of age was 0.62%, and the turnover rate of employees over 51 years of age was 0.02%; The turnover rate of male employees was 1.15%, and the turnover rate of female employees was 0.34%; The turnover rate of domestic employees was 1.33%; The turnover rate of overseas employees is 0.

B2 Health and Safety

General Disclosure

The Group strictly abides by laws and regulations on occupational health and safety in the countries and regions where the projects are located. At home, the Group strictly follows the Work Safety Law of the People's Republic of China, the Measures for the Management of Construction Permits for Construction Projects, the Measures for the Implementation of the Fire Safety Responsibility System, the Law on Safety of Special Equipment of the People's Republic of China, the Regulations on the Safe Management of Hazardous Chemicals in China, the Regulations on Emergency Response to Production Safety Incidents and other laws and regulations that safeguard a safe working environment, and the Law of the People's Republic of China on the Prevention and Control of Occupational Diseases, the Measures for the Administration of Occupational Health Examination, the Provisions on the Supervision and Administration of Occupational Health at Work Sites, the Guideline for Occupational Hazards Prevention and Control in the Construction Industry and other relevant laws and regulations that safeguard occupational health of employees. At abroad, the Group also abides by relevant laws and regulations of countries and regions where projects are operated, such as the Kuwait Labour Law, the Safety Precautions Against Occupational Injuries and Diseases, and the Medical Assessment of Occupational Injuries and Diseases issued by Kuwait.

The Group has formulated a series of systems and regulations on safety management and occupational health to guarantee the comprehensive development of safe operation. Relevant systems and regulations are listed as follows:

Safety management	SEG Management Provisions on Emergency
	SEG Management Regulations on HSE Risk Control and Hidden Danger Investigation (Trial)
	SEG Management Regulations on Safety of High-Risk Operations
	Emergency Management Rules
	Production Safety Incidents (Events) Management Rules
Occupational health	Production Change Safety Management Rules
	SEG Management Measures for Employee Health
	SEG Management Regulations on Labour Protection Costs of SEG
	SEG Management Regulation on Individual Labour Protection Equipment
	Management Regulations on Labour Protection Equipment on Construction Sites

In addition, to improve the occupational health management of overseas employees, the Group has also formulated the SEG management Regulations on the Health of Overseas Employees, the Guidelines for Health Risk Assessment of Overseas Employees and the Guidelines for Risk Prevention and Control of Cardiovascular and Cerebrovascular Diseases For Overseas Employees and other management systems, regulations and guidelines to definite responsible departments of health management and thus develops complete employee occupational health management systems.

During the Reporting Period, the Group focused on revising and releasing the SEG Management Regulations on Safety of High-Risk Operations, setting out stricter regulations on 17 high-risk direct operations to improve the safety control capability foundation for high-risk direct operations. During the Reporting Period, there were no occupational diseases, and no severe or death cases reported.

B2.1 Number and rate of work-related fatalities occurred in each of the past three years including the reporting year.

Indicators	Unit	2022 ^{Note1}	2021	2020
Number of reported incidents	/	3	0	3
Number of work-related deaths	Person	1	0	0
Percentage of work-related deaths	%	0.06	0	0
Work-related lost working-hours ^{Note 2}	Workday	6,000	0	0
Fatal accident rate per 200,000 working-hours	%	0.0024	0	0

Note1:The statistical scope of the year is extended to the Group, the data reported in the previous year only included that of the Company in previous years, resulting in an increase in the data reported.

Note 2: According to GBT15499, one work-related death is estimated at 6,000 lost workdays due to work injury. The scope of reported lost working-hours is over a year.

B2.2 Lost days due to work injury.

Indicators	Unit	2022 ^{Note1}	2021	2020
Number of incidents of work related injuries	Person	23	0	4
Lost working-hours due to work related injuries	Workday	1,000	0	122
Incident (event) rate per 200,000 working-hours	%	0.04	0	0.08

Note1:The statistical scope of the year is extended to the Group, the data reported in the previous year only included that of the Company in previous years, resulting in an increase in the data reported.

B2.3 Description of occupational health and safety measures adopted, and how they are implemented and monitored.

The Group has set up a complete occupational health and safety management system and has formed a three-tier structure with the "ESG Committee at the Board level - HSE Committee at the management level - QS Department at Functional Department Level". In the event of major occupational health and safety incidents, the relevant responsible person of the QS Department will handle the incidents and report to the HSE Committee. The ESG Committee at the Board level is responsible for relevant supervision. Detailed implementation and supervision procedures can be found in Occupational Health and Safety Management.

The Group places a strong emphasis on occupational health and safety, and regularly carries out awareness-raising and promotion activities. It provides regular medical check-ups for employees and actively urges employees to undergo medical check-ups. The Group has developed different medical check-up plans for different age groups, and created a list of high-risk personnel for medical check-ups. The Group also ensures that employees undergo health check-ups and assessments before they are sent abroad. In addition, the Group recognises the importance of mental health and has established a counselling room for employees. It also employs external professional mental health experts to provide professional and confidential mental counselling services for its employees to mitigate their mental stress.

