

CHINA PETROLEUM & CHEMICAL CORP  
Form 6-K  
March 29, 2019

SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, DC 20549  
FORM 6-K  
Report of Foreign Private Issuer  
Pursuant to Rule 13a-16 or 15d-16 of  
The Securities Exchange Act of 1934

For the month of March 2019

CHINA PETROLEUM & CHEMICAL CORPORATION  
22 Chaoyangmen North Street  
Chaoyang District, Beijing, 100728  
People's Republic of China  
Tel: (8610) 59960114

(Indicate by check mark whether the registrant files or will file annual reports under cover of Form 20-F or Form 40-F.)

Form 20-F  Form 40-F

(Indicate by check mark whether the registrant by furnishing the information contained in this form is also thereby furnishing the information to the Commission pursuant to Rule 12g3-2(b) under the Securities Exchange Act of 1934.)

Yes  No

-

(If "Yes" is marked, indicate below the file number assigned to registrant in connection with Rule 12g3-2(b):

82-\_\_\_\_\_. )

N/A

This Form 6-K consists of:

A copy of the report regarding communication on progress for sustainable development in 2018 of China Petroleum & Chemical Corporation (the “Registrant”).

Sinopec Corp.  
Communication on Progress for Sustainable Development 2018

New Era New Opportunities New Growth Drivers

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#### Report Information

The 2018 Communication on Progress for Sustainable Development (hereinafter referred to "COP") is the thirteenth sustainability report from China Petroleum & Chemical Corporation (hereinafter referred to as "Sinopec Corp.", "the Company" or "We"). The theme of this year's COP is New Era, New Opportunities, New Growth Drivers. The COP introduces our efforts promoting economic growth, social development and environmental protection, and highlights how we responded to stakeholder expectations in 2018.

#### Report description

This COP covers our business activities from 1 January to 31 December 2018. The information herein comes from internal data, materials from our subsidiaries, and official documents and statistics. Unless the COP otherwise requires, the data in this report covers the data of Sinopec Corp. and its wholly- owned and controlled subsidiaries. The Company's Board of Directors approved the Report on March 22, 2019. The report is available in Chinese and English. If there is any conflict or inconsistency, the Chinese version shall prevail. The report can be downloaded at the website: <http://www.sinopec.com/listco/en/csr/>.

#### References

This COP is prepared in accordance with Ten Principles of the United Nations Global Compact (UNGC), the criteria of the Global Compact Advanced Communication on Progress, the Guideline on Environmental Information Disclosure issued by Listed Companies of Shanghai Stock Exchange (SSE), as well as the Environmental, Social and Governance Reporting Guide issued by Hong Kong Stock Exchange (HKEx) and by reference to the GRI Sustainability Reporting Standards (GRI Standards) issued by the GRI Global Sustainability Standards Board (GSSB).

#### Disclaimer

This COP includes certain forward-looking statements with respect to the results of our business operations and certain plans and conditions. All statements that address activities, events or developments that we expect will or may occur in the future, other than statements of historical fact, are forward-looking statements and by their nature involve risk and uncertainty. This means that actual results may differ materially from those indicated in the forward-looking statement due to a number of factors and uncertainties. The forward-looking statements are made by March 22, 2019 and the Company undertakes no obligation to update these forward-looking statements unless required by an appropriate regulatory authority.

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Contents	
Letter from the Chairman	02
About Us	04
Stakeholder Engagement	09
Sustainability Management System	11
Topic 1: Green Enterprise Campaign	12
Topic 2: Green Energy and Products	14
Topic 3: Intelligent Operation	18
Topic 4: Targeted Poverty Alleviation	20
Safety	22
Work Safety	24
Contractor Safety	25
Logistics Safety	26
Cyber Security	26
Public security	26
Climate Change	28
Climate-Related Risks	30
Improving energy efficiency	31
Natural gas	32
Using alternative energy sources	32
GHG emission management	34
Environment	36
Environment-related Risks	38
Air emissions	39
Water resources	40
Solid waste	41
Land resources	42
Oil Spills	42
Biological diversity	43
Contributing to Society	44
Value Chain Management	46
Advancing Win-Win Cooperation with Customers	48
Promoting Industry Development	50
Community Engagement	50
Public Welfare	51
Human Rights	52
Employee protection	54
Occupational health	54
Career development	55
Ethics	56
Anti-corruption System	58
Transparent Operation	58
Enhancing Anti-corruption Awareness	59
Key Performance	61
Index	65
Feedback	70



Letter from the Chairman

Dear friends,

On behalf of the Board of Sinopec Corp., I would like to extend our heartfelt thanks for your attention and support. In a complicated international environment of 2018, collective efforts were made to promote the United Nations 2030 Agenda for Sustainable Development focusing on addressing climate change, eradicating poverty and revitalising global cooperation partnership etc., and to explore a sustainable development path for human society. Adhering to the new development philosophy, China promoted the supply-side structural reform, fulfilled the responsibilities of advancing the construction of ecological civilisation, expanding opening-up at high level and maintaining sustainable and healthy development of the society, which injected new growth drivers to economic globalisation.

