



2021

ENVIRONMENTAL, SOCIAL
AND GOVERNANCE REPORT

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ABOUT THIS REPORT

Reporting Period

This report illustrates activities the Company undertook in 2021 pursuant to its ongoing commitment to fulfil its environmental, social and governance responsibilities, with the time span ranging from January 1, 2021 to December 31, 2021. For continuity and comparability, this report provides explanations on past and future initiatives on certain issues.

Reporting Boundary

Unless otherwise stated, the relevant data set forth in the report covers the Company and its wholly-owned and holding subsidiaries.

Explanation of Information

All information disclosed in this report was sourced from PetroChina's official documents and statistics as well as performance reports and statistics gathered from the Company's affiliated enterprises. It takes into account the Company's development priorities and stakeholder concerns. This report has been reviewed and approved by the Board on March 30, 2022. The Board and all directors of the Company hereby assure that there are no misrepresentations, misleading statements or material omissions in this report. Furthermore, we jointly and separately accept full responsibility for the truthfulness, accuracy and completeness of this report.

Forward-Looking Statements

This report includes a set of Forward-Looking Statements. Excluding historical facts, all events that may or will occur (including but not limited to premise, objectives, estimation and business plans) and descriptions of such events are categorized as Forward-Looking Statements. Due to the presence of external uncertainties, actual outcomes or the future climate may differ from those expressed in the Forward-Looking Statements. As the Forward-Looking Statements were made prior to December 31, 2021, PetroChina holds no responsibility or liability for any modifications made subsequent to the said date.

Reference Standards

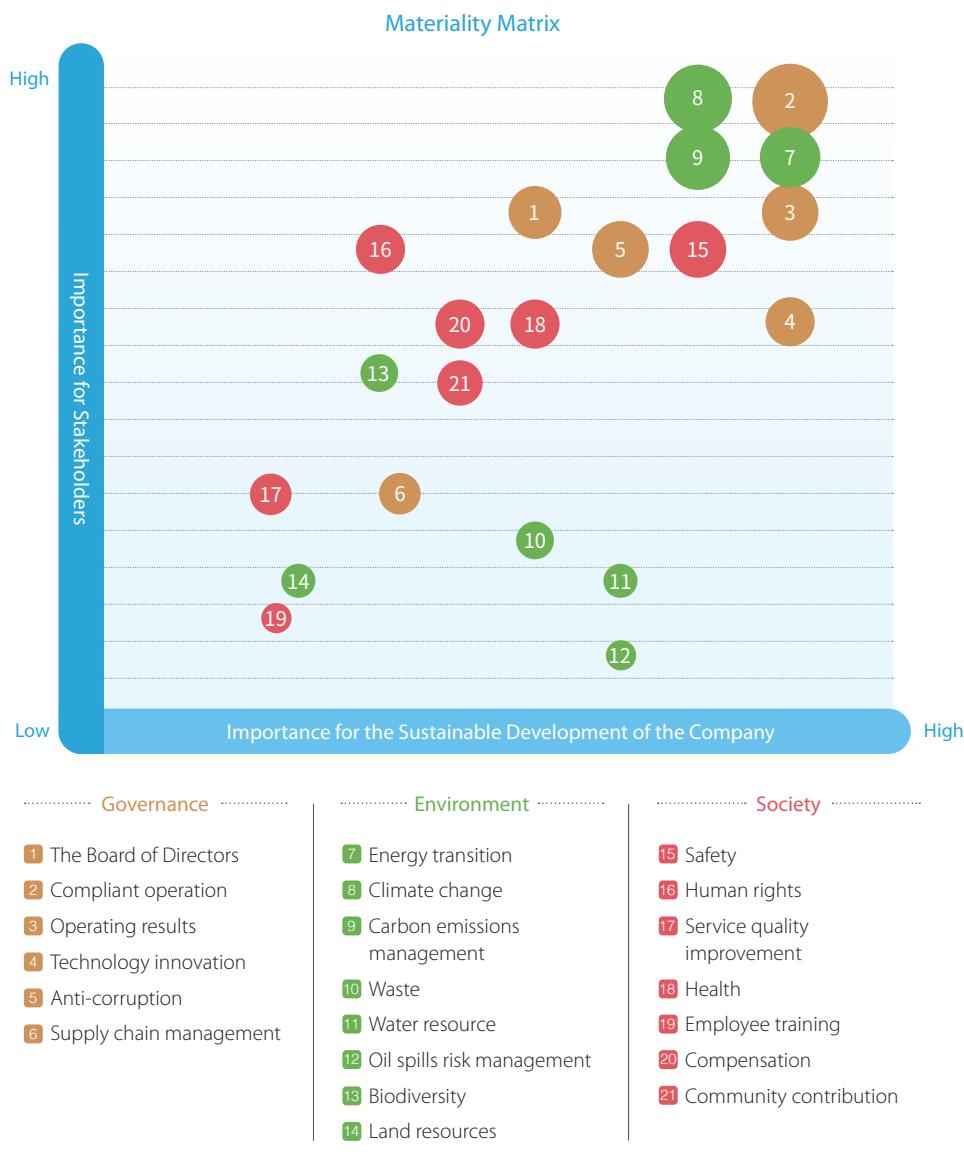
The preparation of this report is done in accordance with the *Environmental, Social and Governance Reporting Guide* issued by the HKEX, the *Recommendations of the Task Force on Climate-Related Financial Disclosures* issued by the Task Force on Climate-Related Financial Disclosures (TCFD), the *Sustainability Reporting Guidance for the Oil and Gas Industry* (2020) jointly issued by the International Petroleum Industry Environmental Conservation Association (IPIECA) and the American Petroleum Institute (API), the *Sustainability Reporting Standards* (2016) issued by the Global Reporting Initiative (GRI) and the *Ten Principles of the United Nations Global Compact* (UNG) together with other guidelines.

Reporting Principles

This report follows the requirements of the *Environmental, Social and Governance Reporting Guide* of the HKEX, and adheres to the principles of materiality, quantitative, consistency and balance.

Materiality

This report adopts a materiality analysis methodology to select the ESG issues that are matters of concerns both internally and externally.





Workflow for Materiality Analysis

- The Company was concerned about the expectations of stakeholders and conducted stakeholder consultation, including community interviews, periodic reports, field surveys, thematic workshops and online communications, and communicated with investors, clients, ESG investment and rating agencies (see Section 5 of Chapter 1 of this report for details), and invited them to evaluate the importance of each issue from their own perspective.
- At the headquarters level, ESG-related seminars, research and exchanges were conducted 47 times throughout the year. Stakeholders were more concerned about matters in respect of green and low-carbon transformation, ESG risk management and control, protection of investors' rights and interests, health and safety management, supply chain management, and the community contribution of the Company.



Quantitative

The Company conducts quantified performance management for material ESG issues, which cover governance system and capability, green and low carbon transformation, greenhouse gas emissions, sustainable utilisation of resources, pollutant emissions, safety and health, human resources and other aspects. Please refer to the relevant chapters of this report for details.

Consistency

This report follows the principle of consistency to ensure the comparability of such data. Subject to the adjustments of relevant national policies, the Company adjusted six methods/standards for compilation of data in 2021.

According to the findings of the second national census on pollution sources and specific standards for pollutant emissions accounting stipulated in the technical specifications for application and issuance of pollutant permit for the industries relating to the Company's business, starting from 2021, the Company's pollutant emissions statistics is conducted preferably by the accounting method of online pollution source monitoring data. The statistics of waste gas pollutant emissions includes flare gas emissions.

In 2021, the Company adjusted the statistical method for two indicators, the "unit energy factor consumption for refining" and "fuel and power consumption for producing ethylene products", in accordance with the national standards and the Norm of Energy Consumption Per Unit Product for Petroleum Refining (GB30251) and the Norm of Energy Consumption Per Unit Product of Ethylene Plant (GB30250). The Company also restored the 2019 and 2020 data according to the same standards.

In 2021, the Company changed the formula of the indicator "Average training time per person" from "Average training time per person = Total training time/Number of trainees" to "Average training time per person = Total training time/Number of employees", in line with HKEX's *Environmental, Social and Governance Reporting Guide*. The Company also adjusted the 2019 and 2020 data in accordance with the same standards.

Except for those illustrated above, the scope of statistics and method of calculation for the remaining ESG performance indicators disclosed in this report remain consistent with those in the previous year without any material adjustments.

Balance

This report aims to reflect the Company's ESG management and control strategies and performance in an objective and comprehensive manner, and to enhance the transparency of its ESG information.

Update of this Report

In order to reflect the Company's ESG governance practices in a more objective, comprehensive and focused manner, this report included new chapters such as "Statement of the Board of Directors", "Reporting Principles", "Digitization and Intellectualization", and "Community Impact Management", and adjusted the term "Ecological Protection" to "Ecological Protection and Resource Utilization", "Targeted Poverty Alleviation" to "Rural Revitalization", and added the disclosure of 36 new performance data indicators. We have also made targeted enhancements to the disclosures on climate change and energy transition, sustainable use of resources, disposal of solid waste, biodiversity conservation, community impact management, human rights protection, and the protection of the rights and interests of small and medium-sized shareholders, customer privacy and rights protection, supply chain management, etc. This report introduced the Company's measures and achievements in the form of specific topics in areas of "Empowering Green Olympic Games Together for a Shared Future", "Conserving Biodiversity and Building a Community of Life on Earth", "Consolidating the Achievements of Poverty Alleviation and Fully Supporting Rural Revitalization".

Access to this Report

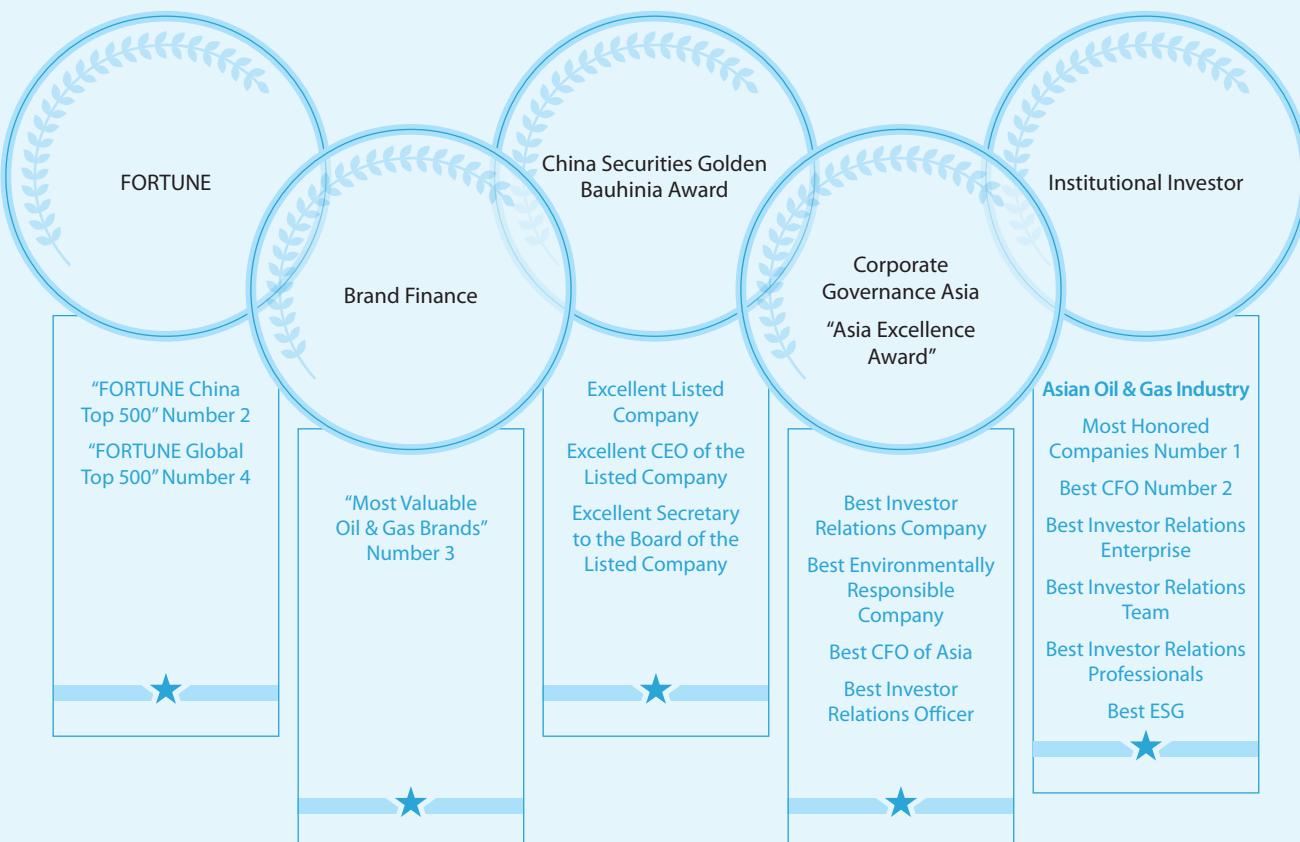
This report is published in simplified Chinese, traditional Chinese and English. In the case of any discrepancy, the version in simplified Chinese shall prevail. As a member of the UNGC, we report a description and explanation on our progress in accordance with the Ten Principles and Sustainable Development Goals, and will submit this report for publication on the UNGC's website (<http://www.unglobalcompact.org>).

For more information, please visit the Company's website www.petrochina.com.cn or download an electronic version of this report.

ABOUT US

PetroChina Company Limited is a joint stock limited company incorporated on November 5, 1999, upon the restructuring of China National Petroleum Corporation (CNPC). PetroChina was listed on the NYSE (ADS code: PTR) and the HKEX (stock code: 857) respectively in April 2000, and on the Shanghai Stock Exchange (stock code: 601857) in November 2007.

PetroChina is one of the major oil and gas producers and distributors in China, and also a significant player in the global oil and gas industry. It engages in a wide range of activities related to oil, natural gas and new energies and new materials, and implements the strategies of innovation, resources, market, internationalization, green and low-carbon. We are also committed to promote green development and energy contribution, to boost the growth momentum of customers, and to empower people to enjoy a better life.



BUSINESS STRUCTURE

Upstream Business

Exploration, development and production of crude oil and natural gas; development and utilisation of new energy.



Mid-Downstream Business

Refining, storage and sales of crude oil and petroleum products, production and marketing of basic and derivative petroleum chemical products, new chemical materials and other petroleum chemical products; transportation of natural gas, crude oil and refined oil and distribution of natural gas.



International Business

We are engaged in oil and gas exploration and production in many countries over the world.



Oil and Gas Exploration, Development and Production

PetroChina is at the forefront of domestic oil and gas exploration and development. We operate in numerous major oil and gas producing regions such as Daqing, Changqing, Tarim, Southwest area, Xinjiang and Liaohe. In 2021, we produced 753.4 million barrels of crude oil and 4,222.2 billion cubic feet of saleable natural gas domestically. The Company's domestic and overseas output totalled 1,624.8 million barrels of oil equivalent in the year.

Development and Utilisation of New Energy

The Company proactively develops and utilises wind, solar, geothermal, power, hydrogen and other new energy. By 2021, the total volume of new energy developed and utilised by the Company amounted to 7 million tons of standard coal per year.

Refining, Storage and Sales of Crude Oil and Oil Products

We own 13 ten-million-ton-level refining bases. In 2021, we processed 1,225 million barrels of crude oil and produced 108.712 million tons of refined oil. We are operating over 20,000 service stations, covering 31 provinces (municipalities and autonomous regions) and the Hong Kong Special Administration Region of China.

Production and Sales of Petrochemical Products

The Company is engaged in producing six major categories of chemical products: synthetic resin, raw materials of synthetic fiber and polymers, synthetic rubber, urea, organic and inorganic compounds, with thousands of trademarked products. Among such categories, our production capabilities of products such as ethylene, synthetic resin and synthetic rubber are ranked among the best in China. In 2021, we produced 30.796 million tons of chemical products and 6.713 million tons of ethylene.

Transportation of Natural Gas, Crude Oil and Refined Oil, and Distribution of Natural Gas

PetroChina is engaged in the transportation and marketing of natural gas, and storage and transportation and also the marketing of crude oil and refined oil. In 2021, we marketed 194.591 billion cubic meters of natural gas domestically.

International Oil and Gas Cooperation

Currently, we have formed five international oil and gas cooperation zones in Central Asia-Russia, the Middle East, Africa, the Americas and the Asia-Pacific, and three oil and gas operation centers in Asia, Europe and the Americas. Our international oil and gas cooperation continued to grow in terms of size and scope, with operational quality improving greatly. In 2021, our overseas oil and gas production reached 167.4 million barrels of oil equivalent.

PETROCHINA AND THE UN SUSTAINABLE DEVELOPMENT GOALS

The UN Sustainable Development Goals	Action and Performances
	<ul style="list-style-type: none"> Proactively committing to revitalising rural areas, promoted the implementation of poverty alleviation projects in various regions in China, including Xinjiang, Qinghai, Chongqing, Henan, Jiangxi and Guizhou
	<ul style="list-style-type: none"> Carrying out road construction, environmental rehabilitation, safe drinking water and other poverty alleviation projects based on actual local needs, facilitating the sustainable development of local characteristic industries
	<ul style="list-style-type: none"> Issuing the <i>Measures for Administration of Occupational Health and Employees' Health</i> and further regulating the management of employees' health to protect the occupational health, physical health and mental health of employees Carrying out special occupational health checks and mental health management training Organising events during the publicity week of the <i>Law of the People's Republic of China on Prevention and Control of Occupational Diseases</i>, with 950,000 staff participating in publicity activities, education and training Intensifying the implementation of the Overseas Employee Assistance Program (EAP) with a record of 1,228 hours of service provided by the psychological counselling hotline Achieving a 99.22% screening rate of workplace occupational hazards Achieving a 100% occupational health examination rate for employees facing occupational hazards Carrying out COVID-19 epidemic prevention and control abroad, establishing an overseas epidemic prevention, joint prevention and joint control mechanism, and epidemic prevention and control system, and implementing targeted prevention and control measures
	<ul style="list-style-type: none"> Improving the cultural quality and development capabilities of the population in remote areas by means of subsidizing students in need and offering trainings to primary and secondary school teachers and managers under the Xuhang Program and the Teacher Training Program. In 2021, the Xuhang Program provided financial support to 2,966 students in need Launching specific courses, such as those related to innovative marketing (live broadcast marketing), digital village and smart agriculture to enhance the capability of supported areas in generating revenue on their own Offering training to officials of supported organisations at all levels, grassroots officials, leading entrepreneurs, and professional and technical personnel in poverty alleviation regions, with an aggregated number of over 70,000 persons trained throughout the year
	<ul style="list-style-type: none"> Observing the principle of gender equality and treating employees of different genders equally Strictly complying with the relevant provisions relating to maternity leave and lactation leave, protecting the rights and interests of female employees
	<ul style="list-style-type: none"> Providing assistance to communities in the construction of the water-saving irrigation projects and promoting agricultural development in local regions Implementing the "Sweet Community" and other clean drinking water projects, assisting in the building of wells in local areas and addressing issues related to difficulties in access to drinking water in the communities
	<ul style="list-style-type: none"> Continuously strengthening the exploration and development of natural gas, with domestic marketable natural gas production increasing by 5.7% on a year-on-year basis Importing natural gas resources through multiple channels Domestically, selling 194.591 billion cubic meters of natural gas in the whole year, representing the replacement of 259 million tons of standard coal and the reduction of emissions of CO₂ by about 260 million tons, calculated in equivalent thermal value Proactively developing new energy businesses, such as geothermal energy, wind and solar power, hydrogen energy, and charging (battery exchange) stations Total volume of new energy developed and utilised amounting to 7 million tons/year of standard coal
	<ul style="list-style-type: none"> The annual total training time was 12.72 million study hours with the average training time per person of 30.5 hours Promoting the construction of people's livelihood projects to improve the living and working conditions of front-line employees, securing the personal benefits of employees and enabling the income of employees to grow simultaneously with the development of the Company Fostering local suppliers and contractors during our construction and operation to create more jobs for local people and promote the development of local economy

The UN Sustainable Development Goals	Action and Performances
 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	<ul style="list-style-type: none"> Enabling in-depth implementation of the innovation strategies, strengthening key core technology research to achieve breakthroughs, focusing on the applied basic research and research on advanced technologies, the construction of technical innovation capabilities and talents, the technological cooperation and exchanges and the work on standards, and the protection of technological intellectual property and transformation and application of such achievement etc. Setting up the research institute for new materials in Shanghai and the research institute for new energies in Shenzhen, strengthening investment in technology research and development to provide technical support for the development of new energies, new materials and new businesses Facilitating the digital and intelligent development of the Company, developing smart oil and gas fields, smart refining and smart marketing, and supporting industrial transformation and upgrading
 10 REDUCED INEQUALITIES	<ul style="list-style-type: none"> Prohibiting child employment and forced labour, and no event involving child employment and forced labour reported No form of discrimination in gender, region, religion, nationality, etc., and employing 26.05% female employees and also 95.21% foreign employees in overseas projects
 11 SUSTAINABLE CITIES AND COMMUNITIES	<ul style="list-style-type: none"> Improving infrastructure in remote areas, developing characteristic industries to promote local economic and social development Focusing on sectors including the people's livelihood, industry, consumption, intelligence and healthcare, to support the revitalisation of rural areas Performing the responsibilities and mission of an official oil and gas partner, providing all-weather and all-round support and services on clean energy supply for the preparation and holding of the Beijing 2022 Olympic and Paralympic Winter Games
 12 RESPONSIBLE CONSUMPTION AND PRODUCTION	<ul style="list-style-type: none"> Strictly monitoring and controlling discharge of wastes and pollutants generated from production processes Rationalising of the use of land resources, with 1,120 hectares land saved Improving the energy efficiency, with the energy-saving amount of 700,000 tons of standard coal throughout the year Strengthening water conservation and save fresh water resources, with the fresh water consumption decline by 2.59%, and 9.69 million cubic meters of water saved throughout the year
 13 CLIMATE ACTION	<ul style="list-style-type: none"> Establishing a three-step green and low-carbon transformation path of "clean energy substitution, strategic succession and green transition" Setting a low-carbon goal of endeavoring to achieve carbon emissions peak by around 2025 and "near-zero" emissions by around 2050 Strengthening carbon emission management and carbon risk response, and perfecting the Company's carbon emission control system, with a y-o-y decrease in the domestic greenhouse gas emissions per unit of oil and gas production Keeping deep involvement in activities of the Oil and Gas Climate Initiative (OGCI) and Alliance of Chinese Oil and Gas Enterprises for Promoting Methane Emission Control Making comprehensive researches on Carbon Capture and Storage/Carbon Capture, Utilization and Storage ("CCS/CCUS") and striving to promote the commercialisation of CCS/CCUS
 14 LIFE BELOW WATER	<ul style="list-style-type: none"> Adhering to the environmental protection philosophy of clean development, continually carrying out environmental control and monitoring projects to protect the ecological environments and biological diversity in the business locations
 15 LIFE ON LAND	<ul style="list-style-type: none"> Strictly complying with local environmental protection policies and laws and regulations governing the trading of animals and plants, and paying attention to the protection of local rare species and biological diversity
 16 PEACE, JUSTICE AND STRONG INSTITUTIONS	<ul style="list-style-type: none"> Implementing the Anti-commercial Bribery Manual, the Integrity and Compliance Manual, the Employee Handbook and the Corporate Culture Manual together with other systems and regulations, abiding by business ethics, adhering to the principles of honesty and trustworthiness, equal consultation, mutual benefits, promoting "Sunshine Trading" and striving to maintain fair and just competition order in business activities
 17 PARTNERSHIPS FOR THE GOALS	<ul style="list-style-type: none"> Strengthening the ESG management of the supply chain Participating the activities of the Alliance of Chinese Oil and Gas Enterprises for Promoting Methane Emission Control Organizing the OGCI international symposium on low-carbon technology in the transportation sector



MESSAGE FROM THE CHAIRMAN

Thank you for reading this report as well as for your interest in and support to PetroChina now and over time.

The year of 2021 was extraordinary for PetroChina on many fronts. In this year, we deployed strategic plan and achieved high-quality development with fruitful results. But there has been both challenges and opportunities arising from energy transition and digitization that we are experiencing now. Responding to this new environment as well as playing a role in it, the Company implemented effectively and thoroughly a series of new development concepts, including our strategic pathway on carbon emission peak and carbon neutrality. We are committed to delivering green and low-carbon transformation and building a modernized corporate governance system and capabilities, propelled by continued reform and innovation. We are proud to have made a number of historic breakthroughs and achievements in this first year of the 14th Five-Year Plan, bringing a fresh look and vitality to the whole company.

Navigating through green and low-carbon transformation, we built out a “low-carbon energy ecosystem”. With the objectives and commitments anchored on achieving the carbon emission peak around 2025 and “near-zero” emissions around 2050, we have accelerated green transformation to offer more clean energy, following our green and low-carbon strategy. The Company implemented our new energies and new businesses plan, coupling with the green and low-carbon development action plan, in the context of our announced roadmap for carbon emission peak and carbon neutrality. We have formed a three-step overarching strategy of “clean energy substitution, strategic succession and green transition”, under which a green industry growth plan has

been laid out, with a view to foster a “low-carbon energy ecosystem” integrating renewable energy along side fossil energy as such that each complements the other during the transition. In 2021, we continued to stabilize oil production while increase gas production, as a result our domestic natural gas output increased by 5.5% year-on-year, accounting for 51.6% of total oil and gas output, further optimized the production output structure. We sold natural gas of 194.591 billion cubic meters domestically in the year, which is the equivalent in calorific value of 259 million tons of standard coal, hence reducing approximately 260 million tons of carbon dioxide emissions. Among the renewable energy projects of wind, solar and geothermal, and the deployment of power and hydrogen, 39 projects were commissioned, achieving an increase in energy generation and utilization capacity equivalent to 3.50 million tons of standard coal per year – a speedy build-out of our renewables business.

We reinforced natural resources conservation and pollutant management, contributing positively to a cause of ecological civilization. An ecological environment with clear waters and green mountains is invaluable assets and particularly important for people's livelihood. The Company has integrated the goals of carbon emission peak and carbon neutrality into its overall reform and development, strictly observing a series of higher standards including the ecological red line, environmental bottom line and resource consumption ceilings, battling for blue sky, clear water and clean soil. In order to reduce greenhouse gas emissions, we launched the Action Plan for Control of Methane Emissions and strengthened the control of both intensity and total volume of energy consumption to improve the efficiency of energy utilization while

The Company will continue to implement the new development philosophy in an effective and robust manner, so as to serve and integrate into the new development paradigm. While the Company will deliver further improvement in the areas of corporate management, reform and innovation, improvement of quality and profitability, green transformation, digital transformation and risk prevention, we will make every effort to achieve sustainable development in harmony with the environment, the society and all other stakeholders.

adequately contain fossil energy consumption. We participated in the international cooperation with the Oil and Gas Climate Initiative (OGCI) to reiterate the ambition of the oil and gas industry in addressing climate change, contributing China wisdom in the green transition of the global oil and gas industry. With Chinese peers, we actively participated in the activity of the Alliance of Chinese Oil and Gas Enterprises for Promoting Methane Emission Control, with an aim to manage methane emissions across the whole industry chain. We believe that green production relies on sustainable processes, therefore, we launched green initiatives in production units and accomplished the accreditation of first 8 green subsidiary enterprises. To protect and restore biodiversity, we participated in the efforts of ecological conservation, pollution prevention and environmental risk control in the key river basins in China, such as the Yellow River basin and the Yangtze River basin. In 2021, the Company achieved a year-on-year decrease in both volume and intensity in energy consumption, fresh water consumption and GHG emissions. There was no substantial or major safety and environmental incident throughout the year.

We committed to modernizing our corporate governance system and governance capability propelled by a mindset of reform and innovation. The Company carried forward its three-year reform action plan to optimize and modernize corporate governance system and governance capacity. Organisational structure at the head office was optimized and business procedures were further streamlined to empower effective internal coordination. The senior management each now fully follows a tenure system which is reflected in their employment contract. All these measures have yielded improved management efficiency and effectiveness of the Company. The Company's internal control system was reshaped to fully embrace the inclusion of ESG related risks so as to scale up our capability in risk control and the effectiveness of internal control system. With innovation as our top strategy, we continue to invest in science and technology and enhance our competency in research and development. We have built innovation capabilities along the industrial chain to create value for now and the future. In 2021, a number of major science and technology projects were deployed and implemented, and breakthroughs were made in core technologies; a number of pilot projects for digital transformation

and intelligent development were launched, and the construction of "Digital PetroChina" was accelerated. In addition, the research institute for new materials in Shanghai and the research institute for new energies in Shenzhen were officially set up. The construction of a number of key technology platforms in new energy business were also kicked off.

We honored our social responsibility and shared results of our business success. Following the people-centered philosophy, we have aligned with the *United Nations 2030 Agenda for Sustainable Development*, promoting balanced and inclusive global development. In response to the rural revitalization strategy proposed by the Chinese government, we continuously increased our support in the area of industrial development, intelligence, local consumption and employment, and promoted the effective linkage between the achievements in poverty alleviation and rural revitalization, so as to give back to the communities. We promptly participated in the flood control and rescue work in Henan Province and the drought relief work in Shaanxi Province, and did our utmost to help the affected areas to tide over the difficulties. As the official oil and gas partner of the Beijing 2022 Winter Olympic and Winter Paralympic Games, we provided clean energy, and made PetroChina's contribution for the operation of a simple, safe and wonderful Olympic Games. We strived to build a healthy and safe enterprise, put the safety and health of our employees first, implemented normalized epidemic prevention and control all the time, and made donations to the governments and communities of the countries in which we operate to fight the pandemic together. Adhering to the concept of building an open, win-win and mutually beneficial cooperation community for oil and gas interests, we continued to share resource value and development opportunities with the governments, partners, communities and people from resource countries, so as to enable more fruits of international energy cooperation to benefit local communities in a more equitable way and promote the prosperity and development of local communities.

In 2022, the external environment remains complex for the Company with many new opportunities and challenges in its journey to build an evergreen world-class enterprise. In the year to come, the Company will continue to implement the new development philosophy in an effective and robust manner, so as to serve and integrate into the new development paradigm. While the Company will deliver further improvement in the areas of corporate management, reform and innovation, improvement of quality and profitability, green transformation, digital transformation and risk prevention, we will make every effort to achieve sustainable development in harmony with the environment, the society and all other stakeholders.



Dai Houliang
Chairman of the Board



CORPORATE GOVERNANCE



[14_ SUSTAINABILITY MANAGEMENT](#)

[15_ GOVERNANCE FRAMEWORK](#)

[18_ MANAGEMENT SYSTEM](#)

[21_ SUPPLY CHAIN MANAGEMENT](#)

[23_ COMMUNICATING AND INTERACTING WITH STAKEHOLDERS](#)

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The UN
Sustainable
Development
Goals



At PetroChina, we always advocate the modern concept of corporate governance characterized by the supremacy of law, reciprocity of power and responsibility, credibility and integrity, justice and impartiality. Taking rule of law as the principle, we enhanced our capability of business management. Taking the Articles of Association as the guideline, we improved our corporate governance system and the scheme of business management, focusing on formulating systematic, scientific and effective internal rules and regulations. Taking compliance as a key issue, we set a code of behavior for both the company and employees. Disciplined by such rules and regulations, we strive to achieve the modernization and internationalization of the corporate governance system and governance capability. We are set to make relentless efforts to explore and enhance the rationality and practicality of our corporate governance and improve the long-term mechanism which aims at running our business in compliance with the law.