To ensure the physical and mental well-being of its employees, the Group has made efforts to improve its Employee Assistance Program (EAP) and provide compassionate care for its workers. During the Reporting Period, the Group organised on-site training sessions with over 50 participants, focusing on topics such as the use of AEDs, the theory and practice of CPR as well as office healthcare skills. It has also been promoting the VHM employee health service, providing employees with services like video inquiry, referral in Beijing and making appointments with famous doctors.

The Group implements occupational health and safety management system certification to promote the standardised construction of the Group's environmental management system. As of the end of 2022, 11 units of Group have passed the ISO 45001 Occupational Health and Safety Management System certification, accounting for 100% of the Group's operating revenue.

The Group regularly reports on key indicators, such as injuries and deaths/accident (incident) rate (per 200,000 working hours)/Fatal accident rate (per 200,000 working hours), to Sinopec Group for supervision and management. The Group also monitors and manages other relevant indicators internally. The Group transparently communicates this data to investors annually through its ESG report.

B3 Development and Training

General Disclosure

The Group is dedicated to advancing the career development of its employees by providing comprehensive vocational training programs. The Group has developed the SEG Management Regulations on Expert Database, the SEG Management Regulations on Talent Cultivation and other systems and regulations to regulate vocational training, to further cultivate a high-performing talent team with an optimal structure, and to promote the growth and development of its employees.

During the Reporting Period, the Group revised and improved the Management Measures for the Positions in SEG Headquarters and employees with management and professional skill development opportunities for career advancement. Meanwhile, the Group arranged various online and in-person training to improve training levels continuously. The detailed position management platform and training content can be found in the section of the Talent Development.

In addition, the Group pays close attention to the career development, business training, and health and safety of its foreign employees. It also actively participates in local or third-country job fairs to introduce foreign employees to its overseas projects, promoting the localisation of overseas employment.

B3.1 The percentage of employees trained by gender and employee category (e.g., senior management, middle management).

During the Reporting Period, the Group improved the statistics on the number of employees participating in training. The total number of employees participating in training was 28,378. Among them, 5,392 were senior managers trained, 7,378 were mid-level managers trained, and 15,608 were grass-roots employees trained. Among them, 18,729 were male employees participated in trainings and 9,649 were female. Among them, 23,506 were job training, 809 were further education, and 4,063 were other forms of training.

Indicator	Unit	2022	2021	2020
Total number of employees participating in training	Person-time	28,378	35,898	36,555
Among which: Percentage of training participation of senior managers	%	19	21	20
Percentage of training participation of mid-level managers	%	26	35	33
Percentage of training participation of grass-roots employees	%	55	44	47
Among which: Percentage of training participation of male employees	%	66	57	61
Percentage of training participation of female employees	%	34	43	39



B3.2 The average training hours completed per employee by gender and employee category.

Indicators	Unit	2022	2021	2020
Average training hours of employees	Hour	50	49	51
Average training hours of male employees	Hour	53	51	52
Average training hours of female employees	Hour	47	46	48
Average training hours of senior management staff	Hour	54	52	55
Average training hours of mid-level management staff	Hour	47	46	48
Average training hours of grassroots employees	Hour	50	49	50
Total amount of vocational training	10,000 hours	67	83	88
Investment in vocational training	RMB10,000	3,261	4,336	3,684
Total attendances of vocational training	Person	28,378	35,898	36,555
Number of employees hired during the Reporting Period	Person	625	507	743

B4 Labour Standards

General Disclosure

The Group strictly complies with the laws and regulations such as the Labour Law of the People’s Republic of China, the Law of the People’s Republic of China on the Protection of Minors, and the Provisions on the Prohibition of Using Child Labour. We actively practice the Human Rights Action Plan of China and international human rights conventions. Overseas, we also strictly comply with the relevant labour laws and regulations in the regions where we operate, such as the Labour Law of the Kingdom of Saudi Arabia.

B4.1 Describe measures to review recruitment management to avoid child labour and forced labour.

The Group strictly prohibits any form of child labour, forced labour and other illegitimate forms of employment, and strives to avoid them from the very beginning. To this end, we employ means such as thorough verification of the age of new hires through their identification documents during the recruitment process.

B4.2 Describe the steps taken to eliminate violations when detected.

If violations such as child labour or forced labour are found in our management, we will take stricter measures to supervise compliance employment and punish violators. In this process, we act in accordance with legal norms and guidelines such as the Compliance Management Guidelines for Business Partners of Sinopec Engineering (Group) Co., Ltd., the Compliance Management Guidelines on Economic Sanctions for Foreign-related Business of Sinopec Engineering (Group) Co., Ltd., and the Compliance Management Guidelines on Anti-Corruption Overseas and Anti-Commercial Bribery of Sinopec Engineering (Group) Co., Ltd. For details of the measures of employment and recruitment review, please refer to the chapter "Protection of Rights and Interests."

During the Reporting Period, the Group had no violations such as child labour and forced labour, or litigation arising from employment issues.