As a provider of energy and petrochemical products and also the witness, contributor, promoter and beneficiary of global development, Sinopec Corp. has been dedicated to building itself as a long-lasting energy and chemicals enterprise and making contributions to the sustainable development of society. In 2018, the Board of Directors finalised the strategic deployment of "two three-year plans and two ten-year plans", set up phased objectives, formulated and implemented action plans which inaugurated a new journey to achieve high-quality development and build a world-class enterprise. Throughout the year, the Company adhered to the new development philosophy, addressed the identified risks and achieved solid business performance. In 2018, the revenue of the Company reached RMB 2.89 trillion with profits before taxation of RMB 100.5 billion. The Company paid RMB 324.6 billion of taxes and fees. We provided green and high-quality products to society and helped achieve sharing growth between employees and the Company and ensure harmony between the Company and the society.

Fostering new growth drivers to contribute to sustainable development. Focusing on upgrading the traditional industries, we enhanced oil and gas exploration with improved oil and gas reserve replacement ratio, made new progress in refining and chemicals bases construction and facilities upgrading, optimised the market network and the global trade network with the result that the market share was consolidated and increased. We further integrated the physical economy with the digital economy by spreading intelligent plants, intelligent oil and gas fields and intelligent service stations. The business platforms such as EPEC, Sinopec Chememall and EasyJoy achieved rapid progress. The volume and the profit of non-fuel business maintained fast growth. In addition, we advanced the building of new energy comprehensive demonstration stations and constructed the hydrogen refueling stations and charging stations orderly and stepped up efforts on the layout of the strategic industries including new energies and new materials.

Firmly advancing green development to embrace new opportunities. We implemented Green and Low-carbon Development Strategy and continued to address climate change. We set up the goal of greenhouse gas emission reduction, deployed the Energy Efficiency Improvement Plan, and conducted evaluations on energy efficiency and carbon emissions. We set up the mid and long term development goals of natural gas sector and optimised the natural gas supply, storage and distributions system. We continuously conducted carbon capture and methane recovery, completed quality upgrading of refined oil product in advance and promoted development of alternative energy sources such as bio-jet fuel, biodiesel and photovoltaic power. We stepped up our efforts on environmental protection. By conducting special environmental supervision and inspection, and promoting implementation of ecological protection measures, we made new achievements in the reduction of pollutant discharges and the protection of water resources and biodiversity. We strengthened our efforts on safety management. By conducting safety risks identification, optimising and launching HSSE management system, strengthening contractor safety control and the domestic and overseas public security management, we realised work safety and clean production throughout the year. Strengthening innovation-driven development to generate vitality. We implemented the Innovation-driven Development Strategy. By deepening the reform on technology mechanism, continuously increasing the R&D investment, speeding up the development of pivotal core technologies and advancing the R&D of cutting-edge technologies, we have achieved fruitful results. In 2018, we received 1 second prize of National Technology Invention Award and 3 second prizes of National Science and Technology Progress Award, with the numbers of applied patents and authorised patents hitting historic highs. We, focusing on promoting green and low-carbon development of energy resources and propelling the functional and high-end development of chemicals and materials, strengthened the efforts on the areas of new energies and new materials. We implemented Open Corporation Strategy. By joining the global innovation network, participating in industry standards formulation, cooperating to develop the new materials essential to the industry development as well as the technologies on energy efficiency and environmental protection, we contributed Sinopec's wisdom to the industry with solutions of sustainable development.