Responsibilities of the Sustainable Development Committee

- To work on the sustainable development of the Company (including but not limited to environmental, social and governance matters), to identify and assess major risks and impacts on the sustainable development of the Company, to enhance risk management (including that in respect of environmental, social and corporate governance), and to make relevant proposals to the Board of Directors.
- To supervise the Company's commitments and performance on addressing climate change, protecting the health and safety and fulfilling social responsibilities in relation to key issues, and to make relevant proposals to the Board of Directors.
- To examine the guidelines and strategies, goals, measures and issues of importance in respect of the sustainable development of the Company, and to supervise and review the implementation of the sustainable development goals of the Company against the pre-determined sustainable development goals.
- To review the environmental, social, and governance report and the quality, safety and environmental protection report of the Company annually and to make relevant proposals to the Board of Directors.
- To focus on the important information on sustainable development matters related to the business of the Company, and report to the Board of Directors when it determines that environmental, social and governance matters will have a significant impact on the relevant stakeholders.



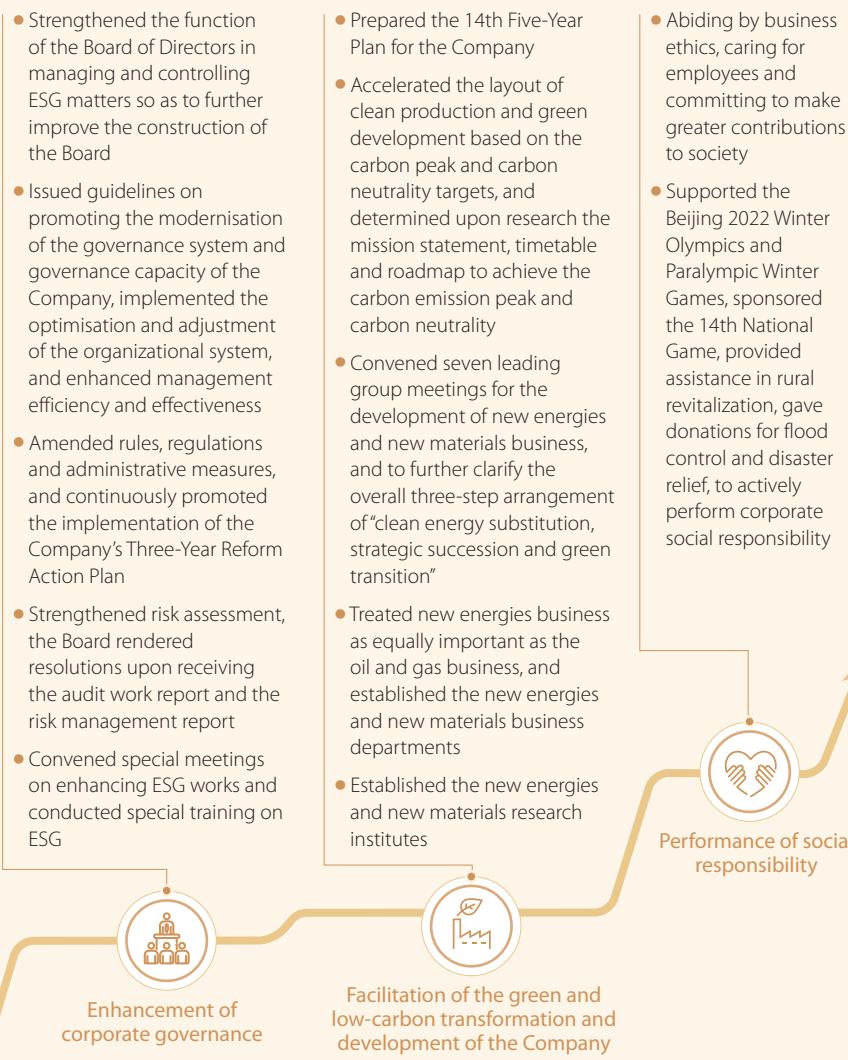
In 2021, we conducted a 2-day ESG special training, attended by more than 70 managerial staff from 23 departments of the headquarters and subsidiaries.

SUSTAINABILITY MANAGEMENT

To promote sustainable development, which we consistently advocate, we must deliver clean, reliable and affordable energy to the public in a responsible, sustainable and ethical manner, abide by laws and regulations, respect human rights, protect the environment and make contributions to the economic and social development of the locations with our business presence. We embrace the *United Nations Universal Declaration of Human Rights* (UDHR) and a number of codes of voluntary compliance, including but not limited to the UNGC and the United Nations Sustainable Development Goals (SDGs) 2030.

We guide and manage the efforts in respect of sustainable development through the work of the Shareholders' General Meetings, the Board of Directors and its special committees, the Supervisory Committee, and the management team led by the President. The philosophy of sustainability is deeply integrated in the entire process of our business operation for effective

In 2021, the Company focused on "high-quality development" and continuously improved our sustainable development capabilities.



control of environmental, safety and social risks. The Sustainable Development Committee under the Board is responsible for overall planning supervision of ESG issues of the Company. Mr. Huang Yongzhang, the Executive Director and the President of the Company, serves as the chairman of the committee, and Mr. Jiao Fangzheng, the non-executive director, and Ren Lixin, the executive director and senior vice president, serve as members of the committee. Compliance, safety and environmental protection, energy conservation and emission reduction are included in the annual performance assessment of the Company's management. If the assessment indicators are not completed, the performance score will be deducted and the compensation and salaries will be deducted according to the regulations. Among them, for those who fail to complete the safety and environmental protection assessment indicators, 5 points will be deducted for each item; for those who fail to complete the energy conservation and emission reduction assessment indicators, 1 point will be deducted for each item, with a maximum of 10 points.

GOVERNANCE FRAMEWORK

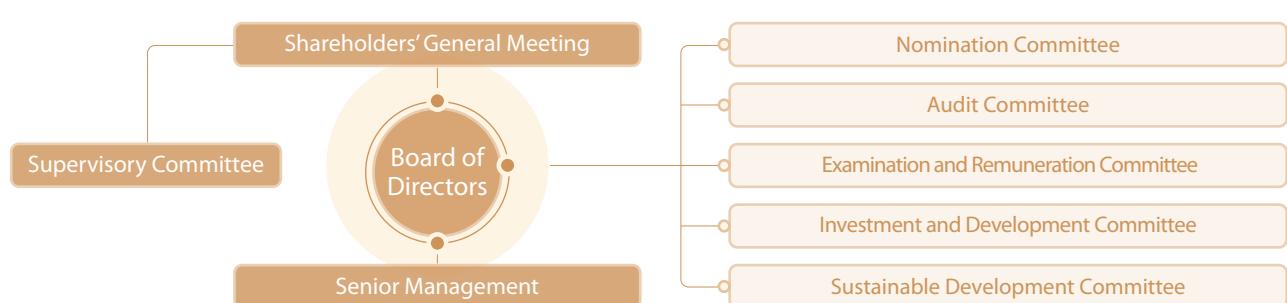
Ever since its incorporation, PetroChina has set in place a corporate governance framework in compliance with regulatory requirements and international practice, and such a framework has been improving from time to time by considering the actual operating circumstances so that the modernization of the corporate governance system and governance capabilities could be continuously enhanced. The respective authorities and responsibilities of the Shareholders' General Meeting, the Board of Directors and its special committees, the Supervisory Committee, and senior management headed by the President have been clearly defined. Such a management structure allows for close coordination and is highly effective.

We actively optimize the legitimate decision-making mechanism in keeping with laws and regulatory requirements, enhance the assessment of such a mechanism, set up and improve the retrospective and lifelong accountability system of decision-making. We keep on improving monitoring and checking exercising of power, and following the principle of consistency of power and responsibility. We clearly delineated the limits of authority at different levels and set out a list of duties and powers. We made well-coordinated use of internal monitoring resources of legal affairs, internal control, auditing, internal inspection and inspection tour. We reinforced self-monitoring by means of double checking by dedicated departments and cross checking between superior and subordinate departments. We receive social supervision voluntarily to procure well-grounded decision making, appropriate authorization, well-controlled exercise of power and disciplinary action against any abuse of power.



The governance system of the Company meets the requirement of the *Company Law of the People's Republic of China* ("Company Law"), the *Securities Law of the People's Republic of China* ("Securities Law"), the relevant provisions of the China Securities Regulatory Commission, the regulatory requirements of stock exchanges where the Company is listed and the *Articles of Association of PetroChina* (hereinafter referred as "Articles of Association").

Corporate Governance Structure Chart



Shareholders and Shareholders' General Meeting

The Shareholders' General Meeting is the highest authority in the Company, exercising functions and powers in accordance with the law. PetroChina's Shareholders' General Meeting is held annually to ensure that all shareholders enjoy equal status and exercise their rights effectively.



In 2021, the Company held the Shareholders' General Meeting twice in total and approved a total of 9 proposals. Such general meetings complied with regulatory rules and legal procedures, the resolutions adopted are legal and valid. For details, please refer to the announcement on our website.

The continuing connected transactions between the Company and its connected persons are governed by the principle of fair, equitable and open pricing. Such transactions will not adversely affect the Company's future financial situation or operating results, nor will they result in any reliance on its connected persons or affect the Company's independence. For more details about connected transactions in 2021, please refer to our annual report for 2021.

Protection of Shareholders' Rights and Interests

We attach great importance to the protection of shareholders' rights and interests, especially the legitimate rights and interests of small and medium-sized shareholders. With respect to the connected transactions, at the beginning of listing, the Company and CNPC entered into a continuing connected transaction agreement. The Company updates the details (including the service scopes and transaction amounts) of the continuing connected transactions with CNPC every three years and submits these to the Board and the shareholders' meeting for approval. The historical transaction amounts of the continuing connected transactions in the past years were within the caps approved by the shareholders' meeting of the Company and disclosed in the annual report every year. In order to ensure the fairness and reasonableness of the connected transactions, CNPC, as a connected shareholder of the Company, abstained from voting on resolutions concerning connected transactions in the general meetings. Since 2018, the "cumulative voting system" has been adopted for the election of directors and supervisors of the Company, with small and medium-sized shareholders having further enhanced their voice, and the enthusiasm of the Company's shareholders to participate in corporate governance has been further enhanced.

The shareholding structure of the Company is detailed in our annual report for 2021.

Directors, Board of Directors and Board Special Committees

The directors are elected by the Shareholders' General Meeting and are accountable to the shareholders of the Company. The term of office is three years, renewable at the end of the term upon re-election and re-appointment. Directors act in the interest of shareholders as a whole, strictly adhere to the principle of diligence, integrity and pragmatism, and conscientiously perform their duties. Currently, the Company has 12 directors, including five independent non-executive directors.

Board of Directors and Special Committees

The Board of Directors sets up 5 special Board committees, namely the Nomination Committee, the Audit Committee, the Examination and Remuneration Committee, the Investment and Development Committee, and the Sustainable Development Committee (the composition, division and work of each Board committee is detailed in the annual report of the Company for 2021). The above-mentioned committees are mainly responsible for providing support to the Board in decision-making. The Directors sitting on the special Board Committees shall focus on certain issues according to their division of duties and make proposals for the improvement and enhancement of the management level of the Company.



A total of six Board meetings and 13 meetings of special Board committees were held in 2021 with 31 Board resolutions being passed, as detailed in our website and our annual report for 2021.

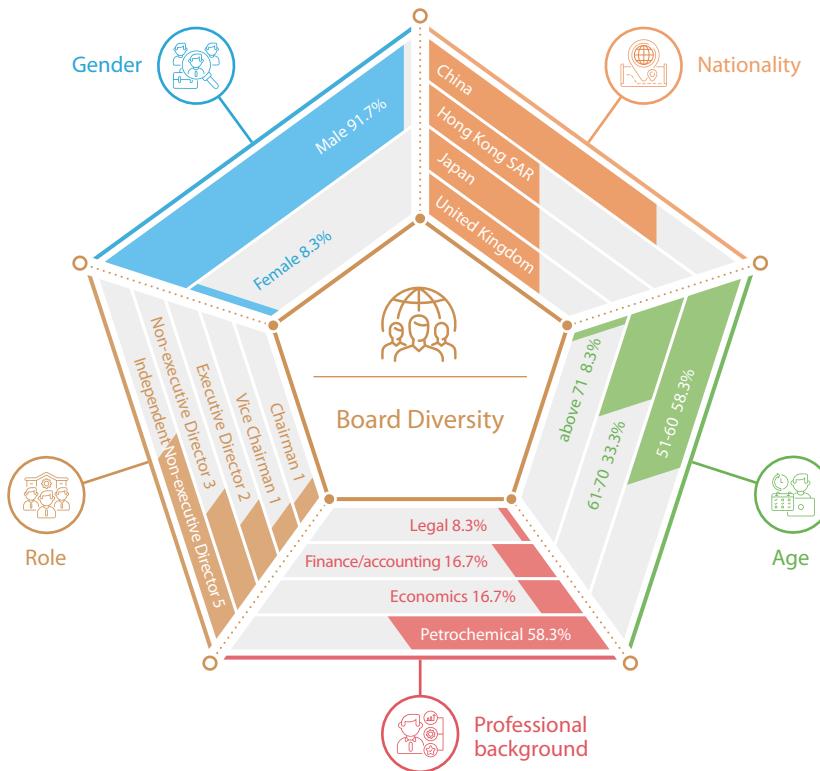
Diversity of the Board

The Company implements the diversification policy of the composition of the Board of Directors, so that Board members are engaged based on the operational model and work requirements of the Company, while taking into account their nationality, gender, age, cultural and educational background, and professional experience. This can help improve the decision-making capabilities and level of the Company. For details of Board members, please refer to our website and our annual report for 2021.



Independent Directors

Our independent directors perform their duties with diligence and loyalty and effectively exercise their special powers for approving major connected transactions, and provide advice for the operation of the Board and the business development of the Company by making use of their professional knowledge and rich experience of their respective field and experience, and practice the duty of diligence.



For details of the attendance by independent directors at the Board meetings, please refer to our annual report for 2021.

Supervisors and Supervisory Committee

The term of office of our supervisors is three years, renewable at the end of the term upon re-election and re-appointment. No supervisor may concurrently hold the position of a director, President, Vice President or Chief Financial Officer. In accordance with the Company Law and the Articles of Association, the supervisors shall attend meetings of the Supervisory Committee and sit in on Board meetings on a non-voting basis. They shall report to the Shareholders' General Meeting, submit the Supervisory Committee's work reports and relevant proposals. By the end of 2021, the Company's Supervisory Committee consisted of 8 supervisors, 3 of which were employee representatives.

The Supervisory Committee is accountable to the Shareholders' General Meeting. The Supervisory Committee formulated the Organization and Rules of Procedures for the Supervisory Committee and the Rules on Supervisors' Performance of Duties, setting out the manner, content, requirement and standard of appraisal with respect to performance of duties by the supervisors. All supervisors are urged to monitor the Company's finances and the legality and compliance of the directors and senior management of the Company in performing their duties with due diligence.

In 2021, the Company held four Supervisory Committee meetings, forming thirteen resolutions, all of which were in compliance with the provisions of the Company Law of the People's Republic of China and the Articles of Association and were legal and effective. In July, the Supervisory Committee conducted an inspection tour of the branch companies (subsidiaries) in Qinghai and Gansu and proposed to accelerate the development of new energy business, actively conduct pilot exploration of development models of new energy business, and accelerate the expansion and layout of the natural gas market.



Participation of Independent Directors in Corporate Governance

In 2021, with the ongoing impact of COVID-19 epidemic, on-site investigation and research cannot be carried out, so independent directors actively learned about the Company's operating status, financial performance and major projects through emails, communication with high-level executives, letters and meetings attended through video connection:

- Fully, independently and objectively expressed opinions at the Board meetings to effectively facilitate scientific decision-making by the Board of Directors
- Provided timely feedback to the management on issues found in work, and listened to the management's reports on proposals and project implementation, to form a closed decision-making loop
- Paid close attention to corporate development strategies, especially to issues such as carbon emission peak and carbon neutrality, new energies, new materials and new businesses, made proposals on strengthening development of new energy, and promoted and improved project planning on development of geothermal energy, hydrogen energy, and wind and solar power
- Focused on risk prevention, in addition to providing targeted advice at the meetings of the Board and the special Board committees, actively gave suggestions in financial, internal control, audit and other business reporting meetings and research work, and provided guidance on risk prevention and resolution

Executive Body

The Company's executive body is headed by the President and is composed of Senior Vice Presidents, Vice Presidents, a CFO and Secretary to the Board, etc. They are appointed by and held accountable to the Board of Directors. They implement Board resolutions and organize the day-to-day production and business activities of the Company in accordance with the Company Law and the Articles of Association of PetroChina on the strength of authorization by the Board of Directors. The major business activities of the Company are detailed on our website.

MANAGEMENT SYSTEM

The Company stresses intensification, specialization and integration and has established a management system where responsibility is commensurate with authority and is scientifically sound, lean, efficient and vibrant, to strengthen the restrictions on and the supervision of the exercise of power. The Company aims at achieving clear-cut control objectives, effective integration of resources and optimal efficiency and effectiveness in order to promote the improvement of our environmental, social and corporate governance standard and to achieve sustainable growth.

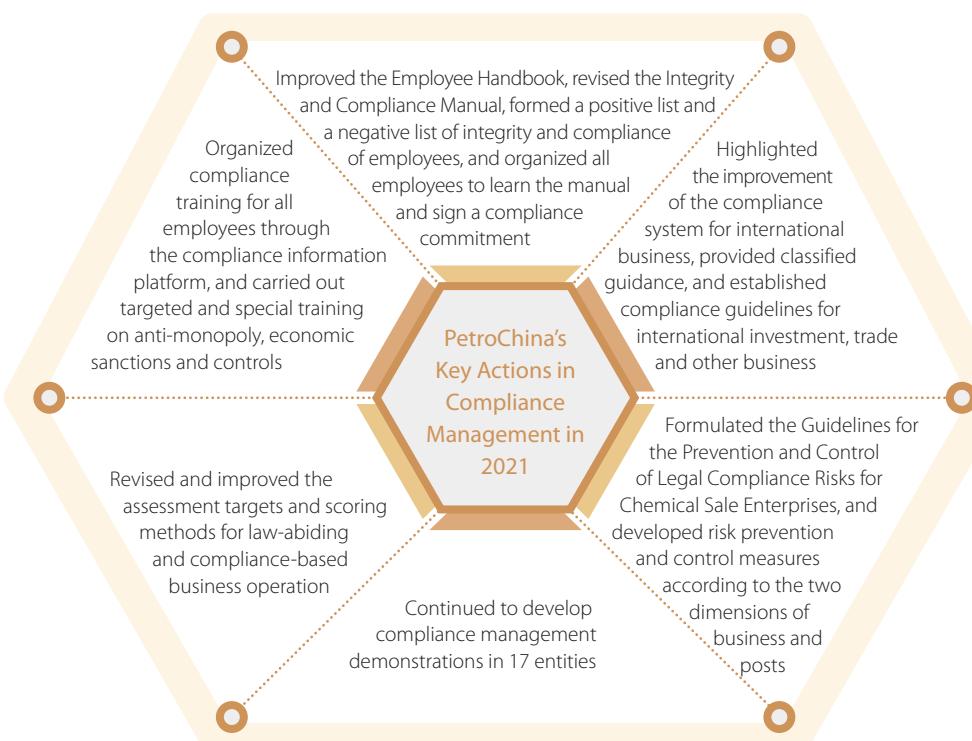


100%

Coverage rate of compliance training

Compliance System

The Company deems adherence to laws and compliance as one of the strategic and fundamental guarantee for corporate prosperity and high-quality development, which is included in the 14th Five-Year Plan, clarifies the concept of compliance with laws and regulations of the "supremacy of laws, compliance as the priority, honesty and good faith, and safeguarding rights according to the law", and sets out ever more rigorous compliance management system continuously. We have strictly implemented laws and regulations as well as government regulatory requirements, incorporated compliance requirements into systems and processes, and established compliance norms and operational guidelines that cover key business areas and matters. We also enhance on a continuous



basis our legal compliance demonstration and review system for major issues and major decisions and intensify the prevention and control measures against any risks associated with irregularities. We actively promoted the implementation of compliance management requirements and responsibilities, and continuously improved the Company's operation level in compliance with the law and regulations.

Rules and Regulations System

The Company continues to optimize and improve the rules and regulations system, and build a system of rules and regulations that is complete, scientific and standardized, and operates effectively. It has formed an overall system structure of three levels vertically, including the headquarters, specialized companies and regional enterprises, and four categories horizontally, including the corporate governance, functional management, professional management and production operations, covering the Company's production in all aspects of operation and management, which enables the system to be connected from top to bottom and connected with each other. In 2021, the Company strictly implemented the external regulatory requirements, met the requirements for the improvement of management, focused on optimizing and improving the rules and regulations in the fields of financial funds, engineering construction projects, material supply, bidding management, safety and environmental protection, quality and health, etc., and promoted the improvement of the system.

Internal Control and Risk Management System

The Company attaches great importance to the construction and supervision of internal control and risk management systems. The Board of Directors and Audit Committee regularly listen to reports on internal control work, organize the identification and assessment of major and significant risks, determine control measures and formulate solutions, and ensure that the Company's internal control system is complete and effective. In 2021, the Company continued to strengthen the foundation for the construction of an internal control system, optimized key areas and links, promoted the information construction of internal control, efficiently organized the management to conduct testing and rectifications, and further enhanced the ability to prevent and resolve major risks. The Company passed an external audit for the 16th consecutive years.

Anti-corruption Risk Prevention and Control System

The Company treats its business partners, customers, suppliers, contractors and counterparts with integrity, respect and equality, opposes any form of commercial bribery and requires our business partners to follow the requirements pertaining to the Company's anti-commercial bribery and anti-corruption policies. Managers and employees are not allowed to abuse their position in signing business contracts to carry out illegal activity on PetroChina's platform, or for the benefit of friends or family, or to obtain personal benefits.

We abide by the *Supervision Law of the People's Republic of China*, the *Anti-money Laundering Law of the People's Republic of China*, the *United Nations Convention against Corruption*, the laws and regulations of the country in which our business is conducted, and international conventions, and do not seek transaction opportunities by means in violation of business ethics or undermine the competitive advantage of other operators. We implement rules and regulations such as the *Anti-commercial Bribery Manual*, the *Integrity and Compliance Manual*, the *Employees Manual* and the *Corporate Culture Manual* to put forward requirements and proposals for business practices such as the prohibition of bribery, compliance with anti-monopoly and anti-money laundering regulations and anti-unfair competition. We strictly enforce various measures including the *Punishment Regulations for Management's Violations and Non-compliance*, *Compliance Management Measures*, *Self-Discipline Convention Applicable to Bidding and Tender Activities*, *Supplier Management Measures*, etc., to strictly regulate the behavior of employees and the Company.

We have zero tolerance for corruption and are committed to fight and eliminate any corruption. We promote the mechanism that ensures no one dares, can, or is willing to be corrupted, and continuously deepen the governance of corruption.



In 2021, 11 corruption lawsuits were closed, all of which were solved in accordance with the law and regulations.

Note: All employee-related cases

Main Measures Taken Against Corruption and Graft by the Company in 2021



Coverage rate of anti-corruption training (Board members included)

In terms of improving our anti-corruption system and procedures

- Strictly abided by the rules of procedure for the Shareholders' General Meeting, the Board of Directors and its Special Committees, the Supervisory Committee and the management, etc., with all matters such as major project arrangement and large-amount capital operations discussed collectively
- Strengthened the development of systems such as compliance management and prevention and control of integrity risks, constantly improved systems and mechanisms such as hierarchical and classified post management, hierarchical authorization and regular rotation and exchange, and strengthened daily supervision and constraints over the performance of duties and exercise of powers by bodies and managers and employees at all levels
- Smoothed reporting channels, formulated and implemented the *Implementation Opinions on Concurrent Investigation of Accepting and Offering Bribes*, accurately handled petition reports and clues related to problems, and carried out investigation and handling in accordance with regulations, disciplines and laws
- Established and improved the supervision and guarantee mechanism, and strengthened the protection of the legitimate rights and interests of whistle-blowers, accusers, witnesses, persons under investigation and handling, their relatives and other relevant personnel

- From time to time provided education and training for Directors and all employees in respect of the Supervision Law, the Administrative Discipline Law and other laws and regulations
- Improved employees' awareness of anti-corruption through preparing and releasing "Warning Cases" and making educational videos, printing and distributing notices, holding warning and education meetings, etc.
- Provided business partners with various forms of compliance and anti-commercial bribery training

In terms of our anti-bribery training

In terms of strengthening supervision and inspection and strictly controlling corruption risks

- Established in an overall manner the supervision operation mechanism, under which each performs his/her duties and shares information, strengthened the supervision over the management at all levels
- Strengthened the supervision of managers, especially the "top leaders" at all levels, and urged managers to use power in a fair, legal and clean manner
- Focused on key areas and positions such as those related to human resources, finance, materials and affairs, and seriously investigated and punished duty-related violations and crimes such as tunneling by taking advantage of powers and accepting bribes
- Strictly implemented a series of systems and regulations on procurement of materials, contract management, bidding and tender, use of funds and internal control of funds, strictly controlled discretion and constantly squeezed the space for rent-setting and rent-seeking

- Prudently selected suppliers, contractors, agents, distributors and joint venture partners, etc., implemented strict market entry requirements, real time online assessments and annual evaluation, and formed a dynamic mechanism for "entry and exit" and survival of the fittest
- Carried out due diligence on business partners, fully understood and continuously paid attention to and evaluated the integrity and compliance performance of business partners and actively prevented and resolved bribery and corruption risks

In terms of strengthening our due diligence and monitoring practices against third party intermediaries/agents



System for Protection of Whistle-blowers

We receive and accept reports through different methods including a telephone hotline and mail. Employees, third parties relating to the Company and the public may, under the condition of confidentiality, report any malpractices and duty-related violations or crimes in relation to anything related to the business of the Company. We carefully investigate the content of the whistle-blowing and give feedback in a timely manner.

We strictly implement the *Working Rules for Disciplinary Inspection and Supervision Organs Handling Reports and Accusations*, protect the information of whistle-blowers, and resolutely safeguard the individual rights and interests of whistle-blowers. We fully respect the will of the whistle-blowers, and we strictly prohibit using technical means to investigate the relevant information. For real-name whistle-blowing, we strictly implement the notification and feedback procedures, keep confidential the whistle-blowers' name, employer, address and other relevant information as well as the content of the whistle-blowing, and do not expose the whistle-blowers' identity information in the process of accepting whistle-blowing and investigating work. If retaliatory behavior is found, we will deal with it seriously in accordance with laws, regulations and discipline.

Whistle-blowing hotline: 8610-62094741

Upholding Business Ethics

The Company abides by business ethics and market rules, and adheres to the principle of honesty and credibility, equal consultation, mutual benefit and common development, and promotes transactions with high business integrity and transparency, in order to maintain fair and impartial competition in our business activities. We strictly comply with the *Anti-monopoly Law of the People's Republic of China*, the *Anti-unfair Competition Law of the People's Republic of China*, the *Supervision Law of the People's Republic of China*, and relevant laws and regulations of the country where we do business, as well as the *UN Guiding Principles on Business and Human Rights* and other applicable laws, regulations and international practices on anti-monopoly, anti-bribery, anti-unfair competition, anti-extortion and fraud, and human rights protection. We comply with trade restrictions, and never conduct, participate in or support any forms of money laundering.



Code of Professional Ethics Formulated by the Company

- *Code of Professional Ethics for Senior Management Personnel of PetroChina Company Limited*
- *Code of Professional Ethics for Employees of PetroChina Company Limited*

SUPPLY CHAIN MANAGEMENT

We insist on the principle of the supplier management concept of global sourcing, open cooperation, resource sharing, mutual benefit and win-win relationships, and consistent supplier reserve to achieve management from access to exit in full life cycle and closed loop. We formulate and constantly improve the *Regulations on the Management of Engineering Construction Projects*, the *Regulations on the Management of Material Supply*, the *Regulations on the Management of Tendering*, and other relevant regulations, as well as a series of supporting systems, measures and standards, so as to strengthen the compliance management of suppliers. We practice responsible procurement, fully identify and control the possible environmental and social risks in the supply chain, such as safety and health, labor rights, environmental protection and business ethics, and constantly improve the quality of suppliers.

Supplier access. The Company constantly strengthens the management of supplier access and optimizes the structure of supplier resources. We provide guidance to our suppliers on lawful and ethical business operation, and corporate social responsibility. We require suppliers to comply with the relevant policies and regulations on anti-commercial bribery and anti-corruption, conduct necessary due diligence on suppliers, and include compliance performance in the contract as a prerequisite for access. Suppliers and contractors shall comply with our unified quality, environmental, health and safety standards, and continue to improve the reliability and



In 2021, we organized random quality inspection of 912 batches of materials procured and handled nonconforming suppliers and products severely.

20,527

There are 20,527 materials suppliers, among which 19,885 registered in China and 642 registered in countries/regions other than China

2,209

2,209 Tier 1 manufacturers

98.01 %

98.01% of Tier 1 manufacturers have passed the quality management system certification (ISO9000)

93.16 %

93.16% of Tier 1 manufacturers have passed the environmental management system certification (ISO14000)

91.49 %

91.49% of Tier 1 manufacturers have passed occupational health and safety management system certification (ISO18000)

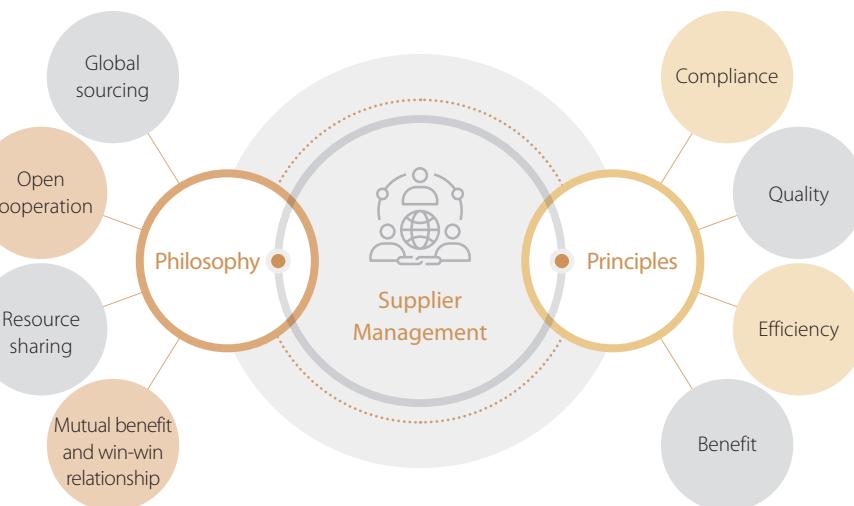
Note: The data only includes the suppliers involved in domestic business of the Company and does not include the international business.

environmental sustainability of products and services, and protect the human rights of employees to fulfill demand for personal development. We give priority to energy-saving and environmentally friendly products. We expressly state that our procurements give priority to energy-saving, environmentally friendly and low-carbon materials, encourage the use of environmentally friendly packaging, promote green procurement, and give extra bonus points in assessment for the same. We organize on-board training on business ethics, anti-corruption and QHSE for all new suppliers and contractors, publicize the Company's operation and management concepts, and require suppliers to sign a letter of commitment for access, of which the signing coverage shall reach 100%.