B5 Supply Chain Management

General Disclosure

The Group has established a strict supplier management and a contractor and subcontractor selection and assessment mechanism. We have formulated the Management Regulations on Supplier Access of Sinopec Engineering (Group) Co., Ltd., the Management Measures for the Dynamic and Quantitative Assessment of Performance to Guide Ordering of Sinopec Engineering (Group) Co., Ltd., the Management Regulations on Supplier Management of Sinopec Engineering (Group) Co., Ltd., the Subcontracting Management Measures of Sinopec Engineering (Group) Co., Ltd., the Management Measures for Subcontracting and Contract Awarding of Sinopec Engineering (Group) Co., Ltd., the Management Regulations on Assessment and Evaluation of Subcontractors of Sinopec Engineering (Group) Co., Ltd., the Regulations on on-site Management of Subcontractors of Sinopec Engineering (Group) Co., Ltd., the Management Regulations on Subcontractor Resource Library of Sinopec Engineering (Group) Co., Ltd., and the Management Measures for Strategic Subcontractors of Sinopec Engineering (Group) Co., Ltd. These policies clearly incorporate the performance of ESG-related factors such as HSE management, quality system establishment, green product certification, social responsibility performance, energy saving and environmental protection, and violation penalties into the qualification review of suppliers. This is aimed at preventing ESG risks at the supply chain level.

Meanwhile, the Group has built a supply resource management platform for overseas projects. We have formulated and revised internal policies such as the Management Regulations on Supply Resources of Sinopec Engineering (Group) Co., Ltd., the Management Regulations on on-Site Inspection of Suppliers of Sinopec Engineering (Group) Co., Ltd., and the Management Regulations on Supplier Assessment of Sinopec Engineering (Group) Co., Ltd. They provide institutional support for the construction of our overseas supply resource library and management platform.

B5.1 Number of suppliers by region.

Indicators	Units	2022	2021	2020
Total number of suppliers in the supply chain	/	3,220	3,041	2,956

During the Reporting Period, the Group improved the statistics on the number of suppliers. The total number of suppliers in the supply chain is 3,220, including 2,851 domestic suppliers and 369 overseas suppliers. The percentage of top five suppliers in total procurement value was 10.47%. The percentage of procurement through bidding was 96.21%, among which public biddings account for 99.47%.

B5.2 Describe the practices regarding the employment of suppliers, including the number of suppliers to whom the practices are implemented, and implementation and monitoring approaches.

The Group has formulated the Discipline on Procurement and the Regulations on Integrity and Self-discipline in Procurement. This effort is aimed at preventing corruption through fair, open and transparent procurement methods and standardised bidding system and process.

During the Reporting Period, we prepared the Interim Measures for Credit Risk Management and revised the Regulations on Material Supply Management, the Management Measures for Material Procurement and the Management Measures for Material Procurement and Supply Resources. With these policies, we follow up and dynamically assess suppliers in the process of supplier access, management and post-evaluation, and to incorporate the results into the provisions of the supplier code of conduct.

The Group has provided diversified training and capacity enhancement opportunities for our suppliers. During the Reporting Period, we organised several supplier conferences to recognise outstanding suppliers based on the evaluation of their basic qualifications, production and operation status, credit rating, equipment, capacity, quality assurance system, performance, cooperation attitudes, and other comprehensive strengths.

In 2022, we have established service relationships with 179 new suppliers, bringing the total number to 3,220.

B5.3 Describe practices related to the identification of environmental and social risks in each component of the supply chain, and related implementation and monitoring methods.

The Group is actively engaged in the whole process of supplier management. At the access assessment end, we implement strict control measures to ensure the quality and credibility of our suppliers. When selecting suppliers, we guide suppliers to sign green procurement service agreements or commitment letters, clearly including HSE management, quality system establishment, green product certification, social responsibility fulfilment, energy saving and environmental protection violation penalties, and other sustainable development practices in the supplier qualification review. We clarify the responsibilities and obligations of suppliers in environmental protection, resource conservation and social responsibility in trading activities, and prevent ESG risks at the supply chain level. ESG risks at the supply chain level. The specific implementation and monitoring methods can be found in the chapter "Responsible Supply Chain".

The Group conducts regular assessments of suppliers at least once a year and filters unqualified suppliers based on their assessment results. If any supplier is found to have negative impacts on the environment or society, the Group may take corrective actions, including warnings, interviews, deactivation, in accordance with relevant regulations.

B5.4 Describe the practices of promoting the use of more environmentally friendly products and services in the selection of suppliers, and the related implementation and monitoring methods.

The Group and its subsidiaries strictly implement relevant regulations such as the Implementation Rules for Green Procurement of Materials. When selecting suppliers, the Group includes suppliers’ ESG-related qualifications, green low-carbon, and green transportation as eligibility criteria, giving priority to those suppliers with recognised green energy-saving certifications. Suppliers are guided to sign green procurement service agreements or commitment letters, which outline their responsibilities and obligations towards environmental protection, resource conservation, and social responsibility in all transactions.

B6 Product Liability

General Disclosure

The Group strictly complies with the laws and regulations, technical standards, and regulatory requirements on construction quality released by Chinese authorities such as the Construction Law of the People’s Republic of China, and the Regulations on Quality Management of Construction Projects, and those implemented in regions where it operates, such as the Road Construction Law of the Kingdom of Saudi Arabia.