Corporate development benefiting employees and improving people's wellbeing. Inheriting the people-oriented philosophy, we conducted the integrated management of employees' occupational health, physical health and mental health, building up a comprehensive health management system. We enhanced the construction of diversified talent teams, promoted decent work to raise employees' senses of achievement, happiness and security. Moreover, we took actions to facilitate the targeted poverty alleviation. In 2018, the poverty alleviation project of Sinopec Corp. in Yuexi County, Anhui Province, passed through national evaluation and inspection, which means that the county with 400,000 populations was lifted out of poverty. We continued to undertake public welfare programmes such as Sinopec Lifeline Express, Warm Stations Programme, Sanitation Workers' Stations Programme and Farmer Assistant Programmes in Autumns and Summers, took part in disaster relief, provided grants or scholarships to students in poverty and helped the communities in need, receiving acclaims from the society. For overseas projects, we fulfilled our social responsibilities to benefited local communities by localised employment and procurement, promoting local economy, and advocating environmental protection, which manifested the responsible image of a global corporate citizen.

In a new era full of opportunities, it is right time for us to take actions. Upholding the philosophy of building a community of shared future for mankind, we will keep pace with the trend of the times demanding peace, cooperation, opening- up, transformation and innovation, remain true to our mission of sustainable development and join hands with you in this new era for powering a better life.

Dai Houliang  
Chairman  
March 22, 2019

## About Us

### Company Profile

#### Exploration and Production

- Sinopec Corp. is a large oil and gas producer in China.
- Our main oil and gas assets are located in China and we also jointly participate in four projects overseas named Taihu in Russia, Block 18 in Angola, CIR in Kazakhstan and Mansarovar in Colombia respectively.
- At the end of 2018, our proven oil and natural gas reserves totaled 1,667 million barrels and 6,807 billion cubic feet respectively.

#### Refining

- Sinopec Corp. ranks first in global refining capacity.
- Our primary facilities are located in China and we invest a refining joint venture project in Yanbu, Saudi Arabia.
- In 2018, we processed 244 million tonnes of crude oil.

#### Marketing and Distribution

- Sinopec Corp. is the largest refined oil distributor in China.
- Sinopec Corp. is equipped with comprehensive refined oil products distribution network, with the number of service stations ranking second in the world.
- At the end of 2018, 30,661 service stations carried the Sinopec logo, and the total number of fuel cards reached 146 million.
- Non-fuel business becomes a new growth driver.

#### Chemicals

- Sinopec Corp. is the first in China and the second globally in ethylene production capacity.
- Our main petrochemical products include synthetic resin, synthetic fibre and synthetic rubber. We invest a joint venture project in Russia.
- We produced 11.51 million tonnes of ethylene in 2018.

#### Technology R&D

- Sinopec Corp. has the capacity and technology to build refining facilities at the ten-million tonnage level, and ethylene facilities at the million tonnage level.
- We have 4 State Key Laboratories, 5 National Engineering Research Centres, 2 National Energy R&D (Experiment) Centres and 2 State- Certified Enterprise Technology Centres.

#### International Trade

- Sinopec Corp. is the largest trader of crude oil in China.
- In 2018, we imported 217 million tonnes of crude oil.
- Sinopec Corp. owns 13 wharfs of more than 200,000 DWT, with a total capacity of 340 million tonnes.

## Core Values

People, Responsibility, Integrity, Excellence, Innovation, Collaboration.

- Sinopec Corp. fulfills its responsibilities as a global corporate citizen by conducting business that serves society. We integrate a people-oriented approach to corporate culture and practices.
- Our diversified portfolio, including energy resources such as crude oil and natural gas, refined oil products such as gasoline, diesel and kerosene, and petrochemical products with thousands of varieties, contributes to social and economic development and satisfies hundreds of millions of families.
- We operate honestly and pay taxes in accordance with the law to contribute to national revenue and boost social development and prosperity.
- We commit to realising sustainable development of the Company and upholding stable and continuous dividend pay-out policy to return to shareholders.
- We focus on leading and cooperating with our partners along the upstream and downstream industrial chain, aiming to enhance sustainability and achieve win-win results.
- We guarantee employee rights, provide good working environment and optimise career development channels that show respect for our employees and promote decent work.
- We engage in local communities by safeguarding community safety, protecting the environment, participating in local economic development projects, carrying out poverty alleviation programmes and sharing our corporate development with local residents.

Performance in 2018

Revenue (RMB): 2,891.2 billion

Net profits attributable to shareholders (RMB) \*: 63.09 billion

Taxes and fees paid (RMB): 324.6 billion

Donations (RMB): 180 million

Dividends declared (RMB): 50.85 billion

Dividends pay-out ratio \*: 80.60%

Social contributions (RMB) \*\*:480.2 billion

Total number of employees: 423,543

Ethics training coverage: 100%

Safety training coverage: 100%

Patients cured under Sinopec Lifeline Express Programme: 3,456

People helped under Warm Stations Programme: 600 thousand

People helped under Sanitation Workers' Stations Programme: 18 thousand

\* In accordance with PRC Accounting Standards for Business Enterprises.