Supplier supervision. Under the principles of "compliance, quality, efficiency and benefit", the Company constantly strengthened the identification and prevention and control of environmental and social risks, and formed a routine management, supervision, and assessment mechanism for suppliers to promote the performance improvement of suppliers. In 2021, we improved the system for material suppliers, formed 46 business links for the whole-process management of material suppliers, and unified and regulated the internal control process of material suppliers. We tracked the performance of the contract with suppliers, conducted assessment, and regarded the daily performance of suppliers as the important contents and basis thereof. In 2021, we completed 300,200 orders, with a dynamic quantitative evaluation rate of 100%.

Supplier exit management. The Company formulated the administrative measures for dishonest behaviors of bidders, and established a special column on the bidding and tender website of PetroChina for regular announcements on dishonest behaviors. For issues related to the quality, compliance, integrity and corruption of our suppliers, we give the supplier four types of exit treatment from suspension of product trading right, suspension of trading right of supplier, to cancellation of product access or cancellation of supplier access depending on seriousness.

Supplier communication. The Company attaches great importance to interconnection and intercommunication with its suppliers, and resorts to various means to understand their concerns and claims via a well-established mechanism for constant communication. In 2021, we continued to strengthen strategic procurement relationship with 18 domestic and international suppliers, including Baosteel and Siemens, expanded the cooperation areas and levels with suppliers, carried out active exchanges in various aspects such as green environmental protection and sustainable development, and opened more avenues for potential cooperation. We paid attention to the health, safety, environmental protection and compliance operations of suppliers, communicated with suppliers in a timely manner, and enhanced the synergy level of the supply chain. For details of the Company's Supply Chain Safety Management Process, please see the Chapter 3, Section 2 of this report.



COMMUNICATING AND INTERACTING WITH STAKEHOLDERS

Stakeholders' trust and support is fundamental to the building of a sustainable business. We worked hard to enhance the quality and profitability of our development to maximize returns to our shareholders and value for our stakeholders, and to achieve our common goal of harmonious development and mutually beneficial maximization.



Conducted 47 interactions with ESG rating agencies and institutional investors

 Actively performing information disclosure obligations	<ul style="list-style-type: none"> • Improved management systems for the disclosure of key events • Built a multi-level and multi-form mechanism to communicate with stakeholders through periodic reports, results performance announcements, extraordinary reports, media communications, interviews and visits, and interactive communication
 Stakeholder consultation	<ul style="list-style-type: none"> • Responded to investors' enquiries and suggestions through general meetings, investor hotline, the Company's website, new media platforms, teleconferences, email and fax • Responded to criticism and opinions from all walks of life and accept supervision through the Open to Public Day, Service Station Open Day, press meetings, customer symposiums, customer visits, questionnaires, and suggestion boxes, etc. • Communicated with employees through workers' congress, trade unions at all levels, various training activities, feedback mailbox and other channels so as to understand employees' appeals • Held online conferences, video conferences, and teleconferences to communicate with investors, media, and third-party organizations • Had discussions with ESG investment and rating organizations on the Company's ESG issues
 Industry participation	<ul style="list-style-type: none"> • The management actively attended various high-level conferences and forums and delivered speeches, and shared industry experience and professional insights, to improve the industry media and the public's understanding of the Company

Case Study

"PetroChina Open Day"

From June 2021 to July 2021, PetroChina organized nearly a hundred affiliated entities to attend the fourth "PetroChina Open Day" and invited around 10,000 officials from local governments, media reporters, customer representatives, residents from surrounding communities and students to visit PetroChina and have an up-close view of the Company. Through on-site experience, communication and other activities, we introduced our scientific and technological innovations, green low-carbon achievements and returning social initiatives to the public, demonstrating the innovative, open, green and sharing PetroChina in an all-round and in-depth manner.



Stakeholder	Expectations	Communication Approach
 Government	<ul style="list-style-type: none"> ● Stable energy supply ● Harmonious economic and social development ● Leading role of brand and technology ● Tax payment according to law 	<ul style="list-style-type: none"> ● Offer company experience ● Pay attention to public concerns and improve corporate behavior ● Launch strategic cooperation with relevant departments ● Attend seminars and forums
 Shareholders	<ul style="list-style-type: none"> ● Standardized corporate governance ● Stable business growth ● Sustainable development 	<ul style="list-style-type: none"> ● Fulfill obligations on statutory information disclosure ● Organize non-deal roadshows and other activities ● Issue reports and announce operating results on a regular basis
 Employees	<ul style="list-style-type: none"> ● Basic rights guaranteed ● Career development ● Growth in salary, compensation and benefits 	<ul style="list-style-type: none"> ● Elect employee representative to join the Supervisory Committee ● Establish labor unions at all levels ● Convene employee representatives meetings and make reports ● Organize employee training programs ● Set up a complaints and feedback system
 Consumers	<ul style="list-style-type: none"> ● Provide safe, environmentally friendly, high-quality products ● Constantly improve the quality of services ● Operate with integrity 	<ul style="list-style-type: none"> ● Carry out activities to protect consumers' interests ● Publicize commitment to quality services ● Provide hotline services ● Conduct customer satisfaction surveys
 Business partners	<ul style="list-style-type: none"> ● Fair and transparent procurement ● Win-win cooperation 	<ul style="list-style-type: none"> ● Hold tendering meetings ● Hold large cross-border business negotiations and technical exchange meetings ● Use the electronic trading platform ● Engage in sharing managerial practices and technical standards ● Conduct contract negotiations and routine meetings ● Hold training for business partners ● Conduct daily operation meetings
 NGOs	<ul style="list-style-type: none"> ● Improve management on sustainable development ● Perform social responsibilities such as poverty alleviation and environmental protection 	<ul style="list-style-type: none"> ● Share the Company's experiences ● Participate in NGO activities ● Promote international communication
 Communities	<ul style="list-style-type: none"> ● Promote employment growth ● Protect community environment ● Promote economic development in the community ● Respect cultural traditions of the community 	<ul style="list-style-type: none"> ● Hold dialogues with local communities ● Organize community visits ● Conduct social and environmental impact assessments of projects ● Promote knowledge sharing and education programs ● Increase information disclosure

Key Actions

- Behave legally and ethically, and abide by the applicable laws and regulations in the jurisdictions where we operate

- Stabilize oil and gas supplies

- Participate in discussions organized by the government on climate change, energy conservation and emission reduction

- Promote local employment and cultivate local talents

- Pay taxes according to law

- Operate in a responsible manner to maintain a good reputation

- Convene Shareholders' General Meetings

- Ensure equal treatment of shareholders, and value the opinions of both small and medium-sized shareholders, and provide feedback to the Company's management in a timely manner

- Strengthen management over investor relations and communicate with small and medium-size investors and shareholders in various ways

- Enhance employee training and skills development

- Organize vocational skill contests

- Conduct occupational health checks

- Promote local employment in overseas operations

- Provide a career development platform for employees

- Protect employee safety in overseas operations

- Enhance quality management

- Improve service quality at service stations

- Increase the supply of clean fuel, such as natural gas, high-standard gasoline and diesel

- Prioritize the supply of oil for disaster relief and agricultural production actively

- Organize PetroChina Open Day activity

- Strengthen centralized procurement management to provide suppliers with equal competition opportunities

- Enhance communication and coordination with contractors and strengthen the QHSE management of contractors by creating a safe and healthy working environment

- Improve security measures and the emergency response network

- Open the investment field

- Hold high-level forums

- Submit an annual Communication on Progress (COP) to the UN Global Compact

- Pay attention to external concerns through various forms of communication

- Play an active role in participating in and supporting international environment and standardization initiatives

- Participate in a wide range of forums and conferences

- Participate in disaster relief and reconstruction, and provide financial support for education and poverty alleviation

- Support and drive the economic and social development of areas where businesses are located with large projects construction

- Supply clean energy such as natural gas, to remote regions

- Promote employees to provide voluntary services

- Expand local procurement

- Provide job opportunities and training for the local community

DIGITIZATION AND INTELLECTUALIZATION

At present, a new round of scientific and technological revolution and industrial transformation is developing in depth, and the global energy industry is accelerating towards a digital and intelligent era. Facing the new situation and new trends of accelerating the energy revolution and energy transformation, PetroChina regards digital transformation as a major strategic measure to modernize its corporate governance system and governance capabilities, and vigorously promotes digital, networked and intelligent development. The use of digital technologies represented by cloud computing, the Internet of Things, 5G, big data, artificial intelligence, etc., drives business model reconstruction, management model transformation, business model innovation and core capability improvement, realizing the industrial transformation and upgrade and the value growth.

Digital Transformation and Intelligent Development

PetroChina makes efforts in such key orientations as intelligent technology and product innovation, integrates digital technology into the products, services and processes of the oil and gas industry chain, reconstructs the value system, adjusts production relations, and transforms from a capacity-driven development model to an innovation-driven development model. PetroChina will focus on forming new industries, new business forms, and new models that conform to the characteristics of "Digital PetroChina", based on new elements, new driving forces and new capabilities.

Digital Transformation Framework

Adhering to the general principles of "value orientation, strategic leadership, innovation drive and platform support", PetroChina implements digital transformation in accordance with the three main lines of business development, management reform and technology empowerment and, through the construction of industrial Internet technology systems and an application ecosystem that takes cloud platforms as its core, creates a digital transformation strategic framework.



Digital Transformation and Intelligent Development

	Category	Target	Progress
Business Development	Collaborative optimization of oil and gas business chains	With the goal of maximizing the overall benefits of the upstream and downstream business chains and the value of shareholders, carrying out optimal allocation of resources, overall planning of operating results and linkage of emergency response	<ul style="list-style-type: none"> Completed and put into use the PetroChina Intelligent Operation Center to promote the unified scheduling, optimized operation and process monitoring of production operations, build early warning models, thus improving emergency response capabilities Completed and put into use an optimization system for oil and gas value chains, which takes efficiency as the center and the market as the orientation, makes overall arrangements for production, transportation, sales, storage, trade and other operations, carries out integrated optimization and refined optimization of sub-operations, and bring the comprehensive integration of PetroChina into full play
	Transformation and upgrade of main business	Integrating the Internet, big data, artificial intelligence and other technologies with the Company's business, and focusing on the construction of smart oil and gas fields, smart refining and sales in order to help the industrial transformation and upgrade	<ul style="list-style-type: none"> Smart oil and gas fields: Making full use of digital and intelligent technical means, fully integrate equipment, processes, data and other elements of oil and gas field, and continuing to promote the transformation of the organization and operation model of an "oil company" Smart refining: Continuing to carry out the capability construction of refining and chemical enterprises in terms of perception, analysis and optimization, forecasting and collaboration, building up a new intelligent refining and chemical model featuring efficient supply chain, refined operation, safe process control and interconnected operation and maintenance Smart sales: Continuing to build the global membership loyalty management system and the end-to-end digital supply chain system, promoting the digital agile operation model, and accelerating the platform-based and ecological development of the sales business
Management Reform		Target	Progress
		Promoting the improvement of decision support, operation management, collaborative office, collaborative R&D and shared services through digitalization, and pushing forward the modernization and transformation of the corporate governance system and governance capabilities	<ul style="list-style-type: none"> The big data analysis platform project has been launched, carrying out the big data demonstration application in the three fields, namely management cockpit, financial supervision and auditing Financial, human resources and other shared service platforms continue to be deeply promoted and applied to promote the centralized, intensive and standardized processing of homogeneous businesses and facilitate the high-quality transformation of management Building an enterprise procurement e-commerce platform which integrates operation, management and supervision, and improving the efficiency of material procurement management and control capabilities and the scientific nature of decision-making
Technology Empowerment		Creating a first-class industrial Internet system in the energy and chemical fields to empower digital transformation with technologies	<ul style="list-style-type: none"> With PetroChina's four major data centers as the core, continuously expanding and improving the application of cloud technology platforms Carrying out the overall design of the data governance system and starting the construction of projects such as the data governance system and the data lake system



ENERGY AND THE ENVIRONMENT

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The UN
Sustainable
Development
Goals



6 CLEAN WATER AND SANITATION	7 AFFORDABLE AND CLEAN ENERGY	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	11 SUSTAINABLE CITIES AND COMMUNITIES

12 RESPONSIBLE CONSUMPTION AND PRODUCTION	13 CLIMATE ACTION	14 LIFE BELOW WATER	15 LIFE ON LAND

The destiny of humankind and nature is intertwined, thus only by observing the law of nature can we avoid pitfalls in the development and utilization of natural resources. We fully incorporate care for people's lives and environmental protection into our corporate mission. Along with the global trend of energy transition, we make great efforts to develop clean, low-carbon, safe and efficient energy, continuously upgrade the management and control of carbon emissions, and endeavor to build PetroChina into a resource-conserving, environmentally friendly and safety-conscious business.

ENERGY TRANSITION

With the acceleration of the low-carbon transition of global energy, the pressure on the green transition of traditional fossil energy is becoming increasingly prominent. The Chinese government has set the target of achieving carbon emission peak by 2030 and carbon neutrality by 2060, so as to promote the establishment of an energy supply system focusing on clean and low-carbon energy. As a clean, low-carbon, safe and efficient energy, natural gas will play an important role as transitional energy in the global energy transition, and is the main energy for China to achieve energy security and “carbon peak and carbon neutrality” targets, which has broad development prospects.

PetroChina's Green and Low-carbon Transition Path

Clean Energy Substitution

2021-2025

- The Company endeavors to achieve carbon emission peak by around 2025

Strategic Succession

2026-2035

- The Company endeavors to achieve supply of green and zero-carbon energy exceeding the self-consumption of fossil energy by 2035
- See the output capacity of the new energies and new businesses accounting for one-third of the total, as that of oil business and gas business

Green Transition

2036-2050

- The Company endeavors to achieve “near-zero” emissions by around 2050
- See the output capacity of the new energies and new businesses accounting for half of the total

Aim



Measure

- Intensify the development and utilization of new energy such as geothermal energy, solar energy, wind energy and hydrogen energy, to promote clean energy substitution for production and coordinated development of new energy, oil and gas industry chain
- Actively promote the integrated development of natural gas power generation and new energy power generation to provide society with clean energy products
- Actively deploy technical research and demonstration in the fields of resource substitution, such as hydrogen energy industry chain and the clean transition of fossil fuels; strive to implement CCUS measures and actively explore the clean development and utilization of fossil fuels at lower cost

- Promote coordinated development of new energies and new businesses, and oil & gas business, and facilitate the formation of strategic succession pattern for oil and gas resources in new business sectors, such as clean power, hydrogen energy industry chain, clean transition and utilization of fossil fuels
- Promote the mass implementation of CCUS and carbon sequestration projects to continuously reduce carbon emissions

- Continue to increase the scale of new energy development and utilization and strategic succession of oil and gas resources; complete the five energy platforms of “oil, gas, geothermal, electricity and hydrogen”

Opportunities and Challenges

Global demand for primary energy will continue to grow steadily. Under the background of cooperative emission reduction, the global population is growing consistently, which is expected to reach nearly 9.8 billion by 2050. With continuous development of the global economy and rising of emerging economies, demand for energy is increasing steadily driven by economy and population. Cooperative emission reduction has accelerated the improvement of energy efficiency and slowed down the growth of primary energy consumption.

Global response to climate change promotes a faster reform in energy. Response to climate change has become an important task of global energy development, and the trend of clean and



low-carbon energy transition is becoming increasingly strong. The 26th UN Climate Change Conference (COP26) reached a number of important consensuses on responding to climate change, which will further accelerate the transition of fossil energy.

China's demand for primary energy will reach a peak plateau after 2030. In order to achieve the goal of carbon neutrality, China's energy system will accelerate its transformation, and total primary energy is required to reach the peak plateau after 2030. China's renewable energy will usher in a great development, the proportion of non-fossil energy in primary energy will increase rapidly, and the proportion and consumption of oil and gas will keep decreasing.

China's low-carbon energy system construction will continue to be promoted. As the fundamental role of oil and gas in China's energy system remains prominent and the importance of natural gas continues to increase, the status of the main energy source will remain unchanged until 2040. The building-up of a new development pattern has driven national economic growth to the stage of high-quality development, and there is still room for the increased energy demand. The technological revolution represented by digitalization and intelligence empowers traditional industries, and energy transition has created more opportunities for the integrated development of traditional energy and new energy.

Strategic Response

PetroChina has conducted in-depth research on energy development strategies and paths under the goal of achieving carbon emission peak and carbon neutrality, incorporated "green and low-carbon" into one of the Company's five strategies, and included new energy business into the development of its principal business. Taking into account the market demand and our own comprehensive advantages, we have compiled new energies and new businesses development plans setting forth clearly the path for green and low-carbon transition development oriented by strict commitment to achieve carbon emission peak and carbon neutrality, vigorously promoted the integrated development of geothermal, wind, solar, gas and electricity power, pushed forward the development of the whole industrial chain of generation, transportation, storage and use of hydrogen energy and strengthened the industrial layout of CCS/CCUS, so as to facilitate PetroChina's transition into a comprehensive energy company offering "oil, gas, geothermal, electricity and hydrogen".

In the process of green and low-carbon transition, we have adhered to the principle of stable development, maintained the stability of oil and gas production, kept the Company's revenue stable, and continuously increased the proportion of natural gas and chemical products. In addition, by making full use of the green and low-carbon energy nature of natural gas, we gave full play to the advantage of rich resources of natural gas, vigorously implemented the policy of "stabilizing oil production and increasing gas production" and accelerated the rapid growth of natural gas output. By 2025, the proportion of our natural gas output will be increased to about 55%.

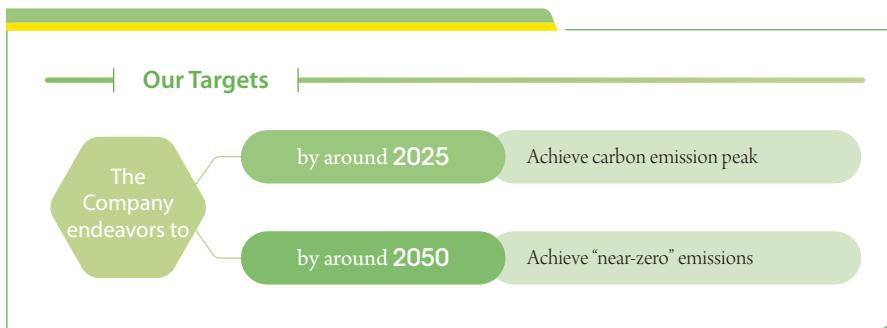
In the development of clean energy, we have made full use of rich resources such as wind, gas and geothermal energy in the oil and gas mining rights areas and the surrounding areas, to vigorously develop the new energy business. We spare no effort to reach the carbon emission peak around 2025, to see the output capacity of the new energies and new businesses accounting for one-third of the total by 2035, as that of oil business and gas business, and to reach "near-zero" emission and the output capacity of the new energies and new businesses accounting for half of the total by 2050.

In the process of carbon reduction and displacement, we have vigorously implemented measures of energy conservation and emission reduction, and made effort to replace energy used in the production with clean energy to reduce fossil energy consumption and carbon dioxide emissions at source, so as to achieve carbon reduction. We endeavored to perform well in the layout of industrialization development, covering CCS/CCUS, forestry carbon sequestration and utilization of carbon dioxide in chemical production, to meet our own carbon displacement needs and at the same time actively assisted the whole of society to achieve the "dual carbon" goals.



RESPONSE TO CLIMATE CHANGE

We agree with the temperature goal set out in the *Paris Agreement* to hold the global average temperature increase, and implement the “carbon emission peak and carbon neutrality” goal proposed by the Chinese government. We strive to be the supplier of clean energy and the promoter of low-carbon transition of society, and share the practices of greenhouse gas control with industry peers and all sectors of society.



Management of Climate-related Risks

The Board attaches great importance to the climate-change-related risks and opportunities. We pay close attention to policies, laws, technology and market changes related to the global and Chinese low-carbon economic transition, and have continuously conducted thematic studies for many years to identify and assess the real challenges and potential impacts of climate change on the Company, and incorporated them into our strategic planning and management practices. At the Company's management level, we have continued to strengthen climate-related risk management, carbon emission management and carbon risk management, improve carbon emission control system, develop low-carbon industries, improve clean energy supply, and actively participate in cooperation among global oil and gas industry in tackling climate change.

Establishment of Green Enterprise

The Company has formulated the green enterprise certification standards for oil and gas fields, refining and oil products marketing, which help us accelerate the transition of green and low-carbon development in three aspects including green products and services, green production and process, green culture and responsibility. In 2021, we completed the certification of the first batch of eight green enterprises.



Greenhouse Gas Reduction Programs and Initiatives Supported and Initiated by the Company:

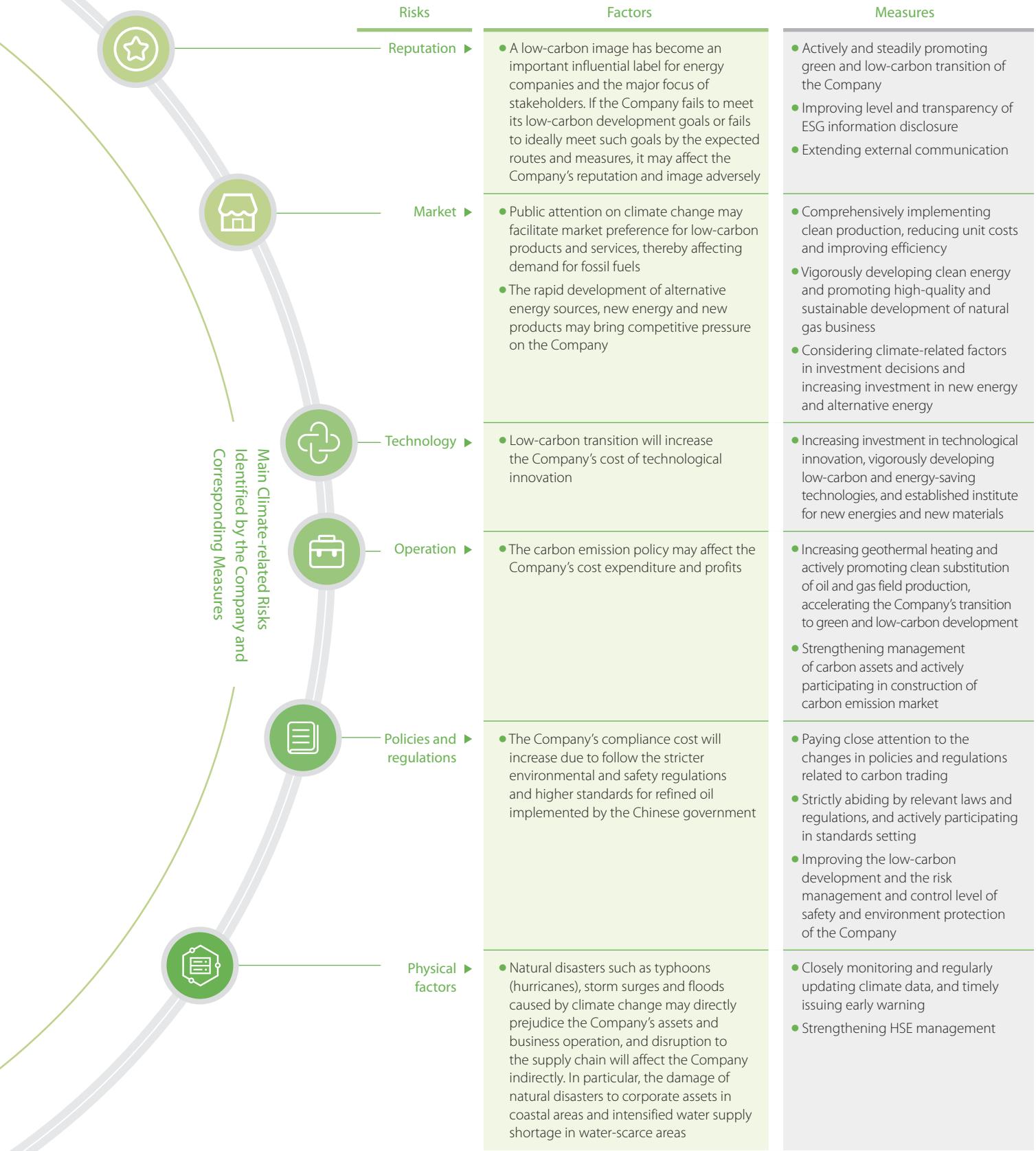
- *Paris Agreement*
- *China's National Program for Addressing Climate Change*
- *China's Policies and Actions for Addressing Climate Change*
- China Technology Strategic Alliance for Carbon Dioxide Capture, Utilization and Storage (CTSA-CCUS)
- Oil & Gas Climate Initiative (OGCI)
- *Carbon Emission Peak and Carbon Neutrality Declaration of China's Petroleum and Chemical Industry*
- Alliance of Chinese Oil and Gas Enterprises for Promoting Methane Emission Control

Corporate Climate Governance Process

Organization	Responsibilities
Board of Directors	<ul style="list-style-type: none"> Formulating and reviewing the Company's green and low-carbon development strategy, major action plans, risk management policies, annual budgets, as well as supervising the Company's achievement of carbon emission reduction goals
Management	<ul style="list-style-type: none"> Reviewing reports and recommendations submitted by functional management departments and submitting strategy, planning and management opinions and suggestions to the Board of Directors Supervising and implementing the Company's green and low-carbon development strategy, path and action plans proposed by the Board of Directors
Strategic Planning and Low Carbon Management Department	<ul style="list-style-type: none"> Organizing and carrying out strategic study on green and low-carbon development policies and strategies, analyzing climate risks and opportunities, as well as providing opinions and suggestions to the Company's management based on the Company's low-carbon management status Implementing the Company's management goals and action plan related to low-carbon management
Branches (Subsidiaries)	<ul style="list-style-type: none"> Implementing the low-carbon development plan, tracking and monitoring the achievement of the objectives of the entity in accordance with the overall deployment and target decomposition of the Company

In 2021, the governance actions on climate risks adopted by the Board of Directors and Management include:

- 1 Conducted a number of discussions and reports on climate and energy transition issues
- 2 Conducted research to determine the mission statement, timeline and roadmap for carbon emission peak and carbon neutrality
- 3 Incorporated green and low-carbon development strategy into the training courses for managers at all levels
- 4 Incorporated total emission of the energy, greenhouse gas and the intensity control target into the annual performance appraisal
- 5 Promulgated the *Guiding Opinions on the Establishment of Green Enterprises* to carry out the action on establishment of green enterprises
- 6 Implemented business structure reform and adjustment, placed the new energy business on the same level of importance as the oil and gas business, established a new energy division, and a new materials division
- 7 Set up a dedicated department in each oil and gas field enterprise, to be responsible for organizing and implementing work related to new energy and new industry, and added performance assessment indicators in relation to new energy





In 2021, the total greenhouse gas emissions of the Company declined by 4.7% in comparison with 2020.

Clean Energy Substitution in Production Process

57,500 kW

Addition of installed capacity of wind and solar power for clean energy substitution in oil and gas fields in 2021

183.4%

Year-on-year increase of installed capacity of wind and solar power

17,900 kW

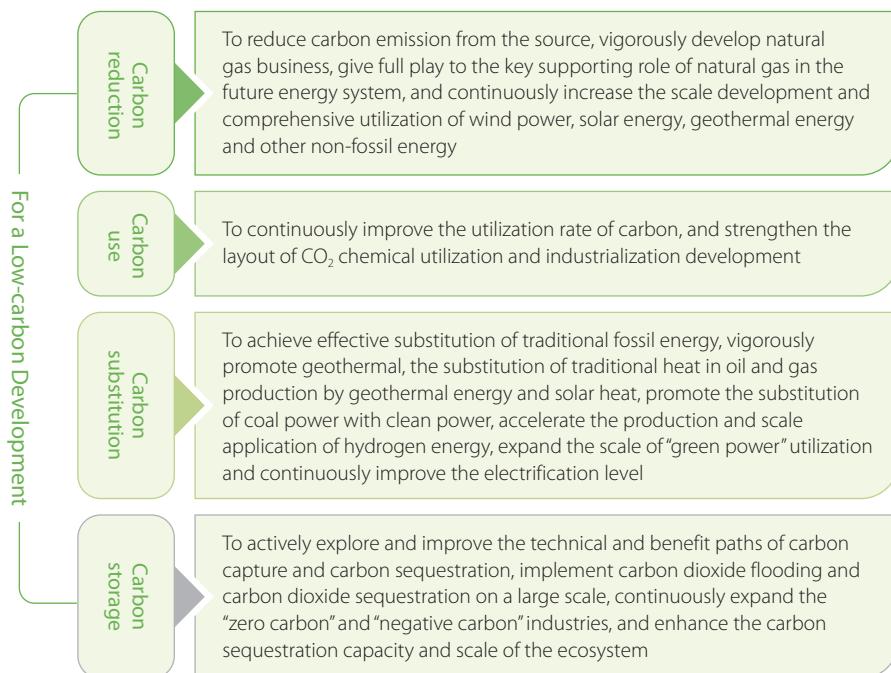
Addition of installed capacity of waste heat power for clean energy substitution in oil and gas fields in 2021

24.5%

Year-on-year increase of installed capacity of waste heat power

Curbing Carbon Emissions

PetroChina made continuous efforts to strengthen carbon emission management and carbon risk handling, and improved the carbon emission control system of the Company. We paid great attention to carbon emissions and carbon footprints in production and operation, and endeavored to reduce the consumption of fossil energy and reduced the energy consumption intensity. We actively participated in the construction of the carbon market and carried out in-depth cooperation with the oil and gas industry globally to address climate change. We also strengthened methane emission reduction management and control, formulated the Action Plan for Methane Emissions Control to plan for methane emission targets and actively participated in the activities of the Alliance of Chinese Oil and Gas Enterprises for Promoting Methane Emission Control to promote the oil and gas industry to accelerate the green and low-carbon transition.