The Group promotes the construction of quality management system on all fronts to strengthen project quality management and ensure product quality and safety. We have 11 quality management policies in place, covering various aspects such as quality management, quality accident management, flight weld quality inspection, welding material management, welder management, welding operation management, heat treatment and non-destructive treatment. Additionally, during the Reporting Period, we prepared the Management Regulations on the Welding Process Evaluation Report for Overseas Projects of Sinopec Engineering (Group) Co., Ltd. (for Trial Implementation) and revised and optimised two policies. They are the Quality Management Regulations of Sinopec Engineering (Group) Co., Ltd. and the Quality Accident Management Regulations of Sinopec Engineering (Group) Co., Ltd.

B6.1 Percentage of the total number of products sold or shipped that are subject to recall for safety and health reasons.

This article does not apply to the Group's operations.

B6.2 Number of received complaints about products and services and how to respond to them.

The Group had neither reported quality incidents nor major quality complaints during the year. During the Reporting Period, we actively carried out design compliance screening and assessment of old installations to identify safety risks.

B6.3 Describe the practices related to the maintenance and protection of intellectual property rights.

The Group strictly follows the laws and regulations related to the protection of intellectual property rights in China such as the Patent Law of the People's Republic of China and those in other regions where it operates. Internally, we have formulated and implemented policies, including the Management Measures for Patents of Sinopec Engineering (Group) Co., Ltd., the Management Measures for Intellectual Property Rights Protection of Sinopec Engineering (Group) Co., Ltd., the Management Measures for Technical Confidentiality Agreements of Sinopec Engineering (Group) Co., Ltd., and the Management Measures for Proprietary Technologies of Sinopec Engineering (Group) Co., Ltd.

During the Reporting Period, we revised and updated the Management Regulations on Intellectual Property Protection. This update includes optimising the management of overseas patents and intellectual property risks, and adding that the Science and Technology Department of the Group's headquarters monitor and inspect the intellectual property situations of all our entities.

B6.4 Describe the quality inspection process and product recall procedures.

The Group makes solid efforts in quality inspection and check. We regularly conduct audits of our quality management system using the Evaluation Form for the Effectiveness of the Quality Management System of Sinopec Engineering (Group) Co., Ltd. (QSH 0828-2021), and inspect our projects using standard specifications such as the Quality Inspection Outline for Petrochemical Engineering(2017 Edition). We analyse the quality issues found in various quality management system audits, quality supervision inspections and flight weld quality inspections and conduct notifications and interviews in respond to typical quality issues in order to rectify and improve our management promptly. During the Reporting Period, we completed the full-coverage inspections of eight large-scale check and maintenance projects through a combination of on-site, online, self-inspection and mutual inspection methods. We organised our subsidiaries to investigate and rectify 4,200 key issues, which include resuming work and production after holidays, and inspection, maintenance, preservation, and operations. We set high standard quality management targets every year based on our business situations, and successfully achieved this year's internal quality management targets. In addition, we have adopted the ISO9001 standard for quality management, and the company has obtained the ISO9001 quality management system certification.

In addition, the Group has continuously improved the mechanism for handling engineering quality issues, established a classified handling mechanism to monitor and resolve complaints, formulated special rectifying and preventive measures for areas in our projects that are prone to issues, and organised our construction personnel, technicians and others to learn them and avoid them happening again.

B6.5 Describe the consumer data protection and privacy policy, as well as the related implementation and monitoring methods.

In terms of customer rights and privacy, we require all document clients to be encrypted through high-level measures and strictly prevent data leaks, in accordance with our internal policies such as the Management Measures for Information Security of Sinopec Engineering (Group) Co., Ltd., the Management Measures for Classified Cybersecurity Protection of Sinopec Engineering (Group) Co., Ltd., the Information and Digital Management Measures of Sinopec Engineering (Group) Co., Ltd. and the Management Measures for Computers and Devices of Sinopec Engineering (Group) Co., Ltd. In the event of privacy leakage and other violations, we will promptly stop the relevant issues to minimise the harm, and will inform and criticize them internally. For serious cases, we will take more severe punitive measures against those responsible. During the Reporting Period, we had no privacy and data leakage cases.

B7 Anti-Corruption

General Disclosure

The Group strictly complies with the laws and regulations that are put in place to prevent bribery, extortion, fraud and anti-money laundering in the regions where we operate. They include the Criminal Law of the People’s Republic of China, the Oversight Law of the People’s Republic of China, the Anti-Unfair Competition Law of the People's Republic of China, and the Group Law of the People's Republic of China and the Interim Provisions on Banning Commercial Bribery. We oppose all forms of corrupt practices and unfair competition.

The Group has formulated its internal management policies such as the Anti-Fraud Management System of Sinopec Engineering (Group) Co., Ltd., the Implementation Measures for Integrity Risk Prevention and Control of Sinopec Engineering (Group) Co., Ltd., the Compliance Management Guidelines for Business Partners of Sinopec Engineering (Group) Co., Ltd., the Compliance Management Guidelines on Economic Sanctions for Foreign-related Business of Sinopec Engineering (Group) Co., Ltd., the Compliance Management Guidelines on Anti-Corruption Overseas and Anti-Commercial Bribery of Sinopec Engineering (Group) Co., Ltd., and the Management Measures for the Registration and Confiscation of Gifts and Cash Received in Domestic Interactions of Sinopec Engineering (Group) Co., Ltd.