\*\* The definition of social contribution is calculated in accordance with the Guidelines on Listed Companies' Environmental Information Disclosure issued by Shanghai Stock Exchange.

2018 Honours

- Sinopec Corp. was named Most Honoured Enterprise in Asia 2018, and Dai Houliang, Chairman of Sinopec Corp., ranked 1st in overall rating of Asia's Best CEOs by Institutional Investor Magazine.
- Sinopec Corp. received Special Contribution Award from Lifeline Express Council for the 14th consecutive years.
- Sinopec Corp. was named Chinese Model of Low Carbon Performance and Responsible Enterprise by China News Service and China Newsweek for 8 consecutive years.
- Sinopec Corp. received Targeted Poverty Alleviation Award from XINHUANET.
- Sinopec Corp. received "Social Responsibility Award for Overseas Investment of Chinese Enterprises 2018" by China Overseas Development Association.
- Sinopec Corp. received Level-A rating in the SSE's 2017-2018 information disclosure assessment of listed companies.
- Sinopec Corp. received Award for Listed Company with Outstanding Contributions During the 40 Years since China's Reform and Opening-up.

## Stakeholder Engagement

The trust and support of our stakeholders is a fundamental approach of Sinopec Corp. to sustainable development. We make progress through our partnerships with all stakeholders to jointly promote a sustainable development based on economic growth, protecting the environment and building a harmonious society.

We have established a communication mechanism with our stakeholders.

- Through continued communications, discussions and reports with authorities, we communicated the material issues including tax paying, innovation, safety, ecological protection, targeted poverty alleviation and information disclosure.
- Through legal information disclosure, performance conferences, meetings with investors, teleconferences, online interaction, and the E-platform of SSE, we communicated the material issues including risks and opportunities in sustainable development, shareholder returns, addressing climate change and energy efficiency improvement.
- Through daily communication, visits, interviews and surveys with customers, we communicated the material issues including product quality and service.
- Through face-to-face communication with NGOs and rating agencies as well as questionnaires, we communicated the material issues including risk management, human rights, safety, environmental protection, greenhouse gas emission and anti-corruption.
- Through Open-day activities, we communicated the material issues including protection of community residents' rights and communication.

We mapped our business operations with United Nation's 17 Sustainable Development Goals (SDGs), and enhanced communication with stakeholders who concern climate-related financial disclosures and analysed the Company's climate related risks and opportunities.

Sustainable development management	P11
Risk management	P11
Technological innovation	P14-19
Anti-corruption	P58-59
Product quality and service	P48-49
Shareholder returns	P06
Work safety	P22-27
GHG management	P30-35
Pollutant discharge	P39-41
Biodiversity	P43
Occupational health	P54
Human rights protection	P52-55
Social contribution	P20-21, P50-51