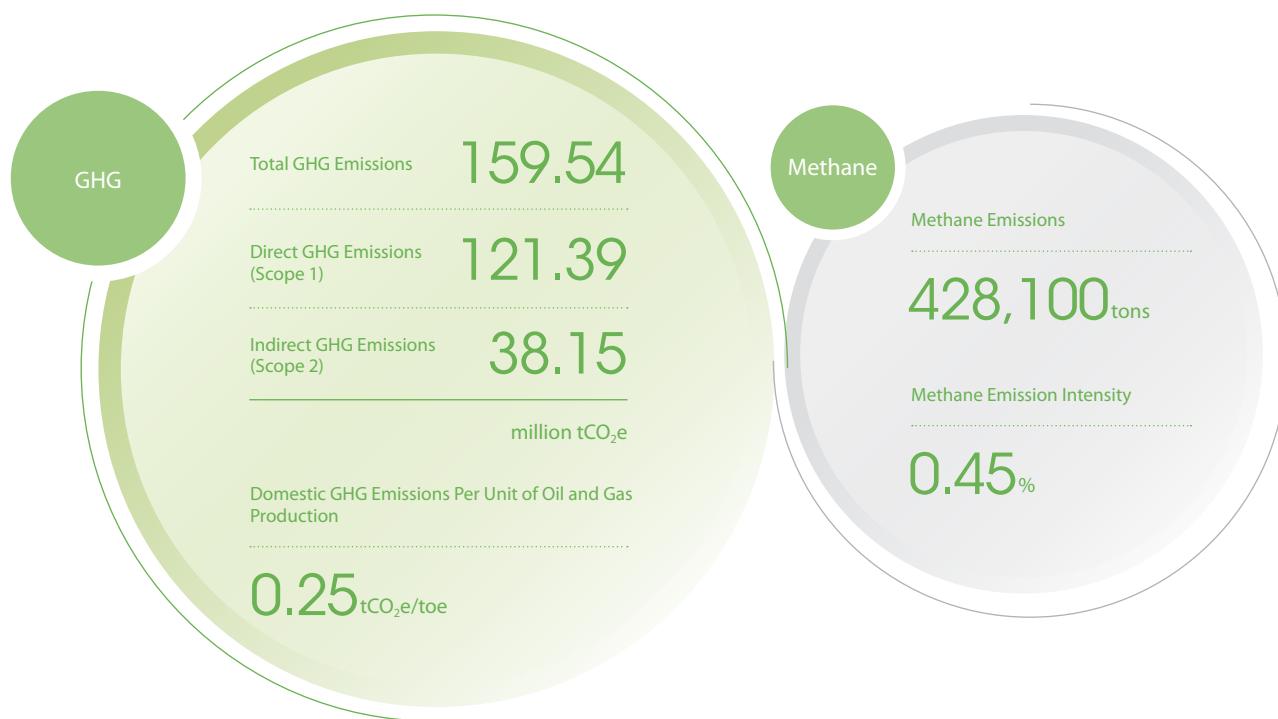


Strengthening Carbon Emission Management

The Company has implemented a dual control system for total carbon emission and intensity, decomposed the total amount and intensity targets to each branch (subsidiary), and included energy saving and emission reduction, pollution reduction and carbon reduction into the contracts on the performance of the Company's management and the main officers of each subsidiary and branch. We have set up the "Greenhouse Gas Verification and Audit Center" to comprehensively strengthen the verification and audit of greenhouse gas emissions. We have also actively conducted research on methane & volatile organic compounds (VOCs) cooperative monitoring technology and greenhouse gas recycling in oil and gas fields.

Controlling Methane Emission

In 2021, the Company continued to increase the efforts for vent gas recycling. Through technical innovation, equipment revamp, management improvement and other measures, the Company has achieved the reduction of vent gas emissions in oil and gas exploration, oil and gas exploitation, natural gas processing, oil and gas storage and transportation, etc., in particular, the contributions



of the vent gas emission reduction in the oil and gas exploration process and in oil and gas exploitation accounted for more than 60% and 20% respectively in the total vent gas emission reduction, which effectively reduced the methane emission intensity.

Case Study Recycling and Utilization of Associated Gas

The Company mainly focuses on the treatment of post-processing, supplemented by CNG/LNG recycle methods, and strengthens the recycle of natural gas during well exploration, oil testing and production testing in oil fields.

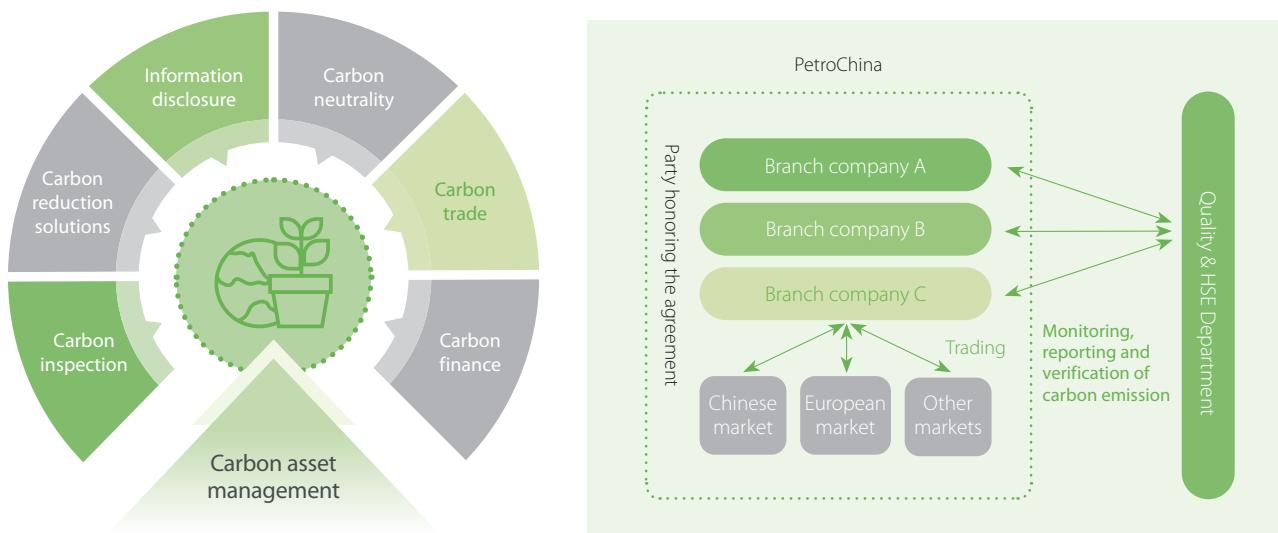
- Zhejiang Oilfield achieved good social benefits by using some natural gas for power generation and local residential use etc.
- North China Oilfield adopted the pipeline network recycling method with 114 million cubic meters of natural gas being recovered in 2021, representing a recovery rate of 99%.

Carbon Asset Management

We continued to enhance carbon trading performance and carbon asset management. By establishing a management system for carbon emission rights trading, we regulated the participation in carbon emission right trading. We set up a dedicated carbon trading team, and have initially formulated a series of management regulations and policies, such as Guidance on Strengthening Greenhouse Gas Control, Measures for Management of Greenhouse Gas Information, Measures for Management of Carbon Trading, and Measures for Management of Carbon Industry Development.

As one of the first ten companies to participate in the carbon market trading in China, we are an active player in the construction of the national carbon market. We encouraged our subsidiaries and branches and affiliated entities to develop national voluntary emission reduction projects and strengthen the carbon quota performance management of our subsidiaries and branches. In 2021, all of our subsidiaries and branches that were on the list of the national carbon emissions trading market fulfilled their contracts.

PetroChina's Carbon Asset Management System



Carrying out Forestry Carbon Sinks

The Company supported and actively participated in the construction of China's carbon sink forest, and continuously conducted afforestation activities in the operation area, staff living area and surrounding communities. In 2021, the Company participated in voluntary afforestation by 403,200 person times, and planted 1,937,900 trees; the total area of existing green field reached 289.4 million square meters; and we built 510 mu of Ma'anshan Carbon Neutral Forest in Daqing Oilfield. We supported local landscaping by means of direct participation and funding, with a green area of 791.32 hectares and planting 1,631,800 trees.

Case Study

PetroChina Actively Participates in OGCI Activities to Promote Low-Carbon Transition in the Industry

As the sole member of OGCI in China, China National Petroleum Corporation (CNPC), PetroChina's parent company, has been advocating and practicing the sustainable and green development model featuring low energy consumption, low pollution and low emission since its membership in 2015. It is deeply involved in international cooperation to address climate change, and works together with other members to contribute to the fight against climate change and the low-carbon transition in the oil & gas industry. In 2021, PetroChina took an active part in CNPC's emission reduction cooperation under the OGCI framework.

Co-signing and Promulgating the OGCI Strategic Reform Principles

The Chairman of the Company Dai Houliang and the chairmen/CEOs of other member companies, jointly signed the OGCI Strategic Reform Principles, committing to achieve carbon neutrality from the business activities under their respective jurisdiction within the time frame stipulated in the Paris Agreement, and to accelerate the achievement of the temperature control goals. OGCI updated the carbon and methane emission intensity targets for oil and gas business in 2025, and proposed that the carbon emission intensity of member companies' oil and gas businesses shall be reduced from 23 kg CO₂ equivalent per barrel oil equivalent in 2017 to 17 kg CO₂ equivalent per barrel oil equivalent, and the average methane emission intensity will be controlled below 0.2% by 2025. The Company strengthened the technological cooperation throughout the industry chain in such fields as energy efficiency enhancement, low-carbon hydrogen energy, low-carbon fuels and CCS/CCUS.

Promote the Technology Research and Commercial Application of OGCI CCUS Projects

We fully participated in the research on carbon capture, utilization and storage (CCUS), published OGCI China CCUS Commercialization White Paper (English

Case Study**Developing CCS/CCUS Technology Vigorously for Low-Carbon Development**

The Company actively promoted the industrialization of CCS/CCUS, conducted pilot experiment, strengthened the technology research for the whole industry chain, and strived to increase the carbon capture and utilization levels, to assist the achievement of the “dual carbon” goals.

Jilin Oilfield CCUS-EOR Whole Process Demonstration Project

Jilin Oilfield continued to improve the series of carbon dioxide capture and sequestration and oil recovery enhancement technologies (CCUS-EOR), popularized mature models, finalized supporting equipment, and established the first CCUS-EOR full-process demonstration project in China. The project includes five carbon dioxide flooding and sequestration demonstration areas, covering 11.83 million tons of geological reserves, 88 gas injection well groups, with a cumulative gas injection of more than 2 million tons, an annual production capacity of 100,000 tons, and an annual sequestration capacity of 350,000 tons. It built the first low-cost carbon dioxide recycling injection station in China, with a daily reinjection capacity of 200,000 cubic meters, and all the associated gas produced being reinjected, thus achieving “zero emission” of carbon dioxide.

**Changqing Oilfield Spares No Efforts to Build a CCS/CCUS Demonstration Project**

Changqing Oilfield combined carbon dioxide flooding with carbon sequestration, carbon sink forest and the construction of new energy demonstration areas. Since the commencement of national CCS/CCUS demonstration project in Yellow-3 Area in Dingbian, Shaanxi Province in 2016, a 100,000 ton comprehensive injection test station has been built, which has a complete technical model of carbon dioxide capture, flooding and sequestration.

Version), and participated in the compilation of the Catalogue of Carbon Dioxide Storage Resources. We developed an information platform for OGCI CCUS industry promotion center, and re-evaluated the CCUS ambition of 12 member companies. We cooperated with relevant international organizations in respect of carbon credit, carbon monitoring and carbon storage, studied the feasibility of incorporating CCUS into the international carbon market, and endeavored to promote the commercial application of CCUS.

Commit to Low Carbon Emission Reduction in Transportation

We worked with Saudi Aramco to jointly lead the research on emission reduction technologies in key transport areas, organized the OGCI international symposium on low-carbon technologies in transport, and jointly explored emission reduction potential and innovative technology development in transport areas. We conducted economic and technical evaluation of hydrogen storage and transportation and evaluation of the hydrogen energy development potential of major economies in the world, and formulated the development roadmap of hydrogen energy, methanol, electricity and other low-carbon/zero-carbon in transport areas in energy and oil and gas industries. We studied the technical and economic feasibility of CCUS application in marine transportation.

Enhancing Industry Exchange and Cooperation

The Company's domestic and overseas counterparts and professional organizations conduct in-depth exchanges on low-carbon transition and carbon emission reduction. We jointly published the 2021 OGCI annual report.

DEVELOPING CLEAN ENERGY

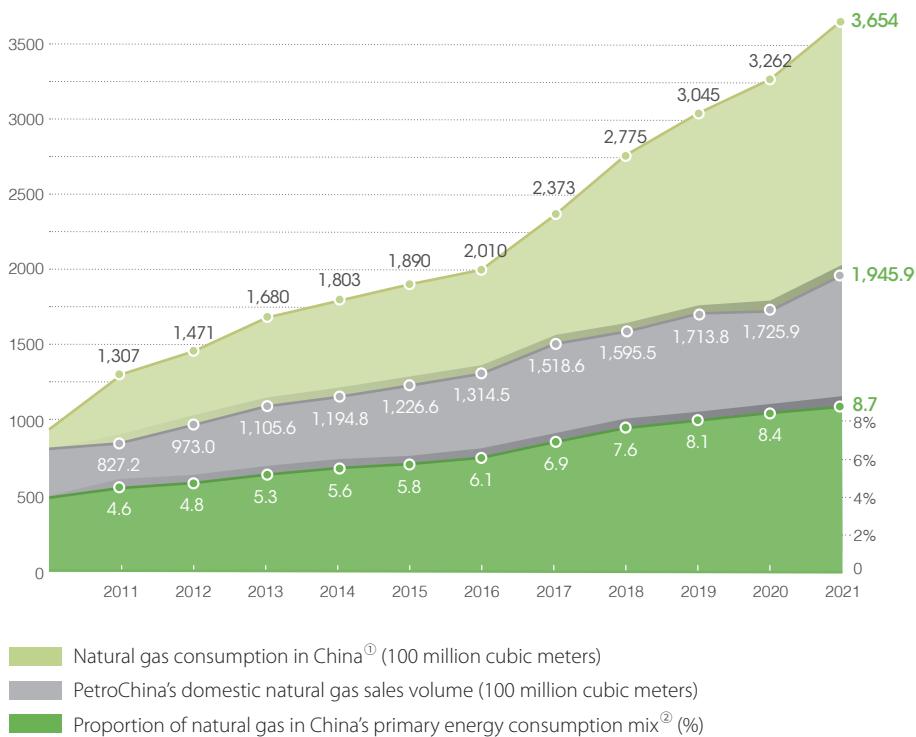
We focus on the sustainable supply of clean energy in the future, vigorously develop natural gas, and increase business layout of new energies and new materials to meet the needs of the society for clean and high-quality energy and products.

Natural Gas

Natural gas is the Company's strategic, growing and value-added business, which plays a key supporting role in the process of energy transition, and it is also a bridge for the transition from fossil energy to clean energy. The vigorous development and utilization of natural gas is a basic project that runs through the process of green and low-carbon transition and development of the Company. The Company insists on setting natural gas as the strategic focus, promotes the development of conventional gas and unconventional gases such as tight gas, shale gas and coal-bed methane. In addition, the Company imports natural gas through multiple channels in order to form a diverse energy supply system.

Green Power and Improving Energy Mix

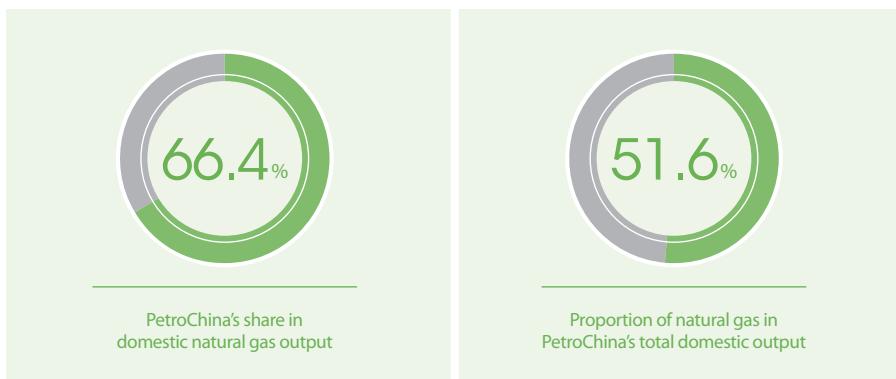
Source: Energy Statistics by CNPC Economics and Technology Research Institute



Note: ①② are estimated data in 2021

In 2021, we achieved the domestic natural gas production of 137.8 billion cubic meters, representing an increase of 5.5% year-on-year, of which the saleable natural gas was 119.56 billion cubic meters, up 5.7% year-on-year. We increased imports of pipeline gas and LNG, and

continuously improved the natural gas marketing network, so that the gas supply covers 31 provinces (municipalities and autonomous regions) and the Hong Kong Special Administrative Region. We sold natural gas of 194.591 billion cubic meters domestically in the year, which, according to the equivalent calorific value, is equivalent to a substitution of 259 million tons of standard coal and a reduction of 260 million tons of carbon dioxide emissions, which contributed to the optimization of China's energy mix and the construction of a beautiful China.



Unconventional Natural Gas

Tight gas	Shale gas	Coalbed methane
<ul style="list-style-type: none"> Built the largest tight gas production base in China — Changqing Oilfield Annual production of tight gas 38.036 billion cubic meters 	<ul style="list-style-type: none"> Based on three national demonstration zones of Changning, Weiyuan and Zhaotong, we accelerated the development of shale gas in the Sichuan and Chongqing areas Annual production of shale gas 12.863 billion cubic meters 	<ul style="list-style-type: none"> Two major coalbed methane industrial bases in Southern Qinshui and Eastern Ordos, with a production capacity of 2.45 billion cubic meters per year Annual production of coalbed methane 2.318 billion cubic meters

Natural Gas Utilization and Alternative Fuels

We promote the comprehensive utilization of natural gas in city gas, industrial fuels, natural gas power generation, chemical feedstock and vehicle fuels. We sped up the renovation project of replacing coal burning with natural gas, built a zero-coal demonstration zone and increased the utilization ratio of natural gas and fuel gas. We continued to carry out "coal to gas" and "gas to replace coal" projects and continuously increased the preference for resources in key areas. Projects such as "Gasification of Xiong'an", "Gasification of Hebei" and "Gasification of Yangtze River" have been promoted continuously, so as to bring clean energy to thousands of households.

Case Study Replacing Coal with Gas to Support the Building of a Beautiful China

In recent years, PetroChina has been accelerating the development of natural gas, vigorously implementing the “Replacing Coal with Gas” project in the nation to help achieve the “dual carbon targets” and build a beautiful China.

In Jiangsu province, natural gas was introduced to Jinxi, Zhangpu and other characteristic ancient towns to improve the living environment and promote the development of local tourism and homestay industries.

In Shanxi province, model villages of “coal to gas” were built in Jixiu city, the “city of coke”, to realize natural gas access to every village and every household and improved local people’s livelihoods.

In Guangdong province, industrial application of natural gas was promoted in Chaozhou, to help ceramic factories in this “Ceramic city of China” to use more stable and controllable clean fuel.

In Gansu province, gas pipelines were laid to Linxia County in remote areas by overcoming construction difficulties, enabling the local residents to enter the new era of gas heating.

In Shandong province, stable natural gas was provided to Lanling County National Agricultural Park to promote the development of local ecological agriculture.

New Energies and New Businesses

RMB 2.18 billion

Investment in new energies
and new businesses in 2021

We take the development of new energy as new driver for the development of green and low-carbon transition. We set up a new energy and new material business development leading group, strengthened the strategic planning for development of new energies and new businesses, and the construction of business management system, and accelerated to expand new energy businesses such as geothermal energy, wind and solar power, hydrogen energy, and charging (battery exchange) stations. The research institute for new materials in Shanghai and the research institute for new energies in Shenzhen were set up to enhance investment in technical R&D and provide technical support for the development of new energies and new materials business. In 2021, PetroChina’s development of new energies and new businesses was accelerated comprehensively, especially in the fields of geothermal energy and hydrogen energy with great progress. 39 new energy projects were completed and put into operation, and the new energy development and utilization capacity increased by 3.50 million tons of standard coal per year, with the total amount developed and utilized reaching 7 million tons of standard coal per year.



Latest Progress on the Development of New Energies and New Businesses in 2021

New Energies and New Businesses	 <p>Geothermal</p>	 <p>Wind and Solar</p>	 <p>Hydrogen</p>
Progress in 2021	<ul style="list-style-type: none"> • Six clean geothermal heating projects put into operation in Xiongan New Area and its neighboring areas, Tangshan, Dezhou of Shandong Province, etc. • Newly increased geothermal heating area of 8.92 million square meters, accumulating 15.16 million square meters, replacing 348,700 tons of standard coal annually, and reducing 906,600 tons of carbon dioxide 	<ul style="list-style-type: none"> • The Company's first concentrated photovoltaic power generation demonstration project, the 200MW Photovoltaic Demonstration Project of Yumen Oilfield, achieved grid connection and power generation • The installed capacity of wind and solar power increased by 240,000kW per year • Six switching stations and three integrated energy service stations have been established across the country; battery charging has been launched at 117 service stations, and photovoltaic power generation has been launched at 91 service stations 	<ul style="list-style-type: none"> • The compilation of the Hydrogen Energy Layout Plan for the Refinery Business has been completed and the 2050 development roadmap of hydrogen energy has been formulated • The hydrogen purification capacity has been established at 1,500 tons/year • The total hydrogen production capacity has exceeded 2.6 million tons/year • Eight hydrogen filling stations (comprehensive energy service stations) have been built in Beijing, Hebei, and Chongqing, etc.

Case Study New Energy Brings Vitality to Old Oilfields

In December 2021, the 200MW Photovoltaic Demonstration Project of Yumen Oilfield invested by the Company in Gansu Province was successfully interconnected to the power grid. The project is the first concentrated photovoltaic power generation project of the Company. After full capacity interconnection to the grid and commissioning, the annual electricity generation will be about 400 million kWh, which will save 110,000 tons of standard coal and reduce 280,000 tons of carbon dioxide each year.



Yumen Oilfield is the oldest petroleum industrial base in China, and also one of the six bases established by the Company for the new energy business under the "14th Five-Year Plan". The Company made full use of the abundant local wind and solar resources to vigorously develop clean energy such as wind power and photovoltaic power, aiming to build a new energy demonstration base of PetroChina in the western region and actively explore the way of clean transition of old oilfields and green low-carbon development.

TOPIC

EMPOWERING GREEN OLYMPIC GAMES TOGETHER FOR A SHARED FUTURE

In February and March 2022, the Beijing 2022 Winter Olympics and Paralympics were held in Beijing and Zhangjiakou, Hebei. PetroChina actively fulfilled its role as an official oil and gas partner to provide all-weather and all-round clean energy supply support and services for the preparation and holding of the Olympic Games, and to empower the “Green Olympic Games”.

Enhancing Oil and Gas Supply to Support the Winter Olympics in All Aspects

We coordinated production and marketing of the whole industry chain, and the upstream and downstream as a whole, to provide sufficient and stable oil and gas supply for the Winter Olympics.

- 16 refueling (gas, hydrogen) stations along selected Winter Olympics venues and transportation routes provide special energy refueling services for the event. Five of them are mobile skid-mounted refueling facilities specially built for high-altitude areas, which can ensure the supply of oil products in extremely cold environments.
- We implemented oil product quality upgrading to provide Beijing and its surrounding areas with cleaner Jing VIB standard automotive gasoline and diesel, and helped to improve the air quality for the Beijing Winter Olympics. During the Winter Olympics, we provided 530 tons of gasoline, 1,717 tons of diesel oil and 448 tons of LNG for vehicles.
- PetroChina Kunlun Lubricants introduced the engine oil which exceeded the present highest standards (API SP Standard) in the world, serving new energy vehicles, guarding the Winter Olympics with high technology.
- We carried out the “Baoshihua Warms Millions of Families” activity, and increased the gas guarantee for the people's livelihood in winter to ensure a stable gas supply for the event.
- For the competition areas of the Winter Olympics, especially the Chongli Area, a special gas supply plan has been formulated to coordinate LNG terminals and factories to provide backup gas supply for the competition areas.





Comprehensively Accelerating the Green Transition, Doing the Best to Empower the Winter Olympics with Hydrogen

Taking the Winter Olympics as an opportunity, we actively deployed the hydrogen industry to provide clean hydrogen energy for the Winter Olympics.

- The green hydrogen is independently developed and produced, and the torch fueled by green hydrogen was first ignited in the history of the Winter Olympics in the past 100 years.
- Four hydrogen refueling stations have been built in Beijing and Hebei, serving about 1,000 hydrogen fuel cell vehicles and providing 206 tons of hydrogen fuel.
- A comprehensive energy service station integrating refueling, gas filling, hydrogenation, charging and convenience store sales was built in the Yanqing Competition Area of Beijing to provide one-stop energy supply for the event and the public.
- The by-product hydrogen purification unit of 2,000 standard cubic meters per hour and 500 standard cubic meters per hour in North China Petrochemical has been completed and put into use, with the purity of hydrogen reaching more than 99.999% to supply the Winter Olympics.

Creating an Atmosphere for the Winter Olympics and Actively Participating in the Promotion of the Winter Olympics Culture

We wholeheartedly supported the Olympic Games and our country's sports undertakings, started to upgrade the Winter Olympics service in all aspects, encouraged employees to actively participate and jointly promote the Winter Olympics culture.

- More than 1,500 Winter Olympics theme image stations and the Winter Olympics licensed merchandise retail counters have been built, more than one million "Winter Olympics theme gas cards" have been issued to provide preferential services for a wider range of people in travelling and in experiencing ice and snow related activities.
- We have carried out a series of Winter Olympics theme activities to let the Winter Olympics culture enter into a hundred enterprises, a thousand communities and ten thousand oil stations.
- We have actively recruited and trained Winter Olympics volunteers, and encouraged employees to participate in the Olympic Games.



Green Products

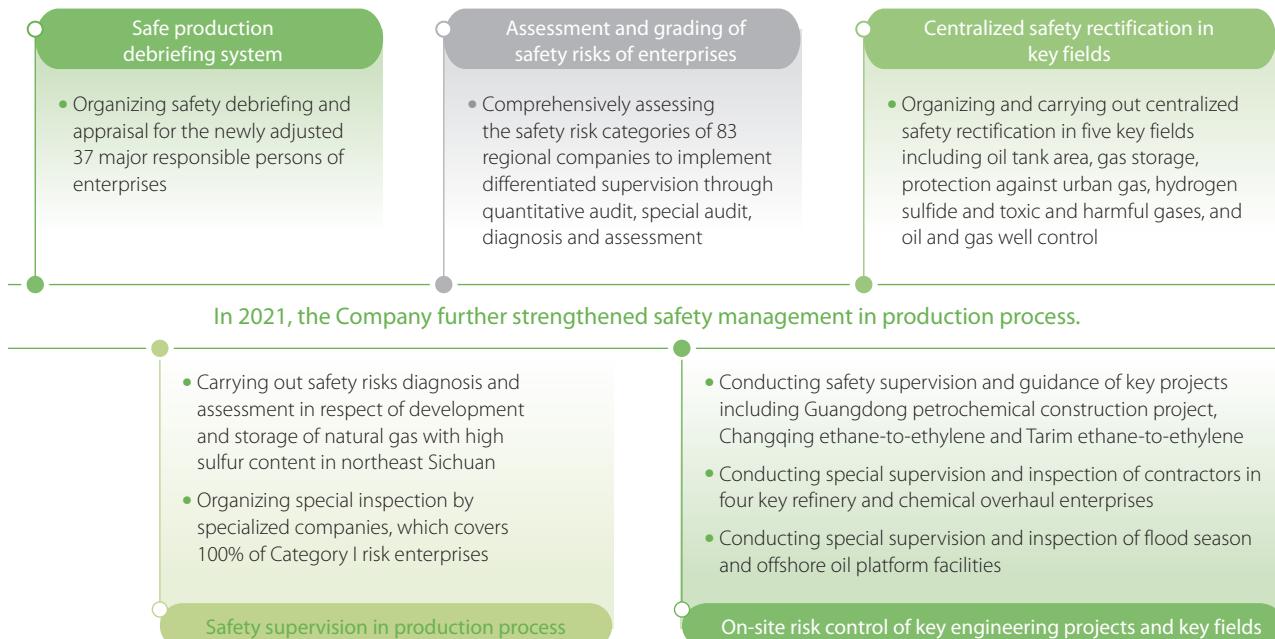
We optimize the energy consumption structure by upgrading energy products. The Company's refineries fully supply National VI standard gasoline and diesel to meet the market demand for high-quality oil. In 2021, the Company increased the production and use of clean energy and replaced oil products with Jing VIB oil products, which represent higher environmental standards in Beijing. The manufacturing level of downstream green chemical products and the level of green management throughout the life cycle continue to improve, effectively supporting the country in achieving its air pollutant emission reduction targets. In response to the International Maritime Organization's (IMO) sulfur limitation regulations, we developed and produced low-sulfur bunker fuel oil with sulfur content less than 0.5% to protect the marine atmospheric environment.

ECOLOGICAL PROTECTION AND RESOURCE UTILIZATION

PetroChina seriously implements the Chinese government's requirements on the construction of ecological civilization, and actively responds to global initiatives and international conventions including the UN's *2030 Agenda for Sustainable Development* and the *Convention on Biological Diversity*. We strictly observe applicable international and Chinese laws and regulations, and learn from the advanced practices of the industry. We have implemented the full life-cycle management and control of production operations and strictly manage and control the discharge of pollutants and solid waste in the course of production. We have amended and improved the *Regulations on Environmental Protection Management*, upgraded and formulated the *Action Plan Related to Green Development*, and supported implementation of the *Plan for the Upgrading of Pollution Control*, the *Ecological Protection Program* and the low-carbon development plan. The Company makes great efforts to build a green development system that covers all aspects of the industry chain to protect and save natural resources, and explores and practices the development mode of green production with low energy consumption and low emissions in order to achieve harmonious coexistence with the environment.

Continuous Improvement of HSE Management

The Company pursues the goal of "zero accident, zero pollution, zero harm", and always regards health, safety and environment ("HSE") as the prerequisite for business development. We implement a uniform HSE management system in our operations worldwide and have



formed a globally integrated HSE working platform and risk control platform. We adhere to the green development concept of "integration and coordination between development activities and environmental protection, giving priority to environmental protection first", and continuously strengthen supervision and safety training in order to enhance our HSE management performance.

We have established an environmental protection incentive mechanism to commend the units and individuals for their outstanding achievements. The environmental protection performance as a KPI index is included in the performance appraisal of senior management of the Company and senior managers of regional companies, and the accountability system for environmental protection performance and the lifelong accountability system for ecological damage have been put in place.

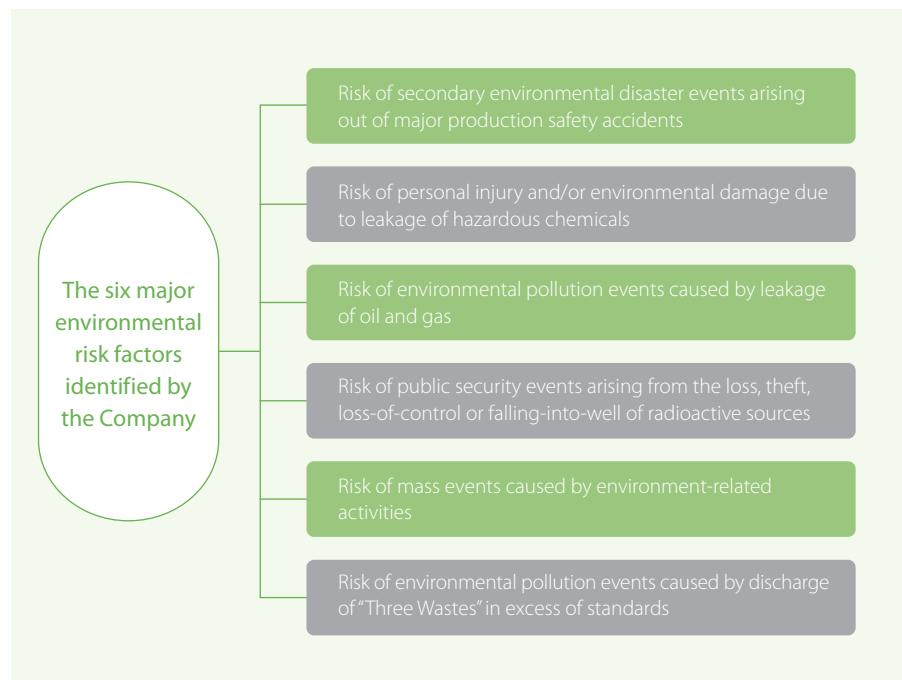
In 2021, we focused on improving environmental risk prevention and control capabilities, further improved the environmental protection management system of "one-post, two-responsibilities", and solidly promoted pollution treatment and environmental protection, and our safety and environmental protection is making steady progress.