During the Reporting Period, the Group formulated and revised its anti-corruption policies such as the List of Strengthening the Supervisory Responsibility of "Chief Officials" and the Leadership and the List of Matters for Tolerance of Errors and Exemptions for the Leadership. Through these efforts, we seek to continuously improve our anti-corruption management system and effectively create a clear and clean business environment. We continuously improve the internal control system, policy, and mechanism, and prevent and control corruption at their sources by revising the List of "Three Important Matters and One Large Sum" Decision-making Matters of Sinopec Engineering (Group) Co., Ltd. and the Guidelines on Authority of Sinopec Engineering (Group) Co., Ltd.

B7.1 Number and the outcome of corruption litigation cases filed and concluded against the issuer or its employees during the Reporting Period

During the Reporting Period, there were no concluded legal cases regarding corrupt practices brought against the Group and our employees.

B7.2 Describe preventive measures and reporting procedures, as well as related implementation and monitoring methods.

The Group continuously establishes and improves its policies and management system for anti-corruption and ensuring sound governance. In addition to the formulation and revision of the above-mentioned anti-corruption management policies involving all our businesses, in respond to the anti-corruption management of suppliers, we have formulated the Regulations on Material Supply Management, the Management Measures for Material Procurement, and the Management Measures for Material Procurement and Supply Resources. These policies include provisions on the code of conduct (including anti-corruption and other content) for suppliers.

The Group's Supervision and Audit Department, as the main department responsible for anti-corruption and integrity work, reports to the relevant discipline inspection working group. The department head serves as the key responsible person.

Awareness building	- Organise and hold alerting and educational meetings in the anti-corruption and integrity education month to address the problem of "leverage the Group for personal gains". We promote the integrity education of senior management so that they "do not want to be corrupted". - Effectively implement the daily integrity education, and quarterly compilation and distribution of thematic learning materials, and a combination of online and in-person approaches. - Focus on the key areas to offer integrity tips, and issue such tips before holidays to eliminate "holiday corruption".
	- Establish a large supervision pattern and system, which integrates comprehensive, special, functional, daily, and democratic supervision. - Continuously conduct inspections to prevent and resolve major risks. Once we find that the internal audit and external investigation and reform is not in place, a significant number of public complaints and reports, poor management of member companies, we will promptly handle and offer feedback, strengthen anti-corruption in our supply chain. As such, people "cannot be corrupted."
	Establish integrity whistleblowing channels, including whistleblowing hotline, whistleblowing mailbox, and e-mail. They allow us to receive whistleblowing tips on discipline violations through multiple channels.

B7.3 Description of anti-corruption training provided to directors and staff.

The Group actively organises a variety of in-person and online anti-corruption trainings for employees, including directors, senior management and other employees, with a 100% coverage rate.

During the Reporting Period, the Group organised a total of 1,194 anti-corruption trainings, including 403 online trainings and 791 in-person trainings. Total training hour of anti-corruption trainings are 4,373 hours. The number of employees participated in anti-corruption trainings reached 28,733, of which 23 were board members, accounting for 0.08% of the total number of anti-corruption trainings, and 28,710 were other management and other employees, accounting for 99.92% of the anti-corruption trainings.

B8 Community Investment

General Disclosure

In accordance with the relevant laws and regulations, such as the Law of the People's Republic of China on Public Welfare Donations, the Circular of the State-owned Assets Supervision and Administration Commission of the State Council on Matters Related to Strengthening the Management of Donations by Central Enterprises, and the Supplementary Circular on Matters Related to the Management of Donations by Central Enterprises, the Group has strengthened its management policies regarding donations and community investments and ensured strict relevant review and approval process.

B8.1 Focus areas of contribution (e.g., education, environmental concerns, labour needs, health, culture, sport).

The Group actively contributes to and support community investment. During the Reporting Period, the Group made contributions in the fields of rural revitalisation consumption assistance, education aid, public welfare and voluntary activities. The Group actively created jobs and hired 625 employees during the Reporting Period.

B8.2 Resources contributed (e.g., money or time) to the focus area.

For the specific expenses and results of different focus areas, please refer to the chapter "Community Relations".

Paraphrasing

China Petrochemical Corporation: Sinopec Group

Sinopec: Sinopec Group and its subsidiaries and branches

The Company: Sinopec Engineering (Group) Co., Ltd.

The Group: the Company and its subsidiaries and branches

Engineering Incorporation Ltd.: SINOPEC Engineering Incorporation Ltd.

Guangzhou Engineering Co., Ltd.: Sinopec Guangzhou Engineering Co., Ltd.

Shanghai Engineering Co., Ltd.: Sinopec Shanghai Engineering Co., Ltd.

Ningbo Engineering Co., Ltd.: Sinopec Ningbo Engineering Co., Ltd.

Nanjing Engineering Co., Ltd.: Sinopec Nanjing Engineering Co., Ltd.

Fourth Construction Co., Ltd.: Sinopec Fourth Construction Co., Ltd.

Fifth Construction Co., Ltd.: Sinopec Fifth Construction Co., Ltd.

Tenth Construction Co., Ltd.: Sinopec Tenth Construction Co., Ltd.

Heavy Lifting and Transportation Co., Ltd.: Sinopec Heavy Lifting and Transportation Engineering Co., Ltd.