SDGs Mapping Table\*

SDGs	Our actions
GOAL 1	Supporting targeted poverty alleviation by investing RMB 228 million in poverty-stricken areas and Yuexi County with 400,000 populations, in Anhui Province under our support is lifted out of poverty.
GOAL 2	Launching projects to develop local industry according to the natural resources of rural areas, such as planting and breeding industry, improving infrastructure construction and enhancing the agricultural production capacity.
GOAL 3	Guaranteeing the occupational health, physical health and mental health of employees; deploying programmes including Sinopec Lifeline Express, telemedicine, doctor training, hospital assistance etc. to improve the accessibility of medical resources.
GOAL 4	Providing vocational skills training for employees and the communities; investing RMB 25.83 million of funds in education to provide educational facilities, scholarship, grants and other support for poverty areas.
GOAL 5	Abiding by the principle of gender equality, establishing the female employees' committee of the Labour Union, forbidding gender discrimination in employment and promotions, and caring for their physical and mental health.
GOAL 6	Establishing the annual target of water consumption, improving water use efficiency, strengthening waste water recycling and utilisation, and promoting enterprises to replace fresh water with reclaimed municipal water and desalinated seawater.
GOAL 7	Developing natural gas, upgrading the quality of refined oil products by technological innovation, and developing green and high-performance chemical products to provide clean and affordable energy and materials.
GOAL 8	Boosting the local prosperity by investment, paying taxes, job creation and localised purchasing, and providing stable job opportunities, stable income and better working environment for employees; helping employees to find new job opportunities after some subsidiaries suspend operations.
GOAL 9	Increasing investment in R&D, strengthening R&D in the fields of new energy and new materials and promoting clean technologies and facilities; actively engaging in industry standards formulation to provide solutions for green development of the industry.
GOAL 10	Prohibiting child labour and forced labour, and any form of discrimination due to gender, region, religion belief, nationality, etc; providing various social insurances and establishing enterprise annuity plan for employees.
GOAL 11	Renovating dilapidated houses for people in poverty and improving transportation conditions in remote areas; maximising professional advantage to help local communities in case of fire of hazardous chemicals or oil spilling incidents caused by the third parties.
GOAL 12	Highly valuing environmental protection and launching the Green Enterprise Campaign as a spearhead; promoting responsible production by disposing wastewater, exhaust gas and waste residue, effectively as well as efficiently utilising the natural resources such as land, water and petroleum.
GOAL 13	Setting up the goal of GHG emission reduction; conducting evaluations on energy efficiency and carbon emissions; setting up the mid and long term development goals of natural gas; conducting carbon capture and methane recovery and promoting the development of alternative energy sources such as bio-jet fuel, biodiesel and photovoltaic power.
GOAL 14	Developing medium and low-alkali marine cylinder oil with the pollution discharge data reaching the international leading level and launching oil spills risk analysis and assessment to strictly prevent the oil spills at sea.

- GOAL 15 Enhancing the pre-evaluation and project appraisal, formulating the ecological protection and restoration plans, and strictly managing the operation of construction and production links to reduce the disturbance to the ecological environment, and to protect biodiversity.
- GOAL 16 Abiding by business ethics, promoting the visibility of the whole process of commodity trading on EPEC and other e-commerce platforms to build clean enterprises; establishing the Workers' Congress system and implementing the principle of equal consultation.
- GOAL 17 Enhancing international cooperation in oil and gas and carrying out oil and gas exploration and development, refining and chemicals cooperation in Russia, Angola, Kazakhstan, Colombia and Saudi Arabia respectively; importing 217 million tonnes of crude oil in 2018.

\*The details are presented in the relevant section of the Report.

## Sustainability Management System

### Social Responsibility Management Committee

Sinopec Corp. established Social Responsibility Management Committee under the Board of Directors. The Committee is responsible for approving the social responsibility management strategy and annual social responsibility plan, and reports sustainability works to the Board of Directors etc. The current Committee is composed of the Chairman of the Board, Mr. Dai Houliang, and the independent directors, Mr. Tang Min and Mr. Fan Gang.

### Risk Management System

We have paid great attention to risks in the process of sustainable development. The Audit Committee was set up under the Board of Directors to review risk management work and provide advice for the Board. Moreover, we have established the Comprehensive Risk Management Working Group and relevant departments are responsible for controlling and mitigating risks related to work safety, environmental protection, climate change, finance, legal affairs, anti-corruption and overseas public security. The Comprehensive Risk Management Working Group convenes meetings regularly to organise identification, and assessment of major and significant risks, identify priorities of risk management, and formulate solutions.

According to the industry characteristics and regional distributions, we have set up risk list from five dimensions including strategy, finance, market, operation and legislation etc., and put the internal control system into risk list so as to conduct "Three Lines of Defence", namely regular test of internal control responding units, daily supervision by risk/internal control departments and comprehensive auditing and inspection. We attach great importance to building the risk management culture, and organise risk management training annually. Subsidiaries adopt the combination of special training and professional training to raise employees' awareness of risk prevention and control.

Safety risks, environmental risks, climate-related risks and corresponding management measures are presented in relevant sections of the Report.

### HSSE Management System

The Company released the standards of Safety, Environment and Health Management System, and the subsidiaries formulated management specifications in accordance with their characteristics. In 2018, we integrated public security into the management system to form Sinopec HSSE (health, safety, security, environment) management system, and correspondingly revised rules covering safety accountability, safety behavior, safety training, risk management as well as hidden hazards management, operations and occupational health. We have established the HSSE Management Committee. The headquarters and the subsidiaries have respectively set up HSSE management organisations. We have regarded work safety, energy conservation and environmental protection as the binding indicators for performance appraisal of the Company's management team. Each deduction of one grade point shall lead to 3% deduction of the annual performance bonus, with the maximum of 20%. The Company sets up GHG emission reduction target and includes the energy efficiency appraisal as well as the carbon emission appraisal into the project evaluation.