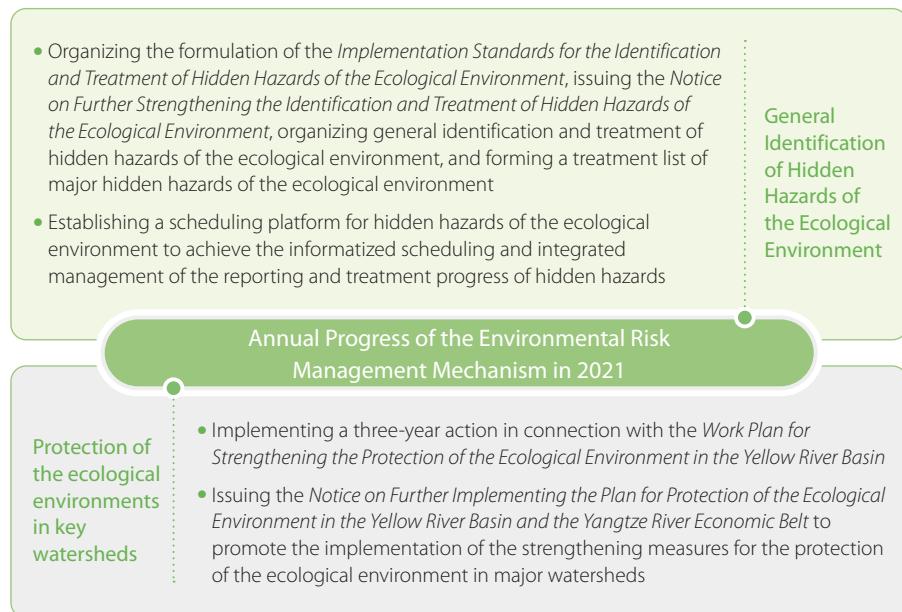
Improving the Environmental Risk Management Mechanism

In 2021, the Company, for the purpose of eradicating environmental pollution and ecological disruption events of a relatively large or more serious level, deeply conducted investigation and assessment of ecological environment risks, constantly improved the "three-grade prevention and control" system, strengthened prevention and control measures against ecological environment risks, and highlighted the management of hidden environmental risks in key fields. The Special Emergency Response Plan for Environmental Emergencies was revised to further define the responsibilities of all departments and levels of the headquarters in more details and improve the operability of the plan. All enterprises regularly carried out emergency response drills for handling environmental emergencies.



In 2021, neither the Company nor any of our subsidiaries were on the list of heavily polluting enterprises released by the Ministry of Ecology and Environment.







Management and Control of Oil Spill Risk

The Company continuously increased its efforts on the management and control of oil spill risks. A pipeline leakage monitoring system was developed to facilitate the timely detection of oil leakage in the process of pipeline transportation. For the road transportation of refined products, a real-time vehicle monitoring system was developed to make optimized choice of transport routes and early identify environmental risk points and sensitive areas along the transport routes.

In 2021, the Company simultaneously carried out environmental emergency scene simulation drills of river oil spill incidents in 9 places, namely, Beijing, Daqing, Panjin, Jilin, Xi'an, Lanzhou, Dunhuang, Karamay and Guanghan. These 9 central monitoring stations, through on-site actual operation and remote video, simulated on-site survey after incidents, preparation and uploading of emergency monitoring plans, on-site collection of river water samples, on-site analysis by the vehicle-mounted mobile laboratory, reporting of testing results and other acts, respectively, so as to effectively enhance the ability to deal with environmental pollution emergencies.



Environmental treatment expenditures



Management and Control of Hazardous Chemical Leakage Risks

In 2021, the Company's monitoring and early warning system for leakage of hazardous chemicals, oil and gas was put into online operation. By online monitoring, remote monitoring, intelligent analysis and early warning study and judgment, the system conducts round-the-clock online real-time monitoring of early warning parameters of major hazard sources, which can effectively avoid the occurrence of safety accidents and achieve full coverage of dynamic monitoring of major chemical hazard sources, multi-level early warning, multi-scene and closed-loop disposal and risk control, consequence simulation and emergency treatment.

Sustainable Utilization of Resources

We attach importance to the protection and rational use of resources. We strengthen the protection of water resources, conserve fresh water resources, rationally utilize land resources, and strive to improve the utilization efficiency of energies and materials so as to minimize the consumption of resources.

Water Management

Our Objective

The fresh water consumption for processing 1 ton of crude oil in 2022

0.485 cubic meters

The Company strictly complies with applicable laws and regulations on the protection of water and water pollution prevention and control, such as the *Environmental Protection Law of the People's Republic of China*, the *Water Law of the People's Republic of China*, and the *Law of the People's Republic of China on the Prevention and Control of Water Pollution*, and implement the *National Water Conservation Action Plan*. We apply the principle of "improving the utilization efficiency of water resources and realizing the sustainable utilization of water resources" in all aspects of production and operation.

We attach equal importance to the prevention and control of water pollution and the water recycling, and protect the ecological environment of water source areas. We also reduce fresh water consumption by strengthening water use process management, applying advanced water-saving and sewage reuse technologies, and incorporating water-saving indicators into performance appraisal. In 2021, the total annual fresh water consumption of the Company was 750.04 million cubic meters, representing a decrease of 2.59% and saving 9.69 million cubic meters of water.

Whole-industry-chain Water Resources Management



Oil and Gas
Exploration and
Development

- Effectively reducing fresh water consumption through improving sewage reinjection, strengthening sewage recycling and reducing leakage and other measures.
- Promoting the application of water-saving technologies, widely applying advanced water-saving materials, technologies and equipment, and carrying out analysis of rational water use to improve water resource utilization efficiency.
- Carrying out maintenance and renovation of water systems to improve the compliance rate of water quality.
- Optimizing the operation plan, transforming the effluent discharge treatment process and reducing the external discharge of produced water.
- Separating oil from water and filtering recycled sewage to realize oil recovery and water reinjection, and avoiding pollution to ground water and surface water.



Refining and
Chemicals

- Promoting clean production process, optimizing water use system and improving water use efficiency.
- Carrying out leakage rate test of water pipe network, strengthening leakage testing and plugging of ground water pipe network, and reducing the leakage rate of ground water. In 2021, the comprehensive leakage rate of water of the Company's refining and chemical enterprises was reduced by 0.02 percentage points year-on-year.
- Adopting advanced recycled water treatment technology, increasing the concentration rate of recycled water, and reducing water replenishment.
- Optimizing the steam system, reducing steam consumption and condensate discharge, and enhancing the steam utilization rate and the recovery rate of steam condensate. In 2021, the condensate recovery rate of the Company's refining and chemical enterprises increased by 0.53 percentage points year-on-year.
- Attaching importance to sewage treatment and reuse, implementing sewage reuse technology renovation, reducing sewage discharge, and increasing the reuse rate of industrial water.



Marketing

- Carrying out anti-seepage renovation of the service stations' buried storage tanks, realizing round-the-clock online monitoring of seepage, and ensuring the safety of soil and ground water environment.

Case Study Management and Control of Water Resource Risks in Shale Gas Development

In recent years, shale gas has become an important part of the Company's vigorous development of the natural gas business. We attach great importance to the management of water resource risks in the development of shale gas and take strict measures to prevent and control water pollution.

- Innovating engineering technologies to reduce sewage and water pollution at the source.** Selecting drilling platform sites that avoid sensitive areas; using a “catheter + three sections” well bore structure, choosing high-quality cement to ensure the cementing quality; using air drilling, fresh water intensive drilling and atomizing drilling in the shallow surface drilling, and using clean and low-pollution system in the deep drilling to avoid pollution of underground and surface water.
- Reuse of wastewater.** Drilling wastewater, fracturing backflow fluid and gas associated water are treated and re-used to prepare fracturing fluid. The maximum sewage recycling rate of a single platform can reach 85%.
- Realizing zero discharge of industrial wastewater.** The remaining industrial wastewater is re-injected after treatment. Such treatment meets the requirements of the Gas Field Water Re-Injection Method (SY/T6596).
- Strengthening water environment monitoring.** During the construction and operation periods, groundwater monitoring wells are built to monitor the quality of surface and groundwater on a regular basis and to track changes in water quality in a timely manner. Monitoring data show that the Company's shale gas exploration and development has not caused pollution to groundwater.

Water Saving

9.69 million cubic meters

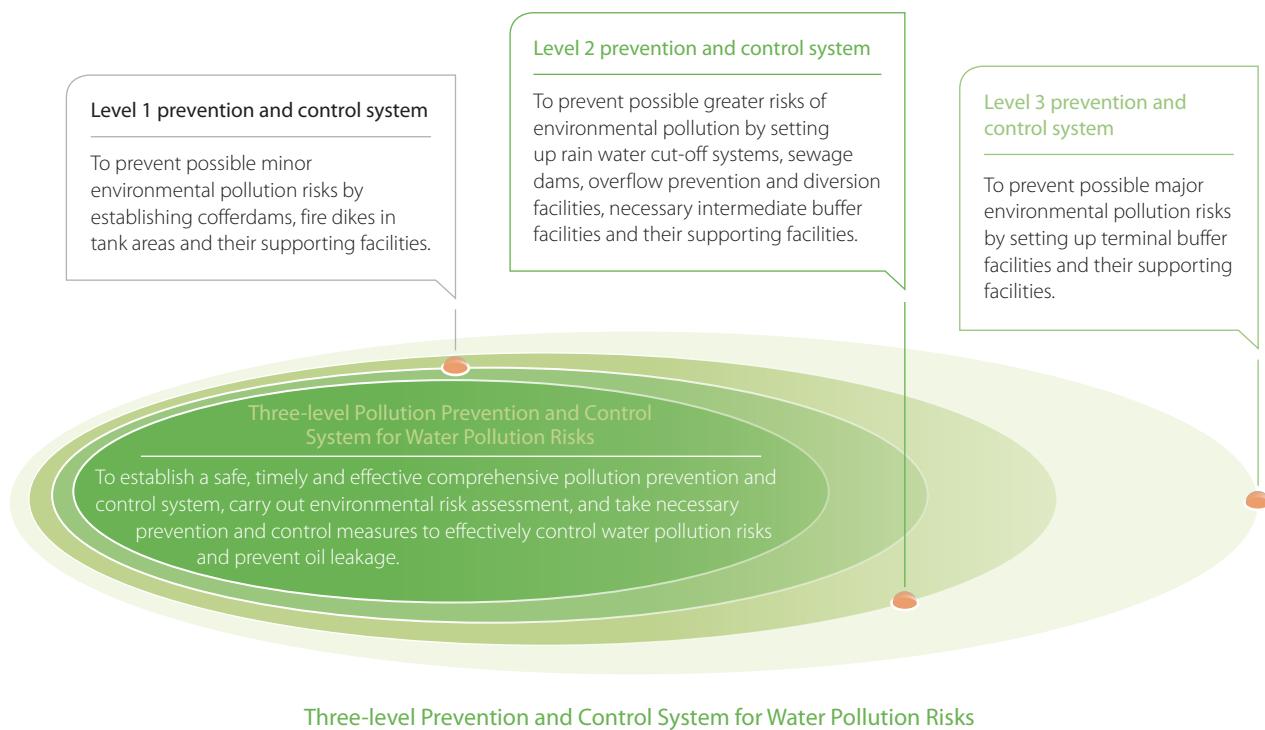
Amount of saved water

2.59 %

Year-on-year decrease in fresh water consumption

0.488 cubic meters

Fresh water consumption for processing 1 ton of crude oil



Land Resource Management and Protection

The Company attaches great importance to protecting land resources. By strictly abiding by the *Law of the People's Republic of China on the Prevention and Control of Soil Pollution*, *Soil Environment Quality-Risk Control Standard for Soil Contamination of Development Land*, and other national laws and regulations, as well as industry-specific pollutant discharge standards, we formulated the Land Management Measures for the purpose of implementing the most stringent arable land protection system and land conservation system in China. Such measures have been put into effect at all stages of production and operation so as to ensure the sustainable use of land resources.

By adopting cluster well groups, horizontal wells, integrated station building, multi-layer system development and other technologies, we optimize the engineering design, innovate land-saving technologies and management mode, and use land in an economical and intensive manner during production and operation. We strictly control land increment and revitalize the existing land. Moreover, we actively carry out land reclamation, as well as management and restoration of the geological environment of the mines so as to improve the efficiency of land use.



Improve Energy Efficiency

Energy Efficiency	
0.7 million tons of standard coal Saved energy	We regard saved energy as the first energy. By strengthening the concept of conservation first and that "energy conservation means an increase in production, and saving means improving efficiency", the Company promotes energy conservation and consumption reduction work in an in-depth manner, and constantly improves the energy use efficiency. In 2021, the Company signed the Letter of Commitment to Save Energy and Reduce Carbon by Enterprises in Key Industries, formulated the Work Plan for Energy Conservation and Energy Efficiency Improvement (2021-2025).
116 kg of standard coal/ton Comprehensive energy consumption of production per unit of oil and gas equivalent	

Case Study

Actively Participating in the "Energy Efficiency Leader" and "Water Efficiency Leader" Selection Activities

In 2021, the Company organized the participation by its affiliates in the "Energy Efficiency Leader" and "Water Efficiency Leader" selection activities in the petroleum and chemical industry, which were organized by China Petroleum and Chemical Industry Federation. Dushanzi Petrochemical won three awards for its excellent performance in energy and water conservation:

- First place in the "Energy Efficiency Leader" in ethylene industry in 2020
- Second place in the "Water Efficiency Leader" in ammonia industry in 2020
- Third place in the "Water Efficiency Leader" in ethylene industry in 2020

Annual Progress of the Company's Energy Conservation Work

1

Advancing energy control

- Formulating the 14th Five-Year Plan for energy management and control
- Promoting the implementation of 10 key plans, which include clean energy substitution, strengthening oil and gas loss control, implementing energy system optimization, increasing technology R&D and promotion, promoting the construction of energy management and control, and strengthening the source control of energy conservation, etc.
- Annual implementation plans and objectives for energy management and control are developed in 16 oil and gas field enterprises and 23 oil refinery enterprises

2

Technical transformation for energy and water conservation

- Investing RMB 450 million in energy and water conservation projects

3

Inspection and evaluation of energy consuming equipment

- Testing and evaluating the energy utilization status of 13,000 sets of energy consuming equipment such as oil pumping units, heating furnaces and pump units

Our Objective

The comprehensive energy consumption for producing unit volume of oil and gas equivalent in 2022

115 kg of standard coal/ton

Pollutant Discharge Management

The Company attaches great importance to the regulation of pollutant discharge and strictly complies with 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 Atmospheric Pollution*, the *Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste*, the *Regulation on the Administration of Permitting of Pollutant Discharges* and other relevant laws and regulations. It also implements national and industry pollutant discharge standards such as the *Integrated Wastewater Discharge Standard*, the *Air Pollutants Discharge Standard*, the *Pollutant Discharge Standards for Petroleum Refining Industry*, the *Pollutant Discharge Standards for Petrochemical Industry*, the *Air Pollutants Discharge Standard for Onshore Oil and Natural Gas Exploitation Industry*, the *Soil Environment Quality-Risk Control Standard for Soil Contamination of Development Land*, etc., performs the obligation to control pollutant discharge, incorporates the management of pollutant discharge permit into its daily work and enhances process management to ensure that all standards are met in the course of pollutant discharge.



Key Measures on Pollutant Discharge Management:

- Ensuring that pollutant discharge meets relevant standards by strict management and control, implementing relevant measures for treating pollution from the source and strengthening the management for the operation of existing pollution treatment devices
- Upgrading and renovating the pollution treatment facilities and ensuring that waste water, waste gas and other pollutants are discharged steadily and within relevant standards
- Strengthening the warning of over pollutant discharge, using the online monitoring system for pollution sources to conduct real-time monitoring of the emission of waste water and gas
- Incorporating enterprise's major pollutant discharge targets into the annual performance contracts of key management staff, and strictly assessing the implementation

Our Objective

The emission of major pollutants continues to decrease, meeting the assessment requirements of national and the Company's binding target

Emission of Pollutants

5,300 tons

COD emissions

11,100 tons

Sulfur Dioxide emissions

56,400 tons

Nitrogen Oxide emissions

Note: The statistics of waste gas pollutant emissions includes flare gas emissions

Air Pollutant Control

The Company constantly strengthens the control of conventional air pollutants and characteristic air pollutants to promote the continuous improvement in the performance in air pollutant discharge. In 2021, the Company further strengthened the management of the operation of existing pollution treatment devices and accelerates the implementation of the ultra-low emission transformation projects for waste gas pollution treatment facilities. Special action for key enterprises in Beijing, Tianjin, Hebei and the surrounding areas was conducted, focusing on VOCs treatment, boiler flue gas treatment aiming at up-to-standard discharge, and control of emission sources of key process waste gas. The Company also engaged in collaborative control of key air pollutants such as fine particulate matter, ozone and its precursors.



The Company continues to strengthen the online monitoring and control of waste water and waste gas pollution sources. By the end of 2021, the number of pollution sources monitored through PetroChina networking reached 770, and all the key pollution sources listed in the National Catalogue of the Key Pollution Discharge Entities as well as all the elevated pollution sources in Beijing, Tianjin, Hebei and the surrounding areas are 100% under control. The automatic pollution source monitoring covers all the main production devices and pollution sources of PetroChina.



All the stations operated by PetroChina's marketing enterprises have been constructed in accordance with relevant standards and the oil and gas recovery system is under effective operation, leading to the decrease in VOCs emission and comprehensive micro-environmental management of the stations.

Waste Treatment

2.603 million tons

General solid waste

100%

General solid waste compliance disposal rate

1.396 million tons

Hazardous waste

100%

Hazardous waste compliance disposal rate

Note: Volume of solid waste disposed as entrusted by the Company by a third party with relevant qualifications

Solid Waste Disposal

The Company attaches great importance to waste supervision and strictly complies with the *Law of the People's Republic of China on Prevention and Control of Environmental Pollution by Solid Waste*. It also strengthens source control, process tracking and end-user supervision and achieves whole-process management through the solid waste management and control system, which covers the generation, collection, storage, utilization, and disposal of solid waste.



Disposal of Solid Waste in Compliance with Laws and Regulations

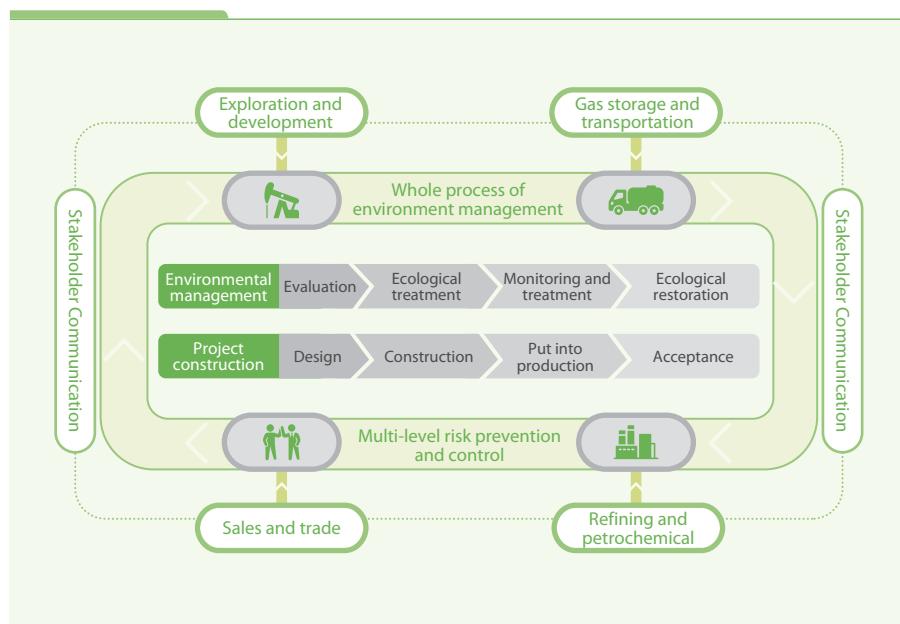
Key measures:

- The Company uses clean production technology and greatly reduces the generation of solid waste, especially hazardous waste by reducing the use of oil-based mud through layered drilling, promoting the disposal of drilling mud in the course of drilling and down-hole degreasing technology, and implementing ground box-like workover operations and other cleaner production measures.
- The Company increases the construction of comprehensive utilization and disposal facilities for oil-bearing waste and other solid waste, introduces by following relevant standards third-party institutions for the disposal and utilization of solid waste, in order to ensure the whole process of solid waste disposal and utilization is in compliance with laws and regulations.
- The Company establishes a unified whole-process management and control platform for solid waste, thereby realizing fine whole-process management and monitoring of general industrial solid waste and hazardous waste.

Biodiversity Conservation

The Company firmly establishes a concept of ecological civilization to respect nature, follow its ways and protect the nature, and gives priority to protection and natural restoration. It has integrated biodiversity conservation into the entire process of its business operation and actively participates in the global biodiversity governance. The Company protects wetlands, rainforests, oceans and other natural ecological environment and endangered species of wild fauna and flora with an aim of building a beautiful and harmonious homeland for all creatures.

Whole-process Eco-environmental Management of Whole Industry Chain



TOPIC

CONSERVING BIODIVERSITY AND BUILDING A COMMUNITY OF LIFE ON EARTH

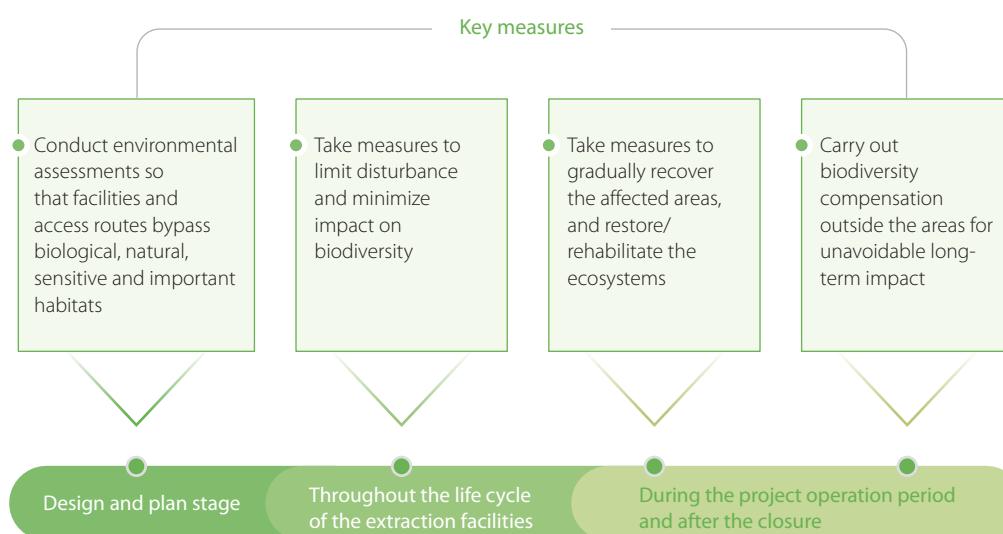
Biodiversity as the basis of human survival and development constitutes the bloodline and foundation of the community of life on earth. It provides mankind with a rich variety of production and living necessities, a healthy and safe ecological environment and a unique landscape culture. Mankind must respect nature, follow its way and protect it, and it shall also strengthen the protection of biodiversity and promote the harmonious coexistence of man and nature.

Our Commitments

The Company responds actively to the United Nations *2030 Agenda for Sustainable Development*, the *Convention on Biological Diversity* and other global initiatives and international conventions, as well as the *Opinions on Further Strengthening the Protection of Biodiversity* by the Chinese government, and strictly implements relevant international and domestic laws and regulations, so as to help realize our goal of “protecting, restoring and sustainably using ecosystems, and halting the loss of biodiversity.”

Our Actions

Most of the Company's oil and gas production sites are located in wetlands, deserts, Gobi areas and other areas that are inherently ecologically fragile. As such, the Company has made more efforts and is committed to reduce and eliminate the potential impact of its production on the ecological environment and biodiversity. The Company adheres to source control, implements eco-environmental management across the entire industry-chain and the whole life cycle.





We

- Formulate and issue the *Action Outline on Ecological Protection, Bans on Eco-environmental Protection* and other rules and bylaws
- Implement the *Work Plan for Strengthening Ecological Environmental Protection of the Yellow River Basin* three-year plan, enact the *Notice of Further Implementing the Eco-environmental Protection Plan of Yellow River Basin and the Yangtze River Economic Belt*, to promote the implementation of strengthened eco-environmental protection measures in key basins
- Constantly improve the management systems and working systems in relation to biodiversity protection and incorporate biodiversity risk assessment into the life-cycle management of projects
- Exit environmentally sensitive areas in an orderly manner, explore and establish biodiversity protection demonstration areas, carry out activities to build green mines, and implement key ecological protection projects
- Protect, restore and promote the sustainable use of land, maximize the efforts to reduce the occupation of arable land, ensure water and soil conservation and vegetation restoration, and try to restore the ecological environment in the operation area
- Actively promote the concept of biodiversity protection, organize employees to participate in publicity and education activities for “World Wildlife Day” and “World Environment Day” to enhance employees’ awareness of biodiversity protection

TOPIC

Our Practice

Protect the natural habitats of animals and plants



● Orderly exit nature reserves and recover the ecological environment

Liaohekou National Nature Reserve, located in Panjin, Liaoning Province, is the largest wetland Nature Reserve in China. It is also an important stopover and feeding place for nearly 100 species of migratory birds such as red-crowned cranes, common cranes and swans, as well as a breeding place for rare waterfowl black-billed gull. In order to protect the living environment of rare birds in the wetland, PetroChina Liaohe Oilfield formulated a plan to close and withdraw the production facilities, and restore the wetland ecology in Liaohekou National Nature Reserve. As a result, all well stations exited the core area and the natural ecological environment of the well sites was completed restored.

Dagang Oilfield is located on the coast of the Bohai Sea, where wetlands, reservoirs, rivers, beaches, farmland and other environmental forms coexist. Every year, hundreds of thousands of birds reside and stay in Beidagang wetland, including many endangered birds such as the oriental white stork. Therefore, Dagang Oilfield formulated an oilfield development and production exit plan in the environmentally sensitive area, which includes abandoned well plugging, demolition of surface and power facilities, ecological restoration and land reclamation. Since 2018, Dagang Oilfield has been orderly plugging in oil wells in the sensitive area and restoring the surface environment, as a result, a total of more than 110 wetland wells were plugged.

● Turning desert hinterland into oasis

PetroChina Tazhong operation area is located in the hinterland of the Taklimakan Desert. For more than 30 years, the Company has been actively improving the ecological environment of the hinterland of the desert and building an oasis of the hinterland of the desert while extracting oil and gas. In order to create a stable ecological chain of diversity, the Company, by closely cooperating with the Xinjiang Institute of Ecology and Geography, Chinese Academy of Sciences, adopts a construction mode which incorporates a botanical garden, plant demonstration garden and green area around the living area, carries out breeding and trial cultivation of the plants introduced from all over the country. Those plants that adapt to the environmental conditions in Tazhong are planted in the acclimatization area, while those who grow well are planted on a large scale in the 7,100 square meters of the plant demonstration garden, forming a treasure house of more than 260 species of desert plants. We have also explored a set of practical technology for large-scale afforestation by using underground brackish water in a large mobile desert and extremely arid conditions, which has been widely used in the afforestation of desert oilfields in Tazhong, Hade and Lunnan. Using science and technology to protect the environment and green the desert has become a reality.

● Protecting the habitat of migrant birds in wetland

Halfaya Oilfield Project in Iraq is close to the Hawizeh wetland, which is the only wetland in Iraq protected by the *Convention on International Wetlands (Ramsar Convention, Convention on Wetlands of International Importance especially as Waterfowl Habitat)* and the ecological environment is highly sensitive. Halfaya Oilfield Project strictly implements HSE standards, reduces the pollution of the wetland caused by human activities, carries out waste and garbage recycling in the oil area, advocates good environmental awareness and habits on the contractors and local residents, and strives to protect the habitat of migrant birds in the wetland. The project has won the approval and trust of the Iraqi government and its partners, and its environmental management has passed the ISO14001 environmental management system certification.

Protecting rare animal and plant species



● Let Przewalski's Horse return to its native place

Przewalski's Horse as the only wild horse species in the world is listed as EW (extinct in the wild) species according to the IUCN Red List. Kashan Nature Reserve, where Przewalski's Wild Horse lives, is adjacent to the Xinjiang Oilfield operation area. We have blocked 284 oil and water wells in the reserve, restored 352,000 square meters of landscape, and achieved the goal of "withdrawing from Kashan Nature Reserve in all respects and let Przewalski's Wild Horse return to its native place."

● Protecting *populus euphratica* forest in Tuha Oilfield

There is a vast (nearly 10,000 mu) *populus euphratica* forest around the operation area in Tuha Oilfield. In order to protect the forest from the impact of exploration and development activities, we took such measures as well relocating, oilfield road rerouting and station downsizing. Thus, the whole *populus euphratica* forest was well preserved during the oilfield development.

● Protecting Arabian oryx leucoryx

Arabian oryx leucoryx is native to the Middle East and the Arabian Peninsula, for which Saudi Arabia, the United Arab Emirates (UAE) and other countries have established corresponding reserves. In the UAE, we strictly abide by the local environmental protection policies and related laws and regulations on animal and plant protection. At the construction site, we carry out survey and assessment of the surrounding environment in advance, record the route, time and place of Arabian oryx leucoryx, and develop avoidance, mitigation and relocation plans. As a result, the life of Arabian oryx leucoryx has not been affected by the construction.





EMPLOYEE RIGHTS AND INTERESTS AND DEVELOPMENT



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The UN
Sustainable
Development
Goals



Employees are our most valuable assets. The all-round development of employees is one of our primary targets. We protect employees' rights and interests, care for their physical and mental health, and provide a platform for their career development. We continue to promote localization of employees and have been strengthening security at our overseas operations. We endeavor to create an inclusive, equal, mutually trusting and cooperative working environment, and to ensure value is aligned to benefit both employees and the Company.

EMPLOYEE RIGHTS AND INTERESTS

We remain committed to a people-first philosophy in treating our employees with respect and equality while protecting their legal rights. We endeavor to resolve the most practical issues that our employees are concerned about and ensure that all employees share the fruits of our development on an equal basis.

Fair Treatment of Employees by Law

We conscientiously abide by international conventions, including the *International Covenant on Economic, Social and Cultural Rights* and the *Elimination of Discrimination in Respect of Employment and Occupation*, along with domestic laws including the *Labor Law of the People's Republic of China* and the *Labor Contract Law of the People's Republic of China*, and relevant laws, rules and regulations of the host countries. We have formulated the *Measures for the Management of Employment Contracts* and the *Measures for the Management of Overseas Employment* and established a complete employment management and policy system to regulate employment practices according to the law. The system incorporates employment contract management, remuneration insurance and benefits, leave, performance appraisal and vocational training.

We strictly comply with the applicable laws and regulations on the dismissal and working hours of employees, and, in line with specific circumstances of the Company, have formulated management regulations and detailed implementing rules that are applicable to all enterprises, employees and business courses of the Company. Through self-inspection of our employment practices in compliance with the law, we regulate the recruitment and promotion of employees and the termination of employee contracts, and provide effective protection of the legal rights of employees.