Energy Saving Co., Ltd.: Sinopec Energy Saving Technical Service Co., Ltd.

R&D Centre: Luoyang Technology R&D Centre of Sinopec Engineering (Group) Co., Ltd.

Information Centre: Information Technology Branch of Sinopec Engineering (Group) Co., Ltd.

QHSE: Quality, Health, Safety & Environment

HSE: Health, Safety & Environment

Company Profile



SINOPEC Engineering Incorporation Ltd.
SINOPEC Engineering Incorporation Ltd., founded in 1953, is a high-tech enterprise with national top-level qualification certificates such as the Integrated Engineering Design Qualification Certificate (Class A), the Engineering Consulting Qualification Certificate (Class A), and the Engineering Supervision Qualification Certificate (Class A). It provides one-stop comprehensive solutions, covering areas such as technology R&D, engineering consulting, engineering design, project management, intelligent plant construction, and general contracting in the energy and chemical industry. Its extensive achievements include more than 1,200 provincial- and ministerial-level awards, including the National Scientific and Technological Progress Award three times, and the "FIDIC Award" twice, which is highly recognised internationally in the field of engineering consulting. It has repeatedly ranked at the top of the overall strength ranking of engineering survey and design enterprises in China, and has been among the "Top 60 Engineering Design Enterprises in China" for six consecutive years. Embarking on a new journey of building the world's leading technology-oriented petrochemical engineering company, it aims to build on its legacy and strive for innovation, creating a new paradigm in the high-quality development of the refining and chemical industry and in the integration and coexistence of social interests and ecological environment.



Sinopec Guangzhou (Luoyang) Engineering Co., Ltd.
Sinopec Guangzhou (Luoyang) Engineering Co., Ltd., established in October 1956, is a high-tech enterprise in the energy and chemical industry integrating technology development, engineering design, and EPCC general contracting. It holds certificates such as the Integrated Engineering Design Qualification Certificate (Class A) and the Engineering Consulting Qualification Certificate (Class A). It has made trailblazing efforts in various fields in China and the world, such as oil refining, oil and gas storage and transportation, and new coal chemicals. It has completed more than 5,000 large and medium-sized domestic engineering and construction projects, including plants, installations, oil depots, long-distance pipelines, and municipal facilities in fields such as petroleum refining, petrochemicals, natural gas, coal oil, coal chemicals, pharmaceuticals, and chemicals. It has also completed nearly 100 overseas design, procurement, and general contracting projects. It has been consistently ranked among the top 60 engineering design enterprises in China. It is actively expanding into new fields such as new chemicals, new chemical materials, hydrogen energy, energy saving and environmental protection, and carbon neutrality, and striving to build a new business chain that integrates the development of related industries.



Sinopec Shanghai Engineering Co., Ltd.
Sinopec Shanghai Engineering Co., Ltd., founded in 1953, is one of the earliest comprehensive engineering companies in China, focusing on petrochemical and pharmaceutical chemical engineering design and general contracting. The company holds certificates such as the Integrated Engineering Design Qualification Certificate (Class A). For 69 years, it has made trailblazing efforts in many fields in China. Its main areas of business include petrochemicals, pharmaceutical chemicals, coal and natural gas chemicals, petroleum refining, new energy and materials, oil and gas storage and transportation, and environmental protection and energy conservation. Its service scope covers areas such as technology development, planning and consulting, engineering design, engineering procurement, general contracting, and engineering project management. At present, it is fully committed to pursuing excellence for a better future, embarking on a new journey towards high-quality development, and making every effort to build a world-leading technology-driven engineering company.



Sinopec Ningbo Engineering Co., Ltd.
Sinopec Ningbo Engineering Co., Ltd., founded in 1954, is a high-tech enterprise with a national-level enterprise technology centre and certificates such as the Integrated Engineering Design Qualification Certificate (Class A) and the special-level Qualification Certificate for General Contracting of Petrochemical Engineering Construction. The company has successfully completed more than a thousand projects related to engineering design, general contracting, and construction refining and chemical equipment. It is renowned for its design capabilities in the fields of petrochemicals, coal chemicals, natural gas chemicals, and syngas chemicals, and has boasted unique advantages in equipment manufacturing, construction of large storage tanks and long-distance pipelines, and factory prefabrication of steel structures supporting pipelines. As a large non-standard equipment manufacturing base of Sinopec Group, it is focusing on new energy, new materials, energy conservation, and environmental protection, especially on the R&D of complete sets of engineering technologies in the fields of resource and energy substitution, energy conservation, emission reduction, environmental protection, and safety technology. It aims to contribute to the establishment of a resource-saving and eco-friendly society.



Sinopec Nanjing Engineering Co., Ltd.
Sinopec Nanjing Engineering Co., Ltd., founded in 1954, is a comprehensive and international engineering company that offers technical and management services for both domestic and international markets. These design-driven services focus on patent, proprietary technology, and process package development, with general engineering contracting, project management, and professional construction as the mainstay. It places a strong emphasis on technology-driven development and has created a two-wheeled business model that prioritises both "traditional petrochemicals and new energy", and owns various patents and proprietary technologies in fields such as sulphuric acid, phosphate fertiliser, and other inorganic chemicals, new coal chemicals, petrochemicals, fine chemicals, environmental engineering, and CCUS (carbon capture, utilisation, and storage). The company's international operations have been highly successful, with multiple large-scale plants built in countries and regions such as Saudi Arabia, Kuwait, Singapore, Uzbekistan, and Malaysia. These achievements have significantly enhanced the company's brand value and social influence.



Sinopec Fourth Construction Co., Ltd.
Founded during the Daqing Oil Campaign in 1963, Sinopec Fourth Construction Co., Ltd. is a high-tech enterprise that has earned a reputation as the "iron army for petrochemical engineering". As an engineering service provider for the whole industry chain of energy and chemical industry, its business covers areas such as refining, chemicals, coal chemicals, storage and transportation engineering, marine engineering, and environmental engineering. It has developed leading technical expertise in areas such as welding of special materials, LNG cryogenic storage engineering, and modular construction in China. With advantages in the construction business, value enhancement business, and international operations as the "three driving forces for business development", it upgrades and optimises its construction organisation modes and operation methods through digital transformation, and creates the "construction + design + project management + manufacturing" synergy mode. It has formed its differentiated development advantages in project management, cryogenic storage, vocational skills education and training, and digital transformation projects.



Sinopec Fifth Construction Co., Ltd.
Sinopec Fifth Construction Co., Ltd., established in 1953, is a high-tech enterprise with strong construction capabilities in the traditional construction business such as large boilers, oil refining, chemicals, coal chemicals, and large-scale storage and transportation. It has built more than a thousand sets of large and medium-sized domestic and foreign installations with high standards. It has boasted unique technical advantages in the installation of large-scale lifting and transmission equipment (units), installation and transportation of large-scale storage tanks, installation and commissioning of automatic centralised control systems of large-scale Distributed Control Systems (DCS), and welding of special materials. It has obtained qualifications such as the class I environmental protection engineering professional contracting. In recent years, while working on traditional business, it has innovated and developed transition business in areas such as safety technology R&D, soil remediation, mechanical cleaning of tanks, trackless unguided all-position crawling welding robots, and intelligent demolition. It has maintained good momentum in high-quality development.



Sinopec Tenth Construction Co., Ltd.
Sinopec Tenth Construction Co., Ltd., established in 1953, is a high-tech enterprise with extensive experience and capabilities in engineering construction areas such as refining, ethylene, coal chemical, LNG, and large storage tanks. In recent years, the company has developed core technical expertise in large storage tank installation, installation and commissioning of large equipment lifting, compressor sets, electrical and instrumentation control systems, machinery repair of large cranes, and welding of special materials. It leads the industry in areas such as management innovation, modular construction, intelligent welding, ethylene, and new energy construction. In response to the characteristics of large modern petrochemical plants, it focuses on "innovation in construction organisation mode, technology and equipment upgrading, and the integration of 'IT-based development and industrialisation'", and continuously promotes its transition to technology-driven development and intelligent equipment, so as to make steady efforts in high-quality development.



SINOPEC Heavy Lifting & Transportation Co., Ltd.
SINOPEC Heavy Lifting & Transportation Co., Ltd., founded in 2014, is the only specialised company within Sinopec Group that focuses on the lifting and transportation business. With more than 60 years of experience in lifting and transportation engineering services, it provides integrated solutions to customers in areas such as petrochemicals, natural gas, coal chemicals, the nuclear industry, clean energy, marine engineering, and infrastructure. Its advanced engineering capabilities and superb technical strength have enabled it to maintain its position at the top of the domestic lifting industry for six consecutive years, as well as remain among the top in the international market.



Luoyang R&D Centre of SINOPEC Engineering (Group) Co., Ltd.
Luoyang R&D Centre of SINOPEC Engineering (Group) Co., Ltd., established in 2015, has made various innovative achievements in fields such as process intensification, new technologies for refining and chemical integration, corrosion control, environmental protection, and energy saving. In recent years, it has shifted its focus towards the strategic goal of "peaking carbon emissions by 2030 and achieving carbon neutrality by 2060", expanding into fields such as new materials, CCUS, and hydrogen energy, and promoting core technology research through a gradually sophisticated scientific and technological innovation platform system.



SINOPEC Energy Management Technology Service Co., Ltd. (Sinopec Energy Management Technology Service Centre)
SSINOPEC Energy Management Technology Service Co., Ltd. (Sinopec Energy Management Technology Service Centre), established in 1993, was reorganised and merged into SINOPEC Engineering (Group) Co., Ltd. in September 2017. It focuses on contract energy management and plant-wide energy system optimisation for petrochemical enterprises, providing customers with comprehensive and one-stop energy-saving and low-carbon services in various areas, including energy assessment, audit, diagnosis, optimisation, and management.



ITC Centre of Sinopec Engineering (Group) Co., Ltd. (Information Technology Branch)
Established in 2019, the information and digital professional services company provides overall solutions for domestic and foreign customers in operation management, project management, construction management, digital plant construction, engineering master data management, engineering software development, IT operation and maintenance, and cybersecurity.