We provide equal opportunities and fair treatment to all employees regardless of their nationality, ethnicity, race, gender, religion and culture. We emphasize the employment of local residents, women, ethnic minorities and college students in order to increase job opportunities for local communities. We strictly implement regulations on female employees' confinement and lactation to protect their rights and interests. We continue to open recruitment to the public, without restrictions on applicants' ethnicity, gender or religion.

We strictly abide by International Labor Organization's *Forced Labor Convention*, *Minimum Age Convention*, *Worst Forms of Child Labor Convention*, the State's *Law on the Protection of Minors* and *Provisions on the Prohibition of Child Labor*, and similar legal requirements of countries and regions where we operate our overseas businesses and prohibit the employment of child labor and reject all forms of forced or compulsory labor. The Company has established an employment examination and supervision mechanism under which new employee recruitment, daily human resource management, supplier access and other links are verified in order to prevent and control related risks. The Company carries out irregular self-examination and inspection, correct and punish any violation in a timely manner. There is never any event of child labor or forced labor in the Company.

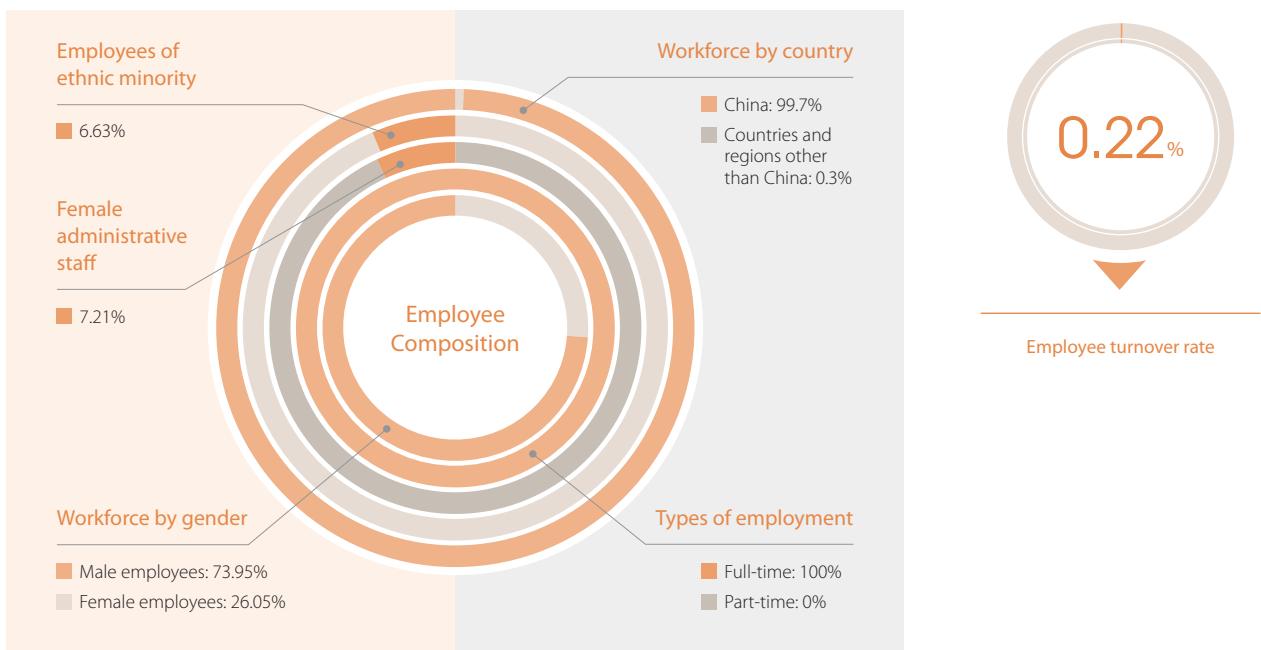


In 2021, no labor-related offence of material implication to our business was committed in the Company.

100%

In 2021, 100% of employees who took maternity/paternity leave returned to work and kept their posts





Improving Remuneration and Benefits System

The remuneration system of the Company is closely centered on such work arrangements as quality improvement, profitability improvement, scientific and technological innovation and building the enterprise with talent. We continue to improve the relevant systems, strengthen positive incentives, and constantly improve the market-oriented remuneration and distribution mechanism. We adjust and improve the special incentive and restraint measures for quality improvement and profitability improvement, highlight appraisal orientation, reflect distribution differences, and improve the differentiated remuneration and distribution mechanism. We optimize and adjust remuneration structure, and give further priority of distribution to grass-roots frontline personnel, key difficult positions, and professional and technical personnel. We promote and implement the project of building the enterprise with talent, continuously increase incentives for high-end operation and management personnel, core technology R&D personnel, and high-skilled leading personnel, and provide more competitive remuneration. We study and formulate implementation opinions on medium and long-term incentives, improve the medium and long-term incentive system, and promote the implementation of medium and long-term incentive policies in an active and orderly manner. We have paid all social insurance premiums for employees on time and in full in accordance with the *Social Insurance Law of the People's Republic of China*, improved corporate annuity and supplementary medical care and insurance, and improved production and living conditions for front-line workers so as to ensure employees' interests.

In 2021, we

- Further implemented the project of building the enterprise with talent
- Studied and formulated implementation opinions on medium and long-term incentives
- Optimized special incentive and restrictive measures for improving quality and profitability

Democratic Participation

We give full respect to employee's democratic rights and lawful interests. We attach great importance to employees' role in democratic management, democratic participation and democratic oversight. Apart from establishing and improving trade unions, we have put in place a democratic style of management and a transparent system to deal with matters at its plants, through its Employees' Congress system, to ensure employees are well-informed and have the means to participate in and supervise corporate management. We have further standardized the content, procedures and model of our open system for matters at our plants by clarifying duties and authorities, the organizational system, and working processes for the Employees' Congress.

The Company has established multiple channels to communicate with employees and has continued to implement democratic procedures. We communicate across different levels of the Company and conduct multi-level communication through meetings with staff representatives and online discussions, to encourage employees to participate in the management of production and operations.

Occupational Health

99.22%

Workplaces occupational hazards detection rate

100%

Occupational health examination rate for employees facing occupational hazards

100%

Employee occupational health monitoring archives establishment rate

HEALTH AND SAFETY

Our health and safety management covers all staff, including staff in the entities in our supply chain. We give top priority to employee health and safety by emphasizing occupational health management and protection at field operations, continuously improving working conditions, abiding by the statutory working hours and holidays required by the places of business and taking employees' mental health as a priority.

Occupational Health

We abide by the *Law of the People's Republic of China on Prevention and Control of Occupational Diseases* and implement the *Outline of the Plan for "Healthy China 2030"* in our occupational health management, focusing on the prevention and control of occupational hazards as well as the implementation of related measures, such as poison prevention, dust removal and noise reduction, with a view to providing employees with a safe and healthy work environment and guaranteeing employees' physical and mental health.

Key Actions for Occupational Health in 2021

- Implementing the *Outline of the Plan for "Healthy China 2030"*

Responding
to Healthy
China 2030

- Printing and distributing the Company's *Provisions on Occupational Health and Employee Health Management*, to define the tasks, contents and responsibilities of health management and further standardize employee health management
- Printing and distributing the Company's *Administrative Measures on Employee Health Check*, and expressly requiring to conduct differentiated physical check, health risk assessment and intervention for high-risk employees, and setting up health records

Occupational
health
management



Normalized Epidemic Prevention and Control

In 2021, the COVID-19 epidemic continued to spread around the world, and the Company kept strengthening normalized epidemic prevention and control measures and building a line of defense for the safety and physical and mental health of employees.

Facing the complex and volatile situation of the domestic epidemic, which spread in multiple places, we updated and improved the *Work Plan for Normalized Prevention and Control of the COVID-19 Epidemic* and the *Guiding Manual for the Prevention and Control of the COVID-19 Epidemic* to strengthen the normalized management of epidemic prevention and control. Meanwhile, we continued to effectively implement the grid management and “one policy for one person”, and adhered to the system of regular reporting of epidemic information by all employees. We upgraded access controls to production and office areas, strictly implemented the systems for temperature measurement, registration, code scanning, and track investigation of visitors and contractors, and effectively dealt with investigation and control of personnel flow; actively coordinated and promoted the vaccination of employees, and practically achieved the goal of “vaccinating as many as possible” and “as soon as possible”. The Company also carried out video inspections of epidemic prevention and control of key enterprises in key regions to ensure the proper implementation of various measures for epidemic prevention and control.

Overseas, the Company established normalized epidemic prevention and control systems for international operations, and updated and promulgated the *Guiding Opinions on Normalized Prevention and Control of the COVID-19 Epidemic in International Operations* and other management systems. We adhered to the strategy of simultaneous prevention and control of people, objects and environments, strictly carried out personnel classification, site partitioning and grid management, focused on detection and isolation before people return to work, carried regular nucleic acid detection for all the employees, cut off “ferrying” transmission, strengthened the management and control of purchase, transportation, handover and storage of external items, improved the environmental extermination of key sites, and updated and supplemented epidemic prevention materials and drugs. Great efforts were made to carry out knowledge publicity and training to enhance the employees’ own on-site epidemic prevention ability. We also made major efforts to promote the COVID-19 vaccination for employees to speed up the formation of epidemic barrier. We organized employee care activities to ensure the physical and mental health of employees.

Popularizing the knowledge of occupational health

- Organizing the event of 2021 Publicity Week of the *Law on Prevention and Control of Occupational Diseases*, with 950,000 person-times participation in the publicity activities and education and training
- Carrying out the quiz answering activity of “learning health management system and improving self-health awareness” for all employees, and strengthening employees’ awareness of prevention and control of health risks

Construction of “Healthy Enterprises”

- Printing and distributing the *Plan for Promoting the Construction of Healthy Enterprises* and the *Acceptance Standards for Healthy Enterprises* to promote the construction of healthy enterprises
- Holding the experience exchange and training publicity meetings on the construction of healthy enterprises
- Focusing on the construction of healthy enterprises during the QHSE examination and appraisal and supervising the implementation of related work

Health management of overseas employees

- Comprehensively establishing an overseas medical security system which integrates monitoring, early warning, prevention and control and treatment
- Carrying out the special malaria prevention and control work in Niger, Chad and other regions to improve malaria prevention and control
- Achieving the full coverage of health examination, assessment, monitoring and management of personnel going abroad, and carrying out 16,728 person-times health examination and assessment by 2021
- Successfully treating six employees with severe diseases through cross-border medical transfer and remote consultation

Case Study Implementation of the Company's Critical Illness Protection Program

In 2021, the Company further improved the public health and occupational health management system and mechanism, and promoted the implementation of critical illness protection program to protect the physical and mental health of employees.

For selected common diseases with high incidence and heavy personal burden, adopting a mode of payment combining one lump-sum payment and reimbursement according to different diseases to help reduce the burden of medical expenses of employees

Main contents
of the critical
illness protection
program include
the following

Carrying out re-diagnosis
of critical illness and online
remote expert consultation
through the "Zhongyi APP"
and other service platforms
to determine a reasonable
treatment plan

Launching unlimited health
consultations, online doctor's
health consultation and
other services to provide
comprehensive medical
consultation service for
employees

Mental Health

We pay close attention to our employees' mental health. We take measures to improve the employee vacation system, set up a hotline and a website for psychological counselling, and carry out various forms of training on mental health knowledge, in order to encourage employees to adopt a positive and healthy attitude. The Company has established an "Employee psychological consultation hotline" covering the employees and their families and carried out various forms of employee mental health promotion activities. We provide training sessions on mental health management, continue to implement the Employee Assistance Program (EAP), and dispatch psychologists to advise on mental health and guide and reduce employees' psychological pressure. We update the Overseas Employee Happiness Platform (IAP), optimize the online consultation appointment process, and provide employees with multi-channel and multi-means psychological consultation services and protection.



In 2021, the overseas psychological counselling hotline of the Company:

- Provided **1,228** hours of service
- Handled **6** special cases
- Handled **21** crisis intervention cases

Case Study The Company's First "Heart Building Hut" Overseas was Put into Use

In 2021, the Company's overseas "Heart Building Hut" project was launched, and the first "Heart Building Hut" was put into use in N'Djamena, Chad. The "Heart Building Hut" is a scientific and interesting employee psychological experience center, equipped with emotional test and stress relief training, concentration training, cognitive training and other brain science equipment to help employees measure their brain waves and scientifically assess their sleep, concentration, relaxation, anxiety and depression indexes. Based on the results, the Hut will carry out focused training such as concentration, meditation and emotional regulation to help employees improve their emotional and stress management abilities. The "Heart Building Hut" has also developed a home online and offline emotional training system for overseas employees to enhance the centripetal force and the sense of companionship of their families.

Safety and Security

PetroChina views production safety as a core value and implements this concept in all segments and all production and operation processes. We actively promote the building of a longstanding work safety system to raise the overall safety management level. In 2021, the Company issued the *Measures for the Management of Unproductive Deaths of Employees*, clarifying the scope, principles, division of responsibilities and methods of the management of unproductive deaths of employees, and took steps to improve our supervision to better implement safety accountability, and by doing so, we consolidated basic work at the grassroots level, and kept up a stable and controllable situation in terms of operational safety.

Safety Management

8,651 days

Loss of working days due to work-related injury

2 persons

Work-related fatalities

0.0541 accidents/million working hours

Total accident rate

0.09 person/100 million working hours

Fatal accident rate

Strict screening process

- Implement safety qualification screening system for contractors and suppliers
- Establish safety performance records
- Regularly publish the list of qualified contractors, and remove unqualified contractors from it
- Establish safety performance evaluation system
- Carry out safety capability assessment, daily safety performance evaluation, and comprehensive safety performance assessment
- Strictly hold accountable those who violate national workplace safety laws, regulations and contracts
- Contractors failing to pass the safety performance assessment or with major accidents will no longer be engaged

Capacity building

- Promote the holding of certificates by contractors' management personnel
- Provide training on system development, HSE system audits, safety management and emergency response

Evaluation and assessment

- Strictly implement the safety supervision responsibility of contractors, based on the principle that those undertaking, supervising and implementing the project are held responsible
- Conduct targeted inspection of contractors' safety management

Process control



The safety of our employees has always been an overriding priority in our overseas operations. We established an overseas security prevention and control management system to ensure safety, and promoted the operation of social security management systems. We strengthened comprehensive control of social security risks, properly responded to emergencies in overseas projects and ensured the safety of employees by formulating annual social security work plans, carrying out regular emergency drills, strengthening social security-related training, conducting continuous safety audits, and implementing strict performance appraisal and management evaluation systems. In 2021, we eliminated social security related fatal incidents in overseas projects.

EMPLOYEE DEVELOPMENT

We addressed our employees' need for career development at different stages, paying close attention to their career planning. We made continuous innovation in the environment, system and mechanism for talent cultivation, attached great importance to the construction of resource system for talent cultivation and provided a big platform for employees to develop their personal potential.

In 2021, we

- Issued the *Action Plan for the Project of Building the Enterprise with Talent* and the *Opinions on Strengthening the Organization and Operation of the Action Plan for the Project of Building the Enterprise with Talent*
- Formulated the *Roadmap 2021-2025 of the Project of Building the Enterprise with Talent* and the *2022 Operation Timetable of the Project of Building the Enterprise with Talent*
- Prepared and distributed the 100 Q&As on the Project of Building the Enterprise with Talent

Employee Training



In 2021, the head office of the Company organized and implemented 134 training projects covering more than 21,000 employees.

The Company adhered to the application of modern enterprise training concepts, accelerated and promoted training of the digital transformation and upgrading, and vigorously promoted the mode of "internet + training" to tap the potential of human resource value. We established an analysis of talent cultivation demands, comprehensively promoted the construction of a standardized system for on-job training and carried out training for all staff. We continued to innovate training methods, carried out diversified and differentiated vocational training for employees in order to achieve positive interaction between employee development and the Company's development, and staff quality and ability have been effectively improved. In 2021, the head office of the Company organized and implemented 134 training projects covering more than 21,000 employees.

In 2021, we

Construction of standardized system for on-job training

- Established a lifelong learning system for all staff based on "Credit System"
- Established a learning enterprise and cultivating knowledge-based employees

Accurate Cultivation of Talents

- Established a mechanism for analysis, tracking and early warning and dynamic adjustment of talent cultivation needs
- Formulated forward-looking competency improvement plan and special talent cultivating plan
- Gave priority to the cultivation of core talent, laying emphasis on the cultivation of backbone talent, hurrying up the cultivation of urgently needed talent, and cultivate reserve talent in advance



Core Talent Training Programs in 2021			
			
Managerial Personnel	Technical Personnel	International Personnel	Skilled Personnel
<ul style="list-style-type: none"> ● Leadership skills promotion training courses ● Management backbone training courses 	<ul style="list-style-type: none"> ● Capability improvement courses for candidates of the key talent plan ● Training held at Tsinghua University, Beijing Institute of Technology, China University of Petroleum (Beijing) and other universities 	<ul style="list-style-type: none"> ● International backup talent training program 	<ul style="list-style-type: none"> ● High-skilled talent demonstration training courses ● Academic seminars for technical experts ● Demonstration training classes to improve the comprehensive ability of enterprise team leaders

We improve employees' vocational skills and professional abilities through the combination of training and contest such as vocational skills competitions. Through these measures, we promote the development of front-line employees and test the results of grassroots training. In 2021, the Company organized and participated in more than 23 vocational skills competitions at all levels. In company-level and above competitions, the participants won 88 gold medals, 151 silver medals, and 220 bronze medals. 144 technical experts within the Company and 14 "National Technical Experts" emerged.

In 2021, we	
Held:	Participated in:
<ul style="list-style-type: none"> ● The Third National Skill Competition for Natural Gas Purification Operators, Electricians and Polypropylene Unit Operators for Oil & Gas Development Sector ● The first PetroChina Cup Chemical General Control Engineering Competition for Professional Colleges and Schools jointly ● The Gas Producer (coalbed methane sector) Skill Competition jointly ● The Company's First Overseas Employee Skill Competition 	<ul style="list-style-type: none"> ● The National Skill Competition for Hydrogenation Cracking (Treatment) Device Operators and Polyethylene Device Operators ● The National LNG Operators Skill Competition

Provide Unimpeded Career Development Paths

We attach great importance to the career planning of employees and endeavor to expand career development for employees to maximize their self-worth. With a corporate culture that values moral integrity as well as professional competence, we have developed a selection process that is democratic, open, competitive and merit-based and established and improved the talent development mechanism in order to create a positive atmosphere that enables the recognition and best use of talent.

In 2021, we implemented the strategy of building the enterprise with talent and the innovation-driven development strategy, launched the “Top Ten Talents Program”, continued to promote the development of leading scientific and technological talents, scientific and technological innovation teams, young scientific and technological talents and outstanding engineers and other key talent teams construction, and improved the mechanisms of dynamic job transfer, appraisal-based recruitment & promotion, and compensation & incentives, to provide employees with unimpeded and stable career development paths.



- 1 was elected academician of the Chinese Academy of Engineering
- 2 were elected members of the Chemical Industry and Engineering Society of China
- 2 won the China Skill Award
- 3 won the 4th Outstanding Engineer Award
- 14 were voted the National Technical Experts

-  By the end of 2021, the Company had:
- **.98** Skilled Expert Studios, including **28** National Skilled Expert Studios
 - **.24** academicians at the Chinese Academy of Sciences and the Chinese Academy of Engineering
 - **.632** experts entitled to the Government Special Allowance
 - **.264** enterprise chief technical experts
 - **.536** enterprise technical experts

LOCALIZATION AND DIVERSITY

At PetroChina, we embrace a respectful, open and inclusive culture and we are committed to "selecting more local talents who live close to our overseas operations, upgrading their professionalism and making them more responsive to market forces". We abide by all laws and regulations of the host countries. We formulated the *Measures for Administration of Local Employees in Overseas Operations*, promoted the innovation and practice of overseas labor management and established an optimal system for recruitment, deployment, performance appraisal, incentives and penalties. We work hard to attract and train top local talents and to provide them with a working environment conducive to their career development.

Local Hiring in Overseas Operation

We actively recruit and train local employees and do not discriminate against local candidates for managerial positions, providing local people with job opportunities. Professionals employed in our overseas projects involve multiple disciplines, such as exploration and development, refining and chemicals, pipeline operation, international trade, finance, accounting, and human resources management. By constantly strengthening and improving the career development channels of overseas local employees, the Company has gradually established localized, regionalized and internationalized career development channels, through which more and more local employees enter management positions. In 2021, foreign nationality employees accounted for 95.21% of our overseas workforce.

Proportion of Local Employees in PetroChina's Overseas Business Regions in 2021



Case Study

Setting up an International Competitive Stage to Speed up the Training of Overseas Talents

In June 2021, we held the first professional skill competition for overseas employees, which aims to carry out skill exchange, build a platform for skill accommodation and enhance friendship, accelerate the professional ability training of overseas employees, and train oil and gas industry professionals for the countries where business is conducted.

The competition was simultaneously held online in China, Kazakhstan, Uzbekistan and other countries. More than 3,000 local employees from the Company's overseas projects participated in the competition, and finally 16 individual awards and 8 group awards were granted.

Cultural Integration

PetroChina fully respects cultural diversity and local customs. We create an environment of multicultural integration, promote communication and exchanges between employees with different cultural backgrounds, and advocate respect for different values and traditions, in order to foster cross-cultural cooperation in a culturally diverse workplace.



SOCIAL CONTRIBUTION



74 _ COMMUNITY IMPACT MANAGEMENT

75 _ RURAL REVITALIZATION

76 _ TOPIC: CONSOLIDATING THE ACHIEVEMENTS OF POVERTY ALLEVIATION AND FULLY SUPPORTING RURAL REVITALIZATION

78 _ OVERSEAS COMMUNITY CONSTRUCTION

81 _ CUSTOMER SERVICE



The UN
Sustainable
Development
Goals



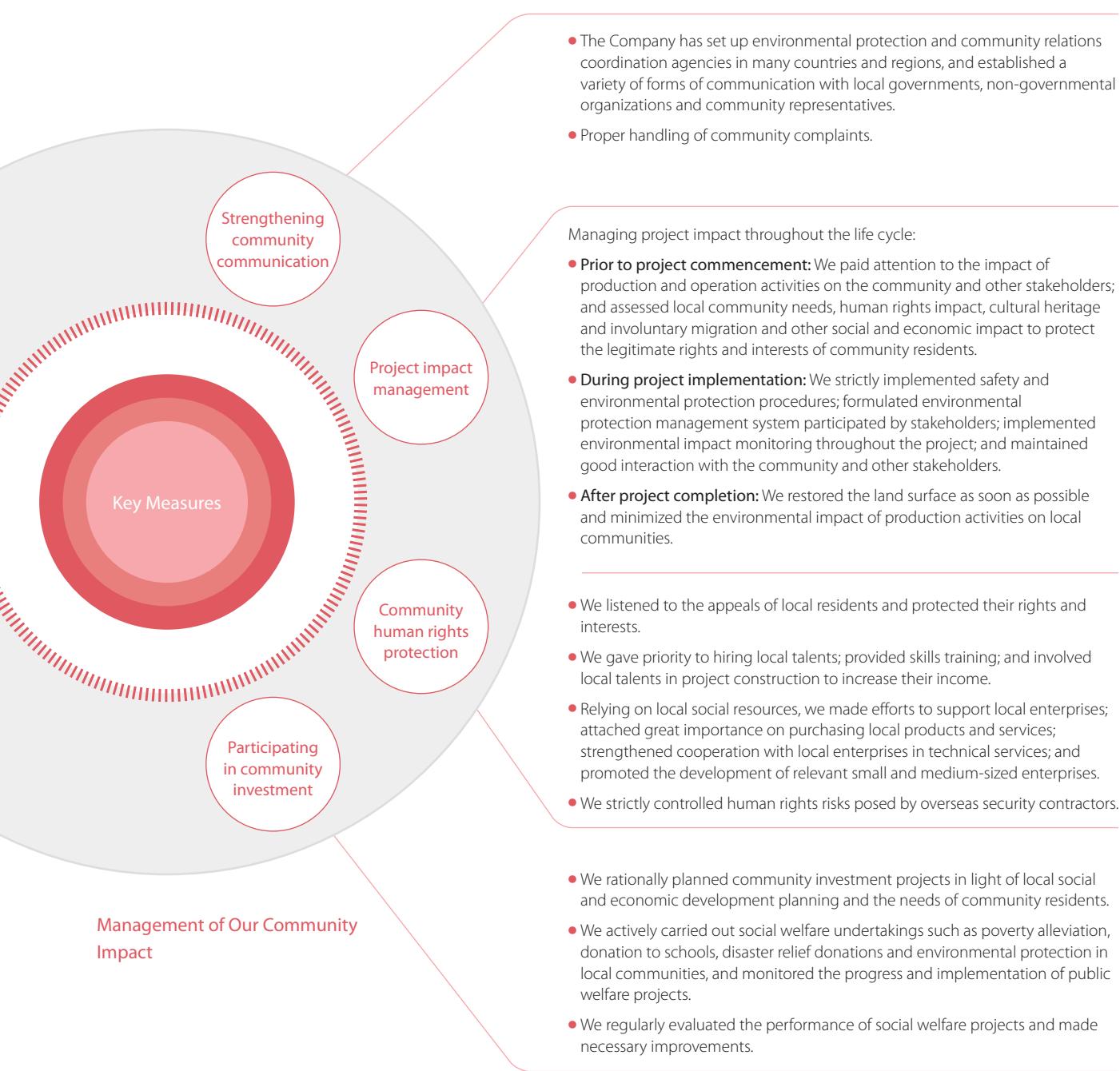
1 NO POVERTY	2 ZERO HUNGER	3 GOOD HEALTH AND WELL-BEING	4 QUALITY EDUCATION	5 GENDER EQUALITY

8 DECENT WORK AND ECONOMIC GROWTH	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	11 SUSTAINABLE CITIES AND COMMUNITIES	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	16 PEACE, JUSTICE AND STRONG INSTITUTIONS

As a Company rooted within society, PetroChina has a duty to return. Our vital goal is to promote socioeconomic development, so we attach great importance to the well-being of people and social advancement. We expand our scale of joint ventures and cooperation, enhance local development capabilities, give donations to impoverished students, and carry out customer satisfaction and community service activities. Through our efforts, we strive to build a harmonious society.

COMMUNITY IMPACT MANAGEMENT

We strive to have a positive impact on community development through responsible operations. This impact can be reflected not only in the creation of jobs, tax contributions and business opportunities for local suppliers, but also in reducing the environmental and social impact of production and operation activities on communities and in safeguarding the human rights of community residents.

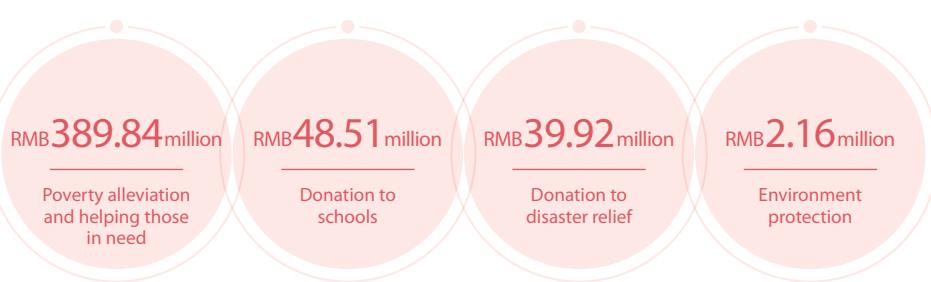


RURAL REVITALIZATION

China has achieved an overall victory in poverty alleviation, and rural revitalization is being promoted in an all-round way. PetroChina has actively responded to the initiatives of the *United Nations 2030 Agenda for Sustainable Development* and the Chinese Government's rural revitalization strategy, focused on people's livelihoods, industry, consumption, intelligence and medical care, adjusted measures to local conditions to effectively connect the achievements made in poverty alleviation with those made in rural revitalization, enhanced the self-development ability of poverty-stricken areas, and promoted sustainable local economic development.

In 2021, PetroChina, jointly with its parent company CNPC, actively devoted itself to rural revitalization, promoting support projects in regions such as Xinjiang, Qinghai, Chongqing, Henan, Jiangxi and Guizhou in China.

Global Social Welfare Input in 2021



Implement rural tourism demonstration projects to revitalize local rural areas

TOPIC

CONSOLIDATING THE ACHIEVEMENTS OF POVERTY ALLEVIATION AND FULLY SUPPORTING RURAL REVITALIZATION

We, jointly with our parent company CNPC, actively respond to the national strategy for rural revitalization, make full use of the Company's business advantages, combine the characteristics of the resources of the recipient areas, and enhance the self-hematopoietic capacity of the local economy and help rural revitalization by deepening the support for characteristic industries, expanding the scope of intellectual medical support, increasing the consumption support, helping local governments expand local employment channels, and continuing to promote the implementation of key projects.

Improving Mechanism

The Company revised and improved the relevant systems for the poverty support work, and constructed a management system for rural revitalization and support matching with clear responsibilities, shared responsibilities and robust implementation. We strengthened the management and control of the whole process of poverty support projects and funds, focused on the compliance of the use of support funds, the implementation of support project management, etc., and improved the efficiency of fund allocation and effectiveness of utilization. We inspected the support projects, detected and investigated problems, and made changes in time to ensure that such regions do not return to poverty on a large scale, which effectively consolidated the achievements of poverty alleviation.

Revitalizing Industry

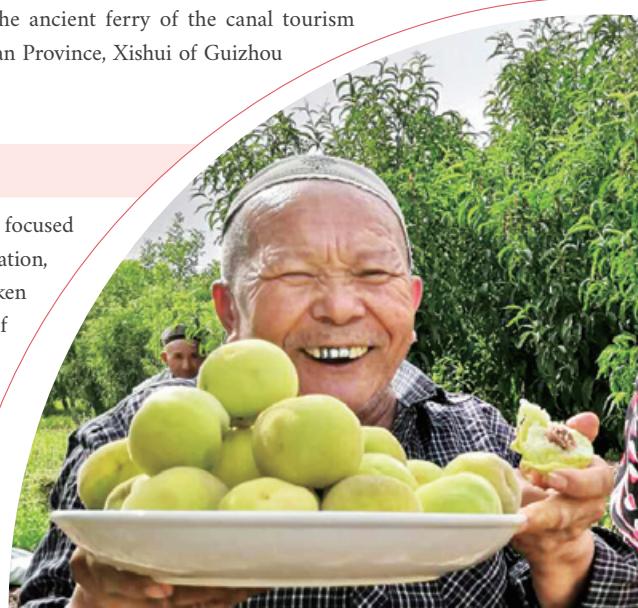
The Company actively helps poverty-stricken areas revitalize industrial development. On the one hand, we help local areas to make up for the infrastructure shortcomings that restrict development; on the other hand, we develop food processing, cultivation and breeding bases, tourist homestays and other characteristic pillar industries according to local characteristics, promote local areas to perfect the industry chain, improve the competitiveness of the product market, and enhance the local self-development ability.

We aided the construction of nine industrial projects including the ancient poplar scenic spot in wetland and the national reserve forest and the construction of hope primary school, infrastructure, water-saving irrigation and other livelihood projects in six counties in Xinjiang Uygur Autonomous Region, namely, Nilke, Tuoli, Qapqal, Qinghe, Jimunai and Balikun. We supported the construction of the ancient ferry of the canal tourism projects and vegetable processing in Taiqian and Fan County of Henan Province, Xishui of Guizhou Province and Hengfeng of Jiangxi Province.