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Independent Limited Assurance Report

GTCNZZ（2023）NO.110C002828

To The Board of Directors of SINOPEC Engineering (Group)Co., Ltd.:

We were engaged by the Board of Directors of SINOPEC Engineering (Group)Co., Ltd. (the "Company") to provide limited assurance on selected 2022 key data in the Company's 2022 Environmental,Social and Governance Report(the "ESG Report") for the year ended 31 December 2022.

I. Key data

In this report, limited assurance procedures were performed on the following selected key data of the Company's 2022 ESG Report:

- GHGs emission (tonnes CO₂-equivalent)
- Direct GHGs emission (tonnes CO₂-equivalent)
- Indirect GHGs emission (tonnes CO₂-equivalent)
- Consumption of diesel oil (tonnes)
- Consumption of gasoline (tonnes)
- Consumption of natural gas (cubic metres)
- Consumption of liquefied petroleum gas (cubic metres)
- Consumption of acetylene (tonnes)
- Consumption of propane (tonnes)
- Consumption of purchased electricity (trillion Wh)
- Consumption of purchased heat (million kJ)
- Consumption of water resources (tonnes)
- Weight of disposed hazardous waste (tonnes)
- Total number of employees
- Employee turnover rate (%)

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• Total recorded accident (incident) rate (per 200,000 working-hours)

Within the scope of our work, we only performed procedures on selected 2022 key data at Sinopec Engineering Incorporation and Sinopec Tenth Construction Co., Ltd., we have not conducted work at other entities. We have not performed any procedures with respect to 2021 and earlier periods or any other information included in the 2022 ESG Report.

II. Responsibilities of the Board of Directors

The Company's Board of Directors is solely responsible for the preparation of the key data of the 2022 ESG Report in accordance with basis of preparation of the key data ("basis of preparation").

The Board of Directors is also responsible for designing, implementing and maintaining the internal controls that enable the preparation and presentation of 2022 ESG Report that is free from material misstatement, whether due to fraud or error.

III. Responsibilities of the certified public accountants

Our responsibility is to carry out a limited assurance engagement and to express a conclusion based on the work performed. We conducted our work in accordance with the International Standard on Assurance Engagements 3000: Assurance Engagements other than Audits or Reviews of Historical Financial Information.

We have complied with our independence requirement and other relevant ethical requirements of the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants(IESBA), and we have complied with the applicable requirements of the International Standard on Quality Control 1 with respect to maintaining a comprehensive quality control system.

Our independent limited assurance report has been prepared solely for the Company in accordance with the terms of our engagement. Our work has been undertaken so that we might report to the Board of Directors of the Company those matters we have been engaged to report in this independent limited assurance report and for no other purpose. We do not accept or assume responsibility to any party other than the Company for our work, for this independent limited assurance report, or for the conclusion we have reached.

IV. Summary of procedures performed

A limited assurance engagement on the 2022 ESG Report consists of making inquiries, primarily of persons responsible for the preparation of information presented in the ESG Report, and applying analytical and other procedures, as appropriate. Our

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procedures include: Assessing the risk of material misstatement of selected 2022 key data relating to the ESG Report, whether due to fraud or error;

- Conducting interviews with relevant staff at the Company who are responsible for providing the information in the ESG Report;
- Performing analytical review procedures on the selected 2022 key data relating to the ESG Report;
- Checking relevant documents of selected key data relating to the ESG Report on a sample basis;
- Recalculating 2022 selected key data relating to the ESG Report;
- Reading the information presented in the ESG Report to determine whether it is in line with our overall knowledge of, and experience with, the sustainability performance of the Company; and
- Perform other procedures deemed necessary.

The extent of the evidence gathering procedures performed in a limited assurance engagement is less than that for a reasonable assurance engagement, and therefore, a lower level of assurance is provided. In addition, our work was not undertaken for the purpose of expressing an opinion on the effectiveness of the Company's systems and procedures.

V. Inherent limitation

We draw attention of the readers that currently there are no generally accepted practices to evaluate and measure non-financial information, therefore there are different measurement methods, which may impact the comparability among entities.

VI. Conclusion

Based on the Limited Assurance procedures performed and the evidences obtained, nothing has come to our attention that causes us to believe that the selected 2022 key data contained in the Company's ESG Report for the year ended 31 December 2022 is not prepared, in all material respects, in accordance with the basis of preparation.



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Feedback

Thank you for reading the 2022 Environmental, Social and Governance Report of SEG. In order to enhance the communication with you and other stakeholders, and to continuously improve our ESG performance and reporting, we sincerely welcome your valuable opinions and suggestions, and look forward to your feedback in the following ways:

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Content	Good / Fair / Poor/ Very poor
1. What is your overall assessment of this Report?	☐ ☐ ☐ ☐
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3. How comprehensive do you think this Report reflects the economic responsibilities of the Company?	☐ ☐ ☐ ☐
4. How comprehensive do you think this Report reflects the environmental responsibilities of the Company?	☐ ☐ ☐ ☐
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6. Do you think the design and layout of this Report makes it easy to read?	☐ ☐ ☐ ☐
7. Which section in this Report do you think needs to be improved?	☐ Governance ☐ Safety ☐ Service ☐ Supply Chain ☐ Employee ☐ Environment ☐ Society

Open questions:

1. What information do you wish to know but has not yet been covered in this Report?

2. Please share with us your comments and suggestions on SEG's ESG practice and ESG report preparation.



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