Stimulating Consumption

The Company leveraged its advantages of sales network resources, focused on expanding sales channels for consumer products for poverty alleviation, promoted the integration of products and services of poverty-stricken areas into the national market, and increased local sales revenue of agricultural products.

We will continue to update the *Catalogue of Recommended Petroleum Consumer products for Poverty Alleviation* in China, and by 2021, recommend more than 4,000 types of consumer products from more than 300 poverty-stricken counties. By relying on the sales channels of service stations, we will help poverty-stricken areas build regional well-known product





brands. Five exhibitions of consumer products for poverty alleviation have been held, at which more than 3,000 kinds of products from more than 150 national-level poverty-relief counties were exhibited. With the help of the uSmile Online Platform, we carried out E-commerce livestreaming for 109 hours in total, with 3 million person-times participating in our E-commerce livestreaming. In 2021, the poverty alleviation amount arising out of petroleum consumption in China exceeded RMB 900 million.

Case Study

uSmile Shopping Festival Opens Sales Channels for Assistance Products

From June 17 to 18, PetroChina's 2021 Consumer Products Exhibition and the First uSmile Shopping Festival with the theme of "Assisting Rural Revitalization and Sharing a Better Life" was held in Chengdu, Sichuan. The exhibition had more than 100 booths on-site, with more than 2,000 kinds of commodities from 150 poverty-relief counties nationwide.

So far, uSmile has set up special areas and special counters for poverty alleviation products in more than 10,000 convenience stores in 31 provinces, municipalities and autonomous regions, built a national network and opened a "green channel" for centralized procurement of special products in poverty-stricken areas, constructed a long-term mechanism of industrial revitalization, and promoted the sustainable development of local special economy.

Cultivating Talents

PetroChina has taken intellectual support as a pioneering effort that focuses on both the present and the future, and has carried out multi-dimensional and multi-level training. By virtue of the "Xuhang Program" and the "Teacher Training Program", we enhanced the cultural quality and development capacity of the population in remote regions by subsidizing students in need and providing training to primary and secondary school teachers, and management personnel. We also offered targeted courses on innovative marketing (video merchandising), digital countryside and smart agriculture, and employed experts to provide technical guidance on farming, livestock breeding and land improvement in the field, in order to enhance the hematopoietic function of the areas we help. Through the network, video and training modes such as sending education to the countryside, we have strengthened training for the involved officials at all levels, grass-roots officials in poverty-alleviation regions, leaders of prosperity achievement, and professional and technical personnel in poverty-stricken areas. By 2021, a total of more than 70,000 people received our training.

Ensuring Medical Treatment

We helped remote regions improve basic medical facilities of township hospitals, provided regular rounds of medical checkups, trained rural healthcare workers, and took various measures to improve medical conditions in remote regions. We innovated in terms of medical assistance, providing health and medical insurance for the poor and subsidizing the treatment and rehabilitation of people in difficult financial conditions to reduce the relevant burden on families.

The Company provided "Consultation for Major Illnesses" medical protection for local people in Xishui County of Guizhou and Hengfeng County of Jiangxi, which allows people who have been initially diagnosed with major illnesses by secondary or higher level hospitals to receive "Consultation for Major Illnesses" through remote consultation by medical experts, so as to alleviate the difficulty of local patients with major illnesses to seek treatment. At the same time, training was provided for hospitals, village clinics and individual doctors in these two counties to improve the overall quality and medical level of medical personnel.



OVERSEAS COMMUNITY CONSTRUCTION

We respect the cultures and conventions of the host countries in which we operate, and we are committed to establishing long-term and stable cooperative relations with the host countries. We take an initiative to incorporate our development into local socioeconomic growth and create economic and social value to jointly promote the development and prosperity of local communities together with host governments and business partners.

We

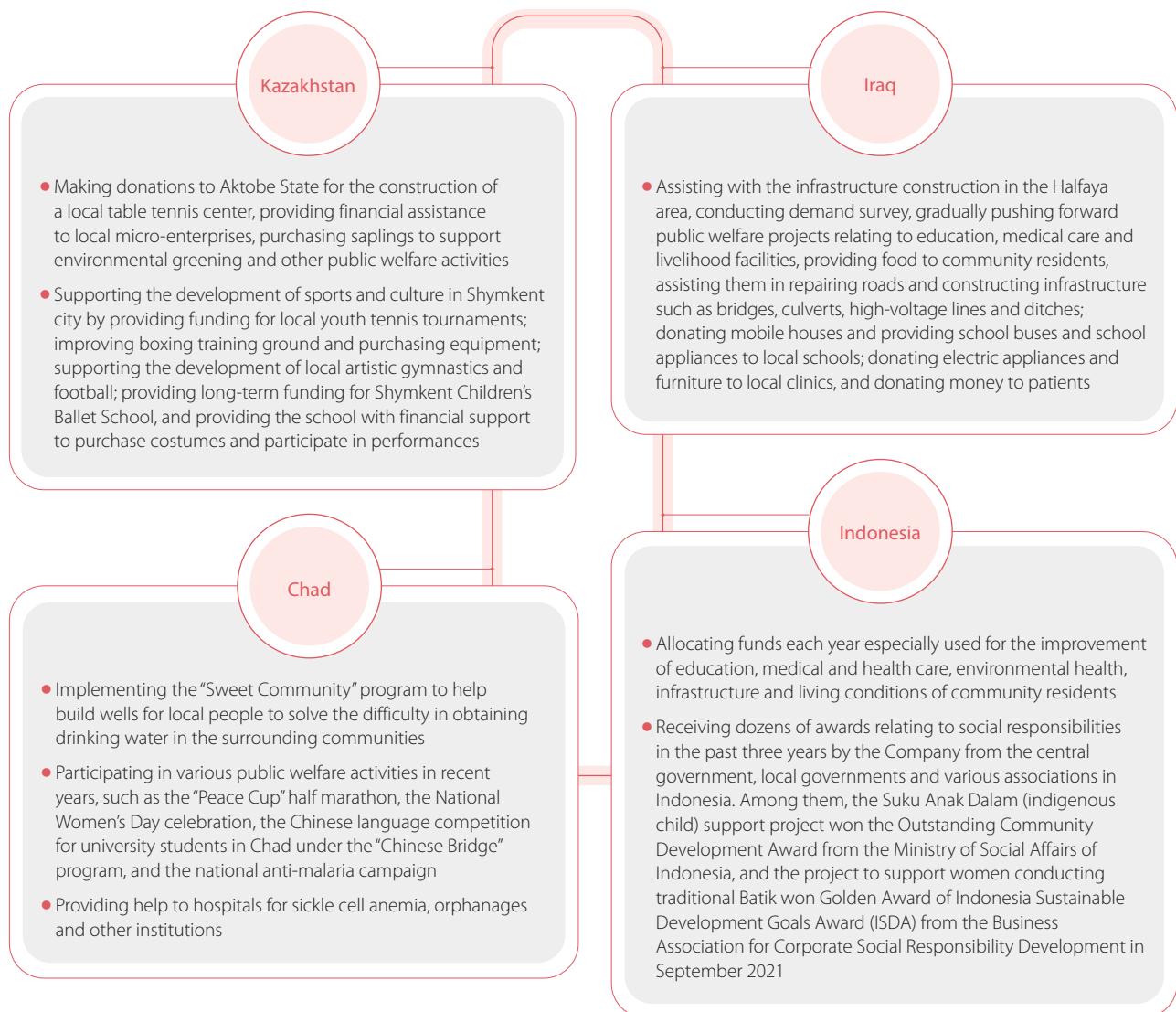
- Comply with all applicable international and local laws that related to community affairs and social responsibility, and dynamically adjust the Company's policies and procedures to comply with the relevant laws and regulations
- Respect, defend and protect human rights and respect local customs and cultural traditions
- Conduct all activities in an ethical, fair, transparent and responsible manner, and commit to the prevention, reduction and compensation of the environmental impact made by its production and operation
- Formulate community development plans and carry out relevant activities to continuously improve the well-being of local people and promote harmonious development of the community
- Notify the community prior to the implementation of the community development projects, regularly assess the results and make necessary improvements
- Provide the stakeholders with timely information about the projects and activities relating to community construction, and call on all employees to participate in such activities
- Promulgate the Company's ESG philosophy and policy to the contractors, and encourage them to actively participate in the implementation of projects and activities relating to community development

Community Welfare

We take an active role to help improve the production and living conditions of local residents, give donations to education, and carry out public welfare programs with respect to hygiene and healthcare to achieve harmonious coexistence with the local community and facilitate the sustainable development of the community.



In 2021, we were engaged in a variety of community activities overseas:



Case Study

Joining Overseas Communities in Continuous Fight against COVID-19 Pandemic

In the face of the continuing spread of the COVID-19 pandemic, PetroChina in 2021 continued to work with the countries in which we operate to fight the pandemic by donating pandemic prevention supplies, providing vaccination services, sharing experience in pandemic control, and establishing joint prevention and control mechanisms with local governments and communities.

We:

- Provided local governments and hospitals with funds to purchase medical equipment necessary to fight the pandemic
- Donated masks, protective suits, oxygen equipment and other epidemic prevention materials to local communities
- Cooperated with local health departments to provide assistance in vaccination efforts in surrounding communities
- Distributed rice, flour, oil and other daily necessities to local families in need to help them survive the pandemic

Protect Local Environment

We strongly believe in the importance of striking a balance between business development and environmental protection. Therefore, we strictly comply with the laws and regulations of host countries and international standards on environmental protection and carefully protect the local ecological environment during operations.

Case Study Building a Green Refinery in Kazakhstan

The Company's Shymkent refinery in Kazakhstan is committed to building an environmentally friendly enterprise and has invested more than USD 1.8 billion in its modernization revamp. The refinery has installed environmental protection equipment such as flue gas desulfurization and dust removal devices, automatic monitoring systems for flue gas emissions and advanced sewage treatment devices. After the revamp, the Shymkent refinery has become the first enterprise in Kazakhstan qualified to produce Euro IV and Euro V standard refined oil products, ranked as a green refinery, and has pushed forward the process to achieve clean energy in Kazakhstan.

In 2021, the Shymkent refinery ranked second among all companies in Kazakhstan in terms of “the best indicators of environmental protection and the indicators of improvement” in the rating published by the World Wildlife Fund, Kazakhstan on openness and availability of environmental information.

Promote Localization

We proactively promote localization and take the procurement of local products and local services as priority in order to offer local contractors and service providers a chance to participate in the projects, promoting the development of local small and medium-sized enterprises and creating employment opportunities for the local communities.

Tax Payments According to Law

PetroChina strictly complies with the laws and regulations in the countries where it operates, pays taxes to local governments according to law, and duly contributes to the development of local economies. In countries where the Extractive Industries Transparency Initiative (EITI) standard is implemented, such as Iraq and Mongolia, our local companies actively participate in the multi-stakeholder groups and publish information on our projects and tax payments to provide details that far exceed the minimum disclosure requirements prescribed by the EITI. We support and follow the Anti-BEPS (Base Erosion and Profit Shifting) initiative and the PetroChina Tax Policy and pledge to pay tax according to the law in areas where we operate and create value, in order to strive to achieve sustainable development and to duly contribute to socioeconomic development.



For more information on the Tax Policy of PetroChina Company Limited, please visit the Company's website.

Protect Human Rights

Protecting indigenous rights. Before the commencement of a project, we conduct assessments of the social and economic impact in relation to the needs of indigenous people, human rights, cultural heritage and involuntary resettlement. We try our best to protect all the legal rights and interests of the indigenous people. We uphold standard operation in land compensation and formulate compensation plans by taking into account the opinions of the local governments, our partners and the local residents in order to protect the interests of the indigenous people. Specifically, compensation is paid before land use, and the compensation information is released in a timely manner to ensure operational transparency.

Protect human rights of overseas security contractors. We strictly comply with the laws, regulations and human rights assurance protection requirements of the countries where the resources are located. All contracts on operation and management of contractors are strictly performed in accordance with the relevant requirements and regulations set forth by the relevant authorities in the countries where the resources are located. According to the basic framework and content of labor agreements for employees in the local oil and gas industry of the countries where the resources are located, we endeavor to ensure that the rights and interests of both the Company and the employees are maximized and maintained in a fair and equitable manner.



Key Measures for Protecting Human Rights of Overseas Security Contractors

- Conducting due diligence to reasonably assess the security contractor's ability to protect human rights and ability to handle violation of human rights or breach of international humanitarian laws after they occur
- Advising security contractors on appropriate human rights protection solutions to avoid various disputes and negative impacts arising from human rights violations
- Entering into security contracts with employees, clarifying business responsibilities, and strictly complying with and implementing various measures required by the labor agreement
- Respecting and protecting the traditional rights, interests, culture, and aspirations of employees, such as shift work system, food habits, and holiday policy
- Communicating with security companies or security personnel on a regular basis to understand the problems in the security work and the work demands of security companies and security personnel, so as to rectify the existing problems and deal with such demands through consultation as soon as possible

CUSTOMER SERVICE

As a leading producer and supplier of petroleum and petrochemical products in China, PetroChina continues to optimize its product structure and improve its product quality, while upholding the principle of pursuing integrity and excellence in quality control. We endeavor to enhance quality management continuously by focusing on the formulating, development and revision of standards, supervision and inspection, and nurturing a culture of quality, in order to provide customers with clean, high-quality and diversified products and services.

Product Quality and Safety

We provide consumers with products that meet legal requirements and standards with a high sense of responsibility. The Company strictly complies with the *Law of the People's Republic of China on Product Quality*, the *Regulations of the People's Republic of China on Certification and Accreditation*, the *Regulations of the People's Republic of China on Administration of Production License of Industrial Products* and other applicable laws and regulations concerning quality management, and has formulated the management rules and implementation rules such as the *Measures for Quality Management*, the *Administrative Rules on Supervision and Random Inspection of Product Quality*, and the *Rules on Quality Supervision of Purchased Materials*, and other specific management regulations and implementation rules covering the entire enterprises, all the staff and the whole process.

Product Quality and Safety

100%

Percentage of qualification for third party quality management system certification

0%

Percentage of products recalled for safety and health reasons

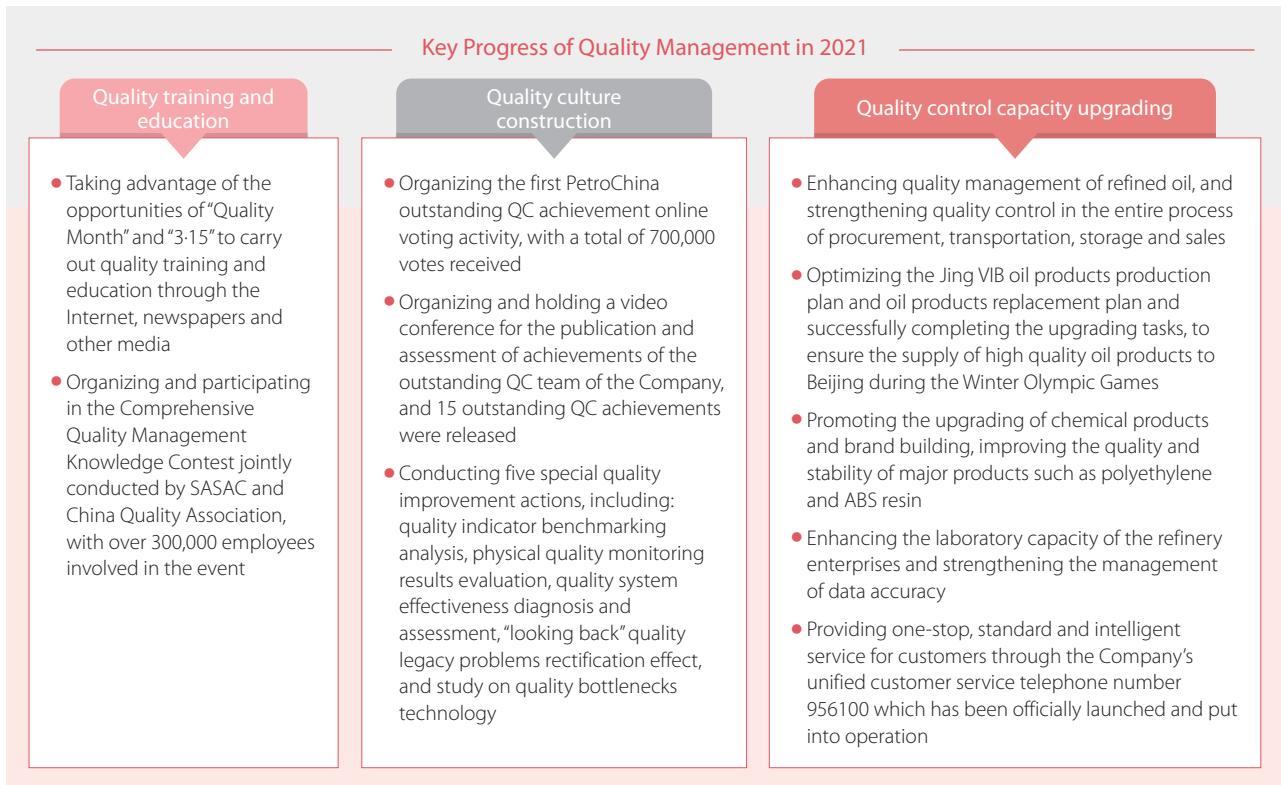
In the process of product supply, we comprehensively consider its impact on the consumers and ensure the product quality and safety. We strengthen product quality inspections, and conduct inspections over raw materials, intermediate products and end products. The manufactured products must especially be inspected before they are allowed to leave the factory. In order to ensure the accuracy and reliability of the inspection data, we persist in regularly conducting verification and calibration of instruments and equipment. We attach great importance to communication with customers, inform them in detail of the performance and physical and chemical indicators of products, and formulate strict procedures for products that need to be recycled to prevent adverse effects on the environment.

In 2021, the Company strengthened and improved product and service quality standards, and strived to provide consumers with diversified and high-quality products. We achieved sales of 110 million tons of refined oil products and 194.591 billion cubic meters of natural gas, and developed 83 new brands of chemical products throughout the year, with an output of 374,000 tons.

Product Quality Test

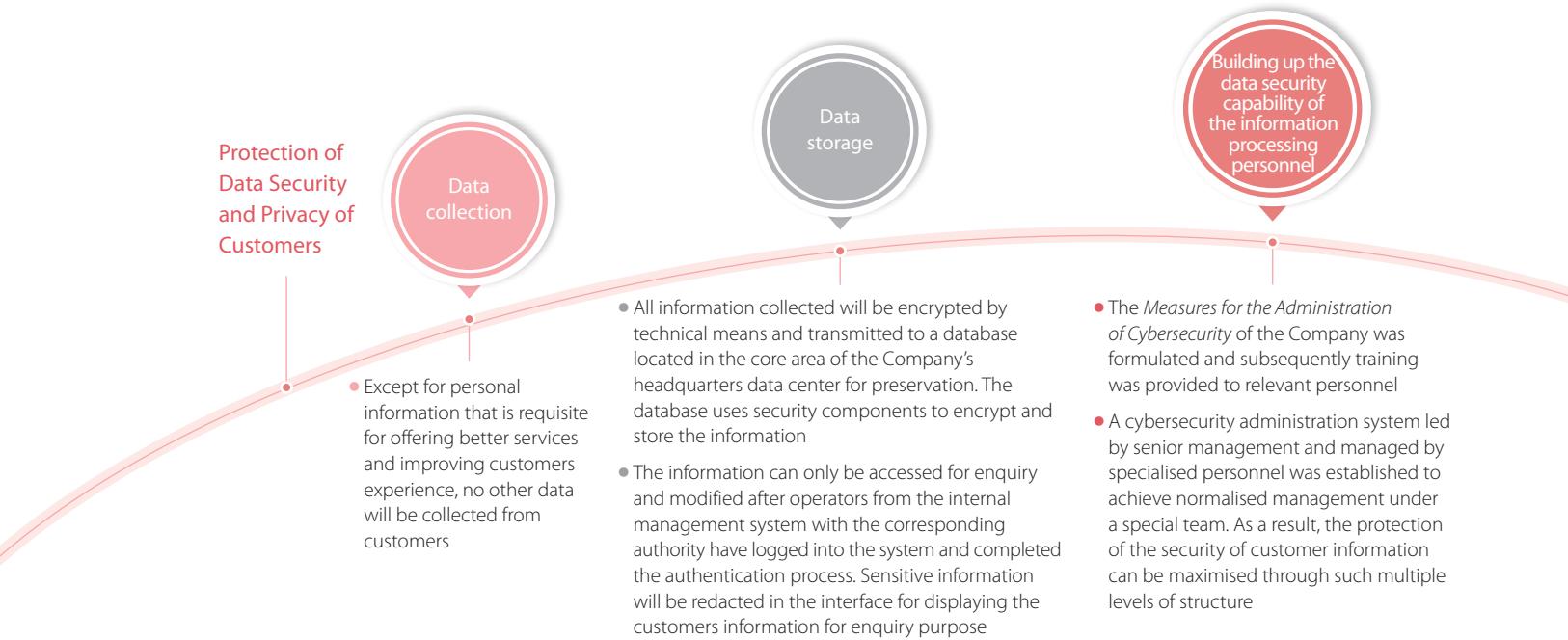
- 1 Establishing a laboratory management system in line with the quality management in accordance with the requirements of national laboratory certification (accreditation), and conducting verification in strict accordance with the standard test methods used for testing
- 2 All measuring instruments and devices, meters, etc. are verified and calibrated in strict accordance with the periodic calibration plan and calibration protocols (norms)
- 3 Implementing process quality control, and controlling quality fluctuations in the production process through establishment of key quality control points, the application of process capability index (Cpk) and other management tools
- 4 Collecting and accumulating data and information reflecting the quality status, organizing quality analysis, and improving and strengthening quality management
- 5 Strictly implementing the "Five Prohibitions" rules for products to be delivered, that is, products that fail to meet the requirements in terms of quality, category and specifications/brands are not allowed to leave the factory; products that fail to pass all analysis and inspection items are not allowed to leave the factory; products without product quality inspection certificate are not allowed to leave the factory; products whose packaging or containers fail to meet the standards are not allowed to leave the factory; and products that fail to keep samples as required are not allowed to leave the factory





Consumers' Rights and Interests

We strictly abide by applicable laws, regulations and international standards relating to advertisements, labelling and privacy of products and services such as the *Law of the People's Republic of China on Protection of Consumers' Rights and Interests* and the *United Nations Guidelines for Consumer Protection*. The Company established customer data management rules and acted in strict accordance with the rules in the management and use of customer data, so as to protect security and privacy of consumer data.



Handling of Customer Complaints

4,111 cases

Number of customer complaints

100%

Customers complaint response rate

The Company insists on adopting a customer-centered approach and constantly enhances its service awareness. As we improve customer service standards and standardize the customer service workflow, customers' complaints are duly addressed and the legitimate rights and interests of our consumers have been accordingly protected. In 2021, the Company conducted inspection and requested rectification of the service stations that had received a relatively higher number of complaints recorded at the customer center so as to improve their service quality.

Customer Complaints Resolution and Service Improvement



Customers Complaints and Feedback on Issues

- Analysis of customer complaints
- Visits by mysterious customers
- Video surveillance of stations

Analysis of Issues

- Conducting service quality benchmarking
- Commencing customer satisfaction survey
- Analyzing the issues identified

Improvements

- Supervising the rectification of issues
- Regularly summarizing the experience
- Conducting service training
- Strengthening the implementation of the service standards
- Improving service quality



According to the 2021 China Brand Power IndexSM (C-BPI) brand ranking and analysis report released by Chnbrand, a renowned brand rating institute, PetroChina's overall rating ranked the first in the list of service station brands for the fifth consecutive year.

The Company places high value on the protection of intellectual property rights. Accordingly, we monitor and assess risks associated with core and key trademarks on a monthly basis, and subsequently file applications with the national trademark administration authority in connection with the registration, invalidation and opposition to the registration of trademarks based on the relevant results. Corresponding measures will be taken to safeguard the exclusive right to use trademarks against acts of trademark infringement and unfair competition.

Value-added Service

For customer satisfaction, we continuously improve the quality of products and services, work hard to improve our service network and its functions, and promote the transformation our sales business which was upgraded to offer a complete suite of services covering "oil, gas, hydrogen, power and non-fuel" businesses. In 2021, the Company used its best efforts to expand the scope of operation of its service stations, to promote digital retail, and to fully develop an innovative integrated service station covering "people, vehicles, and life".

Case Study**PetroChina's First Integrated Energy Service Station Commenced Operation in Beijing**

On September 30, 2021, PetroChina's first integrated energy service station officially commenced operation in Yanqing, Beijing. This service station integrates a number of service functions, ranging from refueling, gas filling, hydrogenation, power charging and convenience store sales and other service, genuinely representing a one-stop shop energy supply for "oil, gas, hydrogen, power and non-fuel" businesses.



- **Refueling:** Vehicle plate payment, identification of dangerous behaviors, smart patrol, smart light control and other intelligent refueling services are offered via the Internet of Things, video AI algorithm, intelligent inventory, electronic price tag and other technologies.
- **Gas filling:** With one 30 cubic meters of LNG skid-mounted gas filling equipment, 11 tons of LNG natural gas can be stored at a time.
- **Hydrogenation:** This integrated energy service station is capable of simultaneously refueling 35 MPa and 70 MPa hydrogen fuel cell vehicles with a daily hydrogenation capacity of 1,500 kg.
- **Power charging:** With the three 120-kilowatt double-gun charging posts and six parking spaces, an electric vehicle can be charged in 15 minutes; the annual output of photovoltaic panels on the roof of the main station building and the charging posts is about 69,000 kWh, which can at the same time meet the lighting and domestic electricity demand at service stations.
- **Non-oil business:** This is divided into three areas including immersion shopping, Kunlun uSmile fresh ground coffee, and entertainment and leisure, with 10 major categories and more than 100 PetroChina's proprietary goods, while also selling 16 major categories of Winter Olympic licensed goods.
- **Others:** With the automatic car washing device and sewage treatment facilities, the green low-carbon car washing service is offered by making use of recycling treatment through which the vehicle cleansing can be completed in 1.5 minutes in average.

PERFORMANCE DATA

Category	Indicator	2019	2020	2021
Governance	The Diversity of the Board of Directors			
	Independent directors (%)	-	45.5	41.7
	By gender (%)			
	- Male	-	90.9	91.7
	- Female	-	9.1	8.3
	Professional background (%)			
	- Legal	-	9.1	8.3
	- Finance/accounting	-	18.2	16.7
	- Economics	-	18.2	16.7
	- Petrochemical	-	54.5	58.3
Safety	Compliance management and anti-corruption			
	Coverage rate of compliance training (%)	-	100	100
	Coverage rate of anti-corruption training (Board members included) (%)	-	-	100
	Number of concluded corruption lawsuits (cases)	-	12	11
Climate Change	Fatal accident rate (person/100 million working hours)	0.07	0.08	0.09
	Total accident rate (incidents/million working hours)	0.0562	0.0495	0.0541
	Work-related fatalities (persons)	2	2	2
	Loss of working days due to work-related injury (days)	6,150	6,806	8,651
	Energy Consumption			
	Total energy consumption ^① (10 ⁴ tons of standard coal)	6,512	6,406	6,273
	Total raw coal consumption ^② (10 ⁴ tons)	1,268	1,289	1,327
	Total crude oil consumption ^③ (10 ⁴ tons)	180	172	168
	Total natural gas consumption ^④ (10 ⁸ m ³)	185	187	175
	Total electricity consumption ^⑤ (10 ⁸ kWh)	563	553	525

①-⑤ Total energy consumption is the actual amount of various physical energy consumed in the production and daily life of an enterprise, which is calculated by applying the calculation method and conversion factors as stipulated in the China Petroleum Enterprise Standard (Q/SY09061-2020), using the following formula: total energy consumption (tons of standard coal) = \sum the actual amount of physical energy consumed in the production of the enterprise \times the conversion factor. For example, the conversion factor is 0.7143 tons of standard coal/ton for raw coal, 1.4286 tons of standard coal/ton for crude oil, 13.3 tons of standard coal/10⁴ cubic meters for natural gas, and 1.229 tons of standard coal/10⁴ kilowatt hours for electricity. The total amount of energy consumption is calculated through multiplying the actual physical energy consumption by the conversion factor.

⑥-⑦ In 2021, the Company adjusted the statistical method for two indicators, the "unit energy factor consumption for refining" and "fuel and power consumption for producing ethylene products", in accordance with the national standards, the Norm of Energy Consumption Per Unit Product for Petroleum Refining (GB30251) and the Norm of Energy Consumption Per Unit Product of Ethylene Plant (GB30250). The Company also restored the 2019 and 2020 data according to the same standards.

Category	Indicator	2019	2020	2021
Climate Change	GHG			
	Total GHG emissions ^(⑩) (10 ⁶ tons of CO ₂ equivalent)	174.08	167.44	159.54
	- Direct GHG emissions (Scope 1) ^(⑪) (10 ⁶ tons of CO ₂ equivalent)	132.17	127.57	121.39
	- Indirect GHG emissions (Scope 2) ^(⑫) (10 ⁶ tons of CO ₂ equivalent)	41.91	39.87	38.15
	Domestic GHG emissions per unit of oil and gas production ^(⑬) (tCO ₂ e/toe)	-	0.28	0.25
	Methane emissions (10 ⁴ tons)	-	-	42.81
	Intensity of methane emission (%)	-	-	0.45
Environment	Investment in new energies and new businesses (RMB 10 ⁸)	-	-	21.8
	Water			
	Fresh water consumption (10 ⁴ m ³)	79,383	76,995	75,004
	Year-on-year change in fresh water consumption (%)	-0.78	-3.01	-2.59
	Fresh water consumption for processing 1 ton of crude oil (m ³)	0.52	0.515	0.488
	Water saved (10 ⁴ m ³)	980	944	969
	Land Resources			
	Land saved (hectare)	1,247	1,190	1,120
	Pollutants Emissions ^(⑭)			
	Quantity of general solid waste ^(⑮) (10 ⁴ tons)	-	-	260.3
	Quantity of hazardous waste ^(⑯) (10 ⁴ tons)	-	-	139.6
	Rate of disposal in compliance for general solid waste (%)	-	-	100
	Rate of disposal in compliance for hazardous solid waste (%)	-	-	100
	COD emissions ^(⑰) (10 ⁴ tons)	2.44	2.35	0.53
	SO ₂ emissions ^(⑱) (10 ⁴ tons)	9.38	8.84	1.11
	NO _x emissions ^(⑲) (10 ⁴ tons)	8.90	7.76	5.64
	Environmental Protection			
	Environmental treatment expenditures (RMB 10 ⁸)	-	-	39.2

⑧-⑪ The volume of GHG emissions are direct emissions (Scope 1) and indirect emissions (Scope 2) within the operating boundary of the Company. For domestic projects, the accounting are conducted mainly in accordance with the *Guidelines on Greenhouse Gas Emission Accounting Methods and Reports for Petroleum and Natural Gas Production Enterprises in China* (for Trial Implementation) (Fa Gai Ban Qi Hou [2014] No. 2920), the *Guidelines on Greenhouse Gas Emission Accounting Methods and Reports for Petroleum and Chemical Production Enterprises in China* (for Trial Implementation) (Fa Gai Ban Qi Hou [2014] No. 2920), the *Guidelines on Greenhouse Gas Emission Accounting Methods and Reports for Chinese Chemical Production Enterprises* (for Trial Implementation) (Fa Gai Ban Qi Hou [2016] No. 2526) and other relevant industry guidelines and standards. For overseas operations projects, priority is given to the accounting norms and requirements of the host country. If there are not any specific requirements in the host country, then the accounting is conducted by referring to the domestic accounting methods combined with the relevant parameters of the host country.

⑫ Thanks to the continuous upgrading of wastewater pollution control in recent years, ammonia-nitrogen emissions have decreased sharply, so much so that ammonia nitrogen is no longer the main pollutant subject to total emissions control. Thus, this index is no longer disclosed in this report.

⑬-⑭ Referring to the quantity of solid wastes disposed of by third party entities with relevant qualification entrusted by the Company.

⑮-⑯ Since 2018, in response to national requirements for pollution prevention and control, we pressed ahead with some projects such as upgrading of wastewater treatment, transformation for ultra-low emissions of waste gas, cleaner production, fuel substitution and other emissions reduction projects, and structural emissions reduction projects, significantly reducing pollutant emissions; at the same time, according to the findings of the second national census on pollution sources and specific standards for pollutant emissions accounting stipulated in the technical specifications for application and issuance of pollutant permit for the industries relating to the Company's business, starting from 2021, the Company's pollutant emissions are accounted for preferably using online pollution source monitoring data. The statistics of waste gas pollutant emissions includes flare gas emissions.

Category	Indicator	2019	2020	2021
Number of employees	Number of employees (10^4)	46.07	43.20	41.72
	Diversity of Employees and Localization			
	Percentage of female administrative staff (%)	7.44	7.28	7.21
	Percentage of ethnic minority employees (%)	6.53	6.61	6.63
	Percentage of foreign employees in overseas projects (%)	94.23	95.15	95.21
	Types of employment of workforce			
	Percentage of full-time employees (%)	100	100	100
	Percentage of part-time employees (%)	0	0	0
	Percentage of employees by gender			
	Percentage of male employees (%)	71.21	72.48	73.95
	Percentage of female employees (%)	28.79	27.52	26.05
	Workforce by age			
	25 years old and below (%)	0.90	1.29	1.60
	26-35 years old (%)	13.89	12.56	11.39
	36-45 years old (%)	29.95	27.35	25.11
	46-55 years old (%)	47.23	49.08	50.10
	56 years old and above (%)	8.03	9.72	11.80
	Workforce by position			
	Administrative staff (%)	28.51	28.57	28.88
	Professional and technical staff (%)	13.94	14.08	14.63
	Operating staff (%)	57.55	57.35	56.49
	Workforce by education			
	Master's degree and above (%)	4.03	4.23	4.55
	Bachelor's degree (%)	33.99	34.82	36.00
	College degree (%)	22.98	22.80	22.57
	Technical secondary school and below (%)	39.00	38.15	36.88
	Percentage of employees by country/region			
	China (%)	99.7	99.7	99.7
	Countries and regions other than China (%)	0.3	0.3	0.3
	Employee health			
	The establishment rate of employee occupational health monitoring archives (%)	100	100	100
	Detection rate of workplace occupational hazards (%)	99.28	99.33	99.22
	Percentage of employees facing potential occupational hazard receiving occupational health checks (%)	99.62	99.25	100.00
	Employee training			
	Average training time per person ^⑯ (hour)	18.3	32.4	30.5
	- Training time per administrative personnel (hour)	-	-	20.7
	- Training time per professional/ technical personnel (hour)	-	-	10.5
	- Training time per operating personnel (hour)	-	-	40.7
	- Training time per male employee (hour)	-	-	36.7
	- Training time per female employee (hour)	-	-	12.9

^⑯ In 2021, we changed the formula of the indicator "Average training time per person" from "Average training time per person = (Total training time)/(Number of trainees)" to "Average training time per person = (Total training time)/(Number of employees)", in line with HKEX's Environmental, Social and Governance Reporting Guide. We also adjusted the 2019 and 2020 data in accordance with the same standards.

Category	Indicator	2019	2020	2021
Number of employees	Training rate of employees (%)	-	-	100
	- Training rate of administrative personnel (%)	-	-	100
	- Training rate of professional/technical personnel (%)	-	-	100
	- Training rate of operating personnel (%)	-	-	100
	- Training rate of male employee (%)	-	-	100
	- Training rate of female employee (%)	-	-	100
	Staff turnover rate			
	Staff turnover rate (%)	-	0.27	0.22
	- Turnover rate of male employees (%)	-	-	0.21
	- Turnover rate of female employees (%)	-	-	0.23
	- Turnover rate of employees of 25 years old and below (%)	-	-	2.38
	- Turnover rate of employees aged 26-35 (%)	-	-	0.81
	- Turnover rate of employees aged 36-45 (%)	-	-	0.22
	- Turnover rate of employees aged 46-55 (%)	-	-	0.06
	- Turnover rate of employees of 56 years old and above 56 (%)	-	-	0.05
	Employees who took maternity/paternity leave returned to work and retained posts (%)	100	100	100
Society	Tax payment according to law			
	Taxes and fees (RMB 10 ⁸)	3,536	2,812	3,536
	Overseas taxes (RMB 10 ⁸)	429	238	375
	Supply chain			
	Number of material suppliers ^⑯ (entities)	23,623	23,699	20,527
	- Suppliers registered in China ^⑰ (entities)	-	-	19,885
	- Suppliers registered in countries/regions other than China ^⑱ (entities)	-	-	642
	Percentage of Tier 1 manufacturers that are qualified for quality management system (ISO 9000) certification ^⑲ (%)	-	98.14	98.01
	Percentage of Tier 1 manufacturers that are qualified for environmental management system (ISO 14000) certification ^⑳ (%)	-	92.73	93.16
	Percentage of Tier 1 manufacturers that are qualified for occupational health and safety management system (ISO 18000) certification ^㉑ (%)	-	91.20	91.49
	Expenditure on procurement ^㉒ (RMB 10 ⁸)	2,180	1,683	1,806
	Products and Services			
	Percentage of qualification for third party quality management system certification (%)	100	100	100
	Number of customer complaints (cases)	-	-	4,111
	Rate of resolution to customer complaints (%)	-	-	100
	Percentage of products recalled for safety and health reasons (%)	-	-	0
Public Welfare	Public Welfare			
	Contribution to poverty alleviation (RMB 10 ⁴)	13,760	11,954	38,984
	Educational donations (RMB 10 ⁴)	2,768	2,656	4,851
	Donations to disaster relief (RMB 10 ⁴)	2,058	1,172	3,992
	Environmental protection (RMB 10 ⁴)	4,383	375	216

^{⑯-㉑} Referring to data on suppliers involved in the domestic business of the Company only, not including international businesses.

Note: Conversion standards. 1 BOE = 1 barrel of crude oil = 6,000 cubic feet natural gas = 169.9 cubic meters of natural gas; 1 cubic meter of natural gas = 35.315 cubic feet of natural gas; 1 metric ton of crude oil = 7.389 barrels of crude oil (assuming API = 34)

INDEPENDENT PRACTITIONER'S ASSURANCE REPORT

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Independent Practitioner's Assurance Report

To the Board of Directors of PetroChina Company Limited

We have been engaged to perform a limited assurance engagement on the selected 2021 key data as defined below in the 2021 Environmental, Social and Governance Report ("ESG report") of PetroChina Company Limited (the "Company").

Selected Key Data

The selected key data in the Company's 2021 ESG Report that is covered by this report is as follows:

- Fatal accident rate
- Total accident rate
- Work-related fatalities
- Total GHG emissions
- Direct GHG emissions (Scope 1)
- Indirect GHG emissions (Scope 2)
- COD emissions
- SO₂ emissions
- NO_x emissions
- Total energy consumption
- Energy saved
- Fresh water consumption
- Water saved

Our assurance was with respect to the year ended 31 December 2021 information only and we have not performed any procedures with respect to earlier periods or any other elements included in the 2021 ESG report.

Criteria

The criteria used by the Company to prepare the selected key data in the 2021 ESG report is set out in the basis of reporting of the key data (the "basis of reporting") after this assurance report.

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Management's Responsibilities

The Management of the Company is responsible for the preparation of the selected key data in the 2021 ESG report in accordance with the basis of reporting. This responsibility includes designing, implementing and maintaining internal control relevant to the preparation of the selected key data in the 2021 ESG report that is free from material misstatement, whether due to fraud or error.

Our Independence and Quality Control

We have complied with the independence and other ethical requirement of the International Code of Ethics for Professional Accountants (including International Independence Standards) issued by the International Ethics Standards Board for Accountants, which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

Our firm applies International Standard on Quality Control 1 and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Practitioner's Responsibilities

It is our responsibility to express a conclusion on the selected key data in the 2021 ESG report based on our work.

We conducted our work in accordance with the International Standard on Assurance Engagements 3000 (Revised) "Assurance Engagements Other Than Audits or Reviews of Historical Financial Information". This standard requires that we plan and perform our work to form the conclusion.

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed. Accordingly, we do not express a reasonable assurance opinion about whether the Company's 2021 selected key data in the 2021 ESG report has been prepared, in all material respects, in accordance with the basis of reporting. Our work involves assessing the risks of material misstatement of the selected key data in the 2021 ESG report, whether due to fraud or error, and responding to the assessed risks. The extent of procedures selected depends on our judgment and assessment of the engagement risk. Within the scope of our work, we have performed the following procedures in the Head Office of the Company, Southwest Oil & Gasfield Branch and Dagang Petrochemical Branch. We have not conducted work in other branches.

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- 1) Interviews with relevant departments of the Company involved in providing information for the selected key data within the ESG report; and
- 2) Analytical procedures;
- 3) Examination, on a test basis, of documentary evidence relating to the selected key data on which we report;
- 4) Recalculation; and
- 5) Other procedures deemed necessary.

Inherent Limitation

The absence of a significant body of established practice on which to draw to evaluate and measure non-financial information allows for different, but acceptable, measures and measurement techniques and can affect comparability between entities.

Conclusion

Based on the procedures performed and evidence obtained, nothing has come to our attention that causes us to believe that the 2021 selected key data in the 2021 ESG report is not prepared, in all material respects, in accordance with the basis of reporting.

Restriction on Use

Our report has been prepared for and only for the board of directors of the Company and for no other purpose. We do not assume responsibility towards or accept liability to any other person for the content of this report.

PricewaterhouseCoopers Zhong Tian LLP

Shanghai, China

March 31, 2022

Basis of Reporting

Fatal accident rate (person/100 million working hours)

Fatal accident rate disclosed herein refers to the ratio of fatalities in industrial production safety accidents to total working hours of PetroChina Company Limited in 2021.

Total accident rate (incidents/million working hours)

Total accident rate disclosed herein refers to the ratio of the number of industrial production safety accidents to total working hours of PetroChina Company Limited in 2021.

Work-related fatalities (persons)

Work-related fatalities disclosed herein refers to the number of people who died in industrial production safety accidents of PetroChina Company Limited in 2021.

Total GHG emissions (10^6 tons of CO₂ equivalent)

Total GHG emissions disclosed herein refers to the sum of direct GHGs emissions and indirect GHGs emissions produced by subsidiaries of PetroChina Company Limited in 2021.

Direct GHG emissions (Scope 1) (10^6 tons of CO₂ equivalent)

Direct GHG emissions disclosed herein refers to the total direct GHGs emissions from fuel combustion emissions, process emissions, fugitive emissions, etc. produced by subsidiaries of PetroChina Company Limited in 2021.

Indirect GHG emissions (Scope 2) (10^6 tons of CO₂ equivalent)

Indirect GHG emissions disclosed herein refers to indirect GHGs emissions from consumption of purchased electricity, purchased steam, etc. produced by subsidiaries of PetroChina Company Limited in 2021.

COD emissions (10^4 tons)

COD emissions disclosed herein refers to the total amount of COD in the wastewater discharged during the production process by subsidiaries of PetroChina Company Limited in 2021.

SO₂ emissions (10^4 tons)

SO₂ emissions disclosed herein refers to the total amount of SO₂ emissions discharged during the production process by subsidiaries of PetroChina Company Limited in 2021.

NO_x emissions (10^4 tons)

NO_x emissions disclosed herein refers to the total amount of NO_x emissions discharged during the production process by subsidiaries of PetroChina Company Limited in 2021.

Total energy consumption (10^4 tons of standard coal)

Total energy consumption disclosed herein refers to the total amount of energy converted into standard coal and consumed by subsidiaries of PetroChina Company Limited in 2021, excluding energy consumed as raw materials for production and energy supplied outside the company.

Energy saved (10^4 tons of standard coal)

Energy saved disclosed herein refers to the sum of the year-on-year savings on energy consumption saved by subsidiaries of PetroChina Company Limited in 2021, under the premise of producing the same products and completing the same processing or workload, and the amount of energy consumption saved various energy-saving projects.

Fresh water consumption (10^4 m³)

Fresh water consumption disclosed herein refers to the amount of water used for the first time by subsidiaries of PetroChina Company Limited in 2021, from tap water, surface water, groundwater sources, excluding seawater, bittern brackish water, sewage, reclaimed water, and water supplied outside the enterprise.

Water saved (10^4 m³)

Water saved disclosed herein refers to the sum of the amount of fresh water saved by subsidiaries of PetroChina Company Limited in 2021, under the premise of producing the same products and completing the same amount of treatment or workload, and the amount of fresh water saved by various water-saving projects.

OBJECTIVES AND PLANS

In 2022, the Company will continue to implement the new development philosophy in an effective and robust manner, so as to serve and integrate into the new development paradigm. While the Company will deliver further improvement in the areas of corporate management, reform and innovation, improvement of quality and profitability, green transformation, digital transformation and risk prevention, we will make every effort to achieve sustainable development in harmony with the environment, the society and all other stakeholders.

Aspects	2022 Main Objectives	2022 Action Plans
Corporate governance	<ul style="list-style-type: none"> Improve corporate governance Promote management upgrade Fully complete the three-year action target of SOE reform Promote digital transformation and intelligent development 	<ul style="list-style-type: none"> Improve the Company's sustainability management to effectively control ESG risk Improve corporate governance framework Strengthen compliance management in key areas Consistently promote the construction of internal control system Strictly implement anti-corruption laws and regulations such as the Supervision Law Strengthen communication and participation with stakeholders such as the investors Perform various tasks of the three-year action plan on the reform of state-owned enterprises in an in-depth way Promote the implementation of science and technology policies and improve the science and technology innovation system Promote data sharing and integrated applications to drive business restructuring, reform in management mode and innovation in business model
Energy and the environment	<ul style="list-style-type: none"> Accelerate green and low-carbon transformation The total emissions of major pollutants fully meet the State's assessment requirements for emission reduction Greenhouse gas emissions are less than or equal to 169 million tons Realize energy saving greater than or equal to 0.56 million tons of standard coal Water saving greater than or equal to 6.8 million cubic meters 	<ul style="list-style-type: none"> Strengthen energy consumption intensity and total energy control, save raw materials and energy, accelerate green substitution of energy used in production, and improve overall energy efficiency; implement energy-saving and water-saving goals and responsibilities, and strengthen the exchange of energy-saving and water-saving technologies to promote application Continue to carry out the construction of green mines in oil and gas field enterprises; ensure proper operation of environmental protection facilities and the stability of relevant devices to achieve emissions meeting the standards in oil refinery enterprises Strengthen the management and control of greenhouse gas emissions; promote reduction, resourcing and decontamination of wastes; carry out the treatment of VOCs, nitrogen oxides and other ozone precursors; and promote the demonstration projects of methane emission reduction Make greater effort for natural gas development and promote synergistic and integrated development of oil and gas business and new energy Carry out CCS/CCUS demonstration construction, explore the path of large-scale development; make layout for carbon sink forest projects, strengthen carbon asset management, and actively participate in carbon emission rights trading
Employee rights and interests and development	<ul style="list-style-type: none"> Comprehensively implement the project of Building the Enterprise with Talent Build excellent groups of managers and talents Optimize compensation allocation mechanism Ensure the safety of employees' lives and property 	<ul style="list-style-type: none"> Safeguard legal rights and interests of employees Devote more to the selection and training of young managers Strengthen all-staff education and training, enhance quality and skill training for employees, and pave a smooth path for employees' career development Constantly improve market-oriented compensation allocation mechanism Continue to promote the pilot application of the professional manager system Improve employee holiday management system and establish an informatization platform for employee health management Improve employees' participation in enterprise's major decision-making, democratic management, policy transparency and other systems Strengthen overseas risk assessment and early warning, and enhance terrorism emergency response capabilities Increase investment to improve the production and living conditions of front-line employees in remote/plateau areas and overseas, and improve the support mechanism for employees with financial difficulties
Social contribution	<ul style="list-style-type: none"> Promote the steady growth of national economy, earnestly fulfill social responsibilities and actively participate in public welfare undertakings 	<ul style="list-style-type: none"> Maintain close communication and coordination with local governments, and support and drive the local economic and social development Assist in promoting rural revitalization Support and participate in social welfare undertakings and promote the improvement of people's livelihood

HONG KONG STOCK EXCHANGE'S ENVIRONMENTAL, SOCIAL AND GOVERNANCE REPORTING GUIDE INDEX



Aspect	Mandatory Disclosure Indicator		Page Number
Governance Structure	<p>A statement from the board containing the following elements:</p> <ul style="list-style-type: none"> (i) a disclosure of the board's oversight of ESG issues; (ii) the board's ESG management approach and strategy, including the process used to evaluate, prioritise and manage material ESG-related issues (including risks to the issuer's businesses); and (iii) how the board reviews progress made against ESG-related goals and targets with an explanation of how they relate to the issuer's businesses. 		Inside front cover
Reporting Principles	<p>A description of, or an explanation on, the application of the following Reporting Principles in the preparation of the ESG report:</p> <p>Materiality: The ESG report should disclose: (i) the process to identify and the criteria for the selection of material ESG factors; (ii) if a stakeholder engagement is conducted, a description of significant stakeholders identified, and the process and results of the issuer's stakeholder engagement.</p> <p>Quantitative: Information on the standards, methodologies, assumptions and/or calculation tools used, and source of conversion factors used, for the reporting of emissions/energy consumption (where applicable) should be disclosed.</p> <p>Consistency: The issuer should disclose in the ESG report any changes to the methods or KPIs used, or any other relevant factors affecting a meaningful comparison.</p>		3-5
Reporting Boundary	<p>A narrative explaining the reporting boundaries of the ESG report and describing the process used to identify which entities or operations are included in the ESG report. If there is a change in the scope, the issuer should explain the difference and reason for the change.</p>		2
Subject Area	Aspect	Comply or Explain Indicator	Page Number
Environmental	Aspect A1: Emissions	General Disclosure Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to air and greenhouse gas emissions, discharges into water and land, and generation of hazardous and non-hazardous waste.	33, 46, 50-55
		KPI A1.1 The types of emissions and respective emissions data.	87
		KPI A1.2 Direct (Scope 1) and energy indirect (Scope 2) greenhouse gas emissions (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	87
		KPI A1.3 Total hazardous waste produced (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	87
		KPI A1.4 Total non-hazardous waste produced (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	87
		KPI A1.5 Description of emission target(s) set and steps taken to achieve them.	33-39, 53-55
		KPI 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.	54-55

Subject Area	Aspect	Comply or Explain Indicator	Page Number
Environmental	Aspect A2: Use of Resources	General Disclosure Policies on the efficient use of resources, including energy, water and other raw materials.	50-53
		KPI A2.1 Direct and/or indirect energy consumption by type (e.g. electricity, gas or oil) in total (kWh in '000s) and intensity (e.g. per unit of production volume, per facility).	86
		KPI A2.2 Water consumption in total and intensity (e.g. per unit of production volume, per facility).	87
		KPI A2.3 Description of energy use efficiency target(s) set and steps taken to achieve them.	52-53
		KPI 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.	50-51
		KPI A2.5 Total packaging material used for finished products (in tonnes) and, if applicable, with reference to per unit produced.	-
	Aspect A3: The Environment and Natural Resources	General Disclosure Policies on minimising the issuer's significant impacts on the environment and natural resources.	46-59
		KPI A3.1 Description of the significant impacts of activities on the environment and natural resources and the actions taken to manage them.	46-59
	Aspect A4: Climate Change	General Disclosure Policies on identification and mitigation of significant climate-related issues which have impacted, and those which may impact, the issuer.	33
		KPI 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.	33-35
Social	Aspect B1: Employment	General Disclosure Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to compensation and dismissal, recruitment and promotion, working hours, rest periods, equal opportunity, diversity, anti-discrimination, and other benefits and welfare.	62-64
		KPI B1.1 Total workforce by gender, employment type (for example, full- or part-time), age group and geographical region.	88
		KPI B1.2 Employee turnover rate by gender, age group and geographical region.	89
	Aspect B2: Health and Safety	General Disclosure Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to providing a safe working environment and protecting employees from occupational hazards.	64
		KPI B2.1 Number and rate of work-related fatalities occurred in each of the past three years including the reporting year.	86
		KPI B2.2 Lost days due to work injury.	86
		KPI B2.3 Description of occupational health and safety measures adopted, and how they are implemented and monitored.	64-68
	Aspect B3: Development and Training	General Disclosure Policies on improving employees' knowledge and skills for discharging duties at work. Description of training activities.	68-70
		KPI B3.1 The percentage of employees trained by gender and employee category (e.g. senior management, middle management).	89
		KPI B3.2 The average training hours completed per employee by gender and employee category.	88

Subject Area	Aspect	Comply or Explain Indicator	Page Number
Social	Aspect B4: Labour Standards	General Disclosure Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to preventing child and forced labour.	62
		KPI B4.1 Description of measures to review employment practices to avoid child and forced labour.	62
		KPI B4.2 Description of steps taken to eliminate such practices when discovered.	62
	Aspect B5: Supply Chain Management	Generally Disclose Policies on managing environmental and social risks of the supply chain.	21
		KPI B5.1 Number of suppliers by geographical region.	89
		KPI B5.2 Description of practices relating to engaging suppliers, number of suppliers where the practices are being implemented, and how they are implemented and monitored.	21-22
		KPI B5.3 Description of practices used to identify environmental and social risks along the supply chain, and how they are implemented and monitored.	21-22, 67
		KPI B5.4 Description of practices used to promote environmentally preferable products and services when selecting suppliers, and how they are implemented and monitored.	21-22
	Aspect B6: Product Responsibility	General Disclosure Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to health and safety, advertising, labelling and privacy matters relating to products and services provided and methods of redress.	81-84
		KPI B6.1 Percentage of total products sold or shipped subject to recalls for safety and health reasons.	89
		KPI B6.2 Number of products and service related complaints received and how they are dealt with.	84
		KPI B6.3 Description of practices relating to observing and protecting intellectual property rights.	84
		KPI B6.4 Description of quality assurance process and recall procedures.	82
		KPI B6.5 Description of consumer data protection and privacy policies, and how they are implemented and monitored.	83
		General Disclosure Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to bribery, extortion, fraud and money laundering.	19
	Aspect B7: Anti-corruption	KPI B7.1 Number of concluded legal cases regarding corrupt practices brought against the issuer or its employees during the reporting period and the outcomes of the cases.	19
		KPI B7.2 Description of preventive measures and whistle-blowing procedures, and how they are implemented and monitored.	19-21
		KPI B7.3 Description of anti-corruption training provided to directors and staff.	20
	Aspect B8: Community	General Disclosure Policies on community engagement to understand the needs of the communities where the issuer operates and to ensure its activities take into consideration the communities' interests.	74-81
		KPI B8.1 Focus areas of contribution (e.g. education, environmental concerns, labour needs, health, culture, sport).	74-81
		KPI B8.2 Resources contributed (e.g. money or time) to the focus area.	89

This report is in compliance with the "comply or explain" provisions under the HKEX's ESG Reporting Guide. The undisclosed indicators in KPI A2.5 and some of the disclosed indicators in KPI B1.2 are interpreted as follows:

1. Clause A2.5 does not apply to the Company due to its product nature.

2. The Company employs a small percentage of its employees outside of China. In consideration of materiality, regional employee turnover data are not disclosed in this report.

TCFD RECOMMENDATIONS INDEX

	TCFD Framework	Page Number
Governance		
a) Describe the board's oversight of climate-related risks and opportunities.		33
b) Describe management's role in assessing and managing climate-related risks and opportunities.		34
Strategy		
a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.		35
b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.		30-32
c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.		31-35
Risk Management		
a) Describe the organization's processes for identifying and assessing climate-related risks.		34
b) Describe the organization's processes for managing climate-related risks.		34
c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.		Inside front cover, 14
Metrics and Targets		
a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.		36-39, 87
b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.		35-39
c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.		30-43

GLOBAL COMPACT AND US

The Global Compact is a global framework initiated and advocated by the United Nations aimed at the promotion of sustainable development and the collective improvement of social well-being through responsible and innovative business practices. As a member of the UN Global Compact, PetroChina is committed to observing and supporting the Ten Principles of the UN Global Compact in the areas of human rights, labor, environment and anti-corruption. We will always follow the Ten Principles in our practices for fulfilling social responsibilities, and consistently disclose the compliance thereof in our annual report.

	Ten Principles in the Global Compact	Corresponding Sections Herein
Human Rights	1. Businesses should support and respect the protection of internationally proclaimed human rights	1.1 Sustainability Management 3.1 Employee Rights and Interests 4.3 Overseas Community Construction
	2. Businesses should make sure that they are not complicit in human rights abuses	3.1 Employee Rights and Interests
Labor Rights	3. Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining	3.1 Employee Rights and Interests
	4. Businesses should uphold the elimination of all forms of forced and compulsory labor	3.1 Employee Rights and Interests
	5. Businesses should uphold the effective abolition of child labor	3.1 Employee Rights and Interests
	6. Businesses should uphold the elimination of discrimination in respect of employment and occupation	3.1 Employee Rights and Interests

	Ten Principles in the Global Compact	Corresponding Sections Herein
Environment Protection	7. Businesses should support a precautionary approach to environmental challenges	2.1 Energy Transition 2.2 Response to Climate Change Message from the Chairman
	8. Businesses should undertake initiatives to promote greater environmental responsibility	2.2 Response to Climate Change 2.3 Developing Clean Energy 2.4 Ecological Protection and Resource Utilization
	9. Businesses should encourage the development and diffusion of environmentally friendly technologies	2.2 Response to Climate Change 2.3 Developing Clean Energy
Anti-Corruption	10. Businesses should work against corruption in all its forms, including extortion and bribery	Corporate Governance

GRI AND IPIECA/API INDEX

The table below provides a contrast of indicators of *the Oil and Gas Industry Guidance on Voluntary Sustainability* (2020) co-published by the International Petroleum Industry Environment Conservation Association (IPIECA) and American Petroleum Institute (API), the *Guidelines for Sustainability Reporting* (2016) published by Global Reporting Initiative (GRI).

Contents	IPIECA/API (2020)	GRI (2016)
Statement of the Board of Directors		102-14, 102-20, 102-29, 102-31, 102-32
About this Report		101-1, 101-2, 101-3, 102-29, 102-45, 102-46, 102-47, 102-48, 102-49, 102-50, 102-51, 102-52, 102-54
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Petrochina and the UN Sustainable Development Goals		
Message from the Chairman		102-14, 102-15, 102-16, 201-2, 203-2
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	Management System	GOV-1, GOV-3, SOC-8 102-16, 102-17, 205-2, 205-3
	Supply Chain Management	GOV-3, SHS-1, SOC-1, SOC-2 102-9, 102-10, 414-1, 414-2
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	Digitization and Intellectualization	

	Contents	IPIECA/API (2020)	GRI (2016)
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	Response to Climate Change	CCE-1, CCE-2, CCE-3, CCE-4, CCE-5, CCE-7	102-12, 201-2, 203-1, 301-2, 302-1, 305-1, 305-2, 305-4, 305-5
	Developing Clean Energy	CCE-2, CCE-3	203-1
	Ecological Protection and Resource Utilization	CCE-6, ENV-1, ENV-2, ENV-3, ENV-4, ENV-5, ENV-6, ENV-7, ENV-8, SHS-6, SHS-7, SOC-3	102-11, 203-1, 302-1, 302-3, 302-4, 303-1, 303-3, 304-1, 304-2, 304-3, 305-6, 305-7, 306-2, 306-3
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	Employee Development	SOC-4, SOC-7	404-1, 404-2
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APPENDIX

We strictly complied with applicable laws and regulations on quality management. For this, we established rules and regulations covering all production units, staff and processes relevant to the Company, including but not limited to:

1	<i>Measures of PetroChina Company Limited for Management of Labor Contract</i>
2	<i>Measures of PetroChina Company Limited for Performance Evaluation of Company Leaders</i>
3	<i>Administration Measures of PetroChina Company Limited on Production Safety and Environmental Protection Accountability System</i>
4	<i>Administrative Measures of PetroChina Company Limited for Supervision and Inspection of Product Quality</i>
5	<i>Administrative Measures of PetroChina Company Limited for Appraisal of Staff Safety and Environmental Performance</i>
6	<i>Regulations on Environmental Protection Management of PetroChina Company Limited</i>
7	<i>Measures for Environmental Monitoring and Environmental Information Management of PetroChina Company Limited</i>
8	<i>Regulations of PetroChina Company Limited on Environmental Protection Concerning Project Acquisition</i>
9	<i>Administrative Measures of PetroChina Company Limited for Energy and Water Conservation</i>
10	<i>Regulations of PetroChina Company Limited on Quality Supervision of Procured Materials</i>
11	<i>Regulations of PetroChina Company Limited on Detection of Occupational Hazards at Workplace</i>
12	<i>Regulations of PetroChina Company Limited on Occupational Health Surveillance</i>
13	<i>Regulations of PetroChina Company Limited for the Administration of Engineering Construction Projects</i>
14	<i>Regulations of PetroChina Company Limited for the Administration of Materials Supply</i>
15	<i>Regulations of PetroChina Company Limited for the Administration of Bid Invitation</i>
16	<i>Administration Measures of PetroChina Company Limited for the Suppliers</i>
17	<i>Measures of PetroChina Company Limited for Service Trademark Management</i>
18	<i>Measures of PetroChina Company Limited for Land Management</i>
19	<i>Regulations of PetroChina Company Limited on the Management of Industrial Water of Refining Enterprises</i>

All the quantitative index data on emissions and energy consumption disclosed in this Report are calculated in accordance with relevant standards issued by the Chinese government, including but not limited to:

1	<i>Statistical Report on Energy Saving and Eco-environmental Protection in Central Enterprises</i>	6	<i>General Rule for the Calculation of Comprehensive Energy Consumption</i>
2	<i>Communiqué on the Second National Pollution Census</i>	7	<i>Statistical Index and Calculation Method of Energy and Water Conservation</i>
3	<i>Guide to Accounting Methods and Reporting of Greenhouse Gas Emissions by China's Oil and Gas Producers (Trial Implementation)</i>	8	<i>Unit Product Energy Consumption Quota for Petroleum Refining</i>
4	<i>Guide to Accounting Methods and Reporting of Greenhouse Gas Emissions by China's Petrochemical Companies (Trial Implementation)</i>	9	<i>Unit Product Energy Consumption Quota for Ethylene Plants</i>
5	<i>Guide to Accounting Methods and Reporting of Greenhouse Gas Emissions by China's Chemical Production Enterprises (Trial Implementation)</i>	10	<i>Technical Specification for Application and Issuance of Pollutant Discharge Permit</i>



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FSC® C107692

PetroChina Company Limited

Address: 9 Dongzhimen North Street, Dongcheng District, Beijing, P.R.China

Post Code: 100007

E-mail: csr@petrochina.com.cn

Website: www.petrochina.com.cn