Based on the HSSE management system, we have established an emergency management system covering work safety, environmental protection, information security and other aspects, and promoted the establishment of emergency command centres in oilfield, refineries, distributions, engineering construction and other enterprises. Meanwhile, our subsidiaries have established the joint emergency defense mechanism with the local authorities and thus established 13 emergency joint defense zones in different geographical regions, to integrate emergency resources within the regions, and strengthen joint drills so as to make coordinated efforts in emergency response to major accidents.

Target of HSSE Zero casualty, zero pollution, zero accident



Philosophy of HSSE Safety foremost, environmental protection prioritised, maintain employees' physical and mental health, preserve the characteristics of preciseness, meticulousness and pragmatism

## Topic 1: Green Enterprise Campaign

The Company attaches great importance to energy conservation, emission reduction and environmental protection. In 2011, we identified the green and low-carbon development strategy as one of the development strategies. The "Clear Water and Blue Sky" environmental protection campaign implemented during the period from 2014 to 2016 carried out 870 projects, with a total investment of RMB 20.92 billion. On this basis, we launched the Green Enterprise Campaign in 2018. The Campaign adopts the vision of "contributing to clean energy, practising green development", advocates to supply clean energy and green products, enhances green production and leads green development of the industry. We have formulated the Sinopec Green Enterprise Evaluation Guideline and established the specific working group. By the end of 2018, 10 subsidiaries were awarded as Sinopec Green Enterprises.

Green Enterprise Campaign consists of six major plans:

### Green Development Plan

Including optimising production capacity layout, ensuring ecological security, adjusting industrial structure, and building green logistics, etc.

### Green Energy Plan

Including increasing clean energy supply, providing high-quality oil products, and promoting new energy R&D, etc.

### Green Production Plan

Including source cleanliness, process cleanliness, maximal use of resources and energy, efficient pollution control, and controllable environmental risks, etc.

### Green Service Plan

Including expanding green chemical product portfolios, building green service stations, developing energy conservation and environmental protection industries, and building a green supply chain, etc.

### Green Technology Plan

Focusing on breakthroughs in green production technology of petrochemicals, resource recycling technology, pollution treatment technology, and cutting-edge green technologies, etc.

### Green Culture Plan

Including building a long-effect mechanism and fostering green culture, etc.

#### Targets of Green Energy Plan:

- To improve the production capacity of conventional natural gas, shale gas and coalbed methane, and promote gas popularisation in the Yangtze River Economic Belt. By 2023, the production capacity of natural gas will reach over 40 billion m<sup>3</sup> per year, and the percentage of clean energy production in oil equivalent will exceed 50%.
- To build LNG receiving station and gas storage, etc. By 2023, the LNG receiving and transportation capacity will reach 26 million tonnes per year. By then, the natural gas supply capacity will reach 60 billion m<sup>3</sup> per year, accounting for 15-20% of domestic supply.
- The quality of oil products maintains the advanced international level. By October 2018, the gasoline and diesel produced by Sinopec Corp. for vehicles will reach the National VI emission standard. In 2020, the sulfur content of marine fuel oils will decrease from 3.50% to 0.50%.
- By 2023, 1,000 additional CNG stations for vehicles will be built. We will explore the layout of battery charge & change stations in key cities and road sections, and timely promote the construction of hydrogen stations and hydrogen storage infrastructure.
- In the construction of green service stations, we will increase the marketing and supply of ethanol gasoline, biodiesel, gasoline cleaners.

#### Goals of Green Enterprise Campaign (2023)

##### Clean energy

- The percentage of clean energy production in oil equivalent will exceed 50%.
- The natural gas supply capacity will reach 60 billion m<sup>3</sup> per year, accounting for 15-20% of domestic supply.

##### Energy conservation

- To conserve 6 million tonnes of standard coals=12.6 million tonnes of CO<sub>2</sub> reduction=planting 150 million trees

##### Water conservation

- Reducing industrial water withdrawal by 46 million m<sup>3</sup> = water volume of 4 West Lakes in Hangzhou City

##### Pollutant discharge reduction

- Discharge of industrial waste water drop by 12%
- COD drop by 12%
- Ammonia Nitrogen drop by 12%
- VOCs drop by 12%
- SO<sub>2</sub> drop by 18%
- NO<sub>x</sub> drop by 18%

Note: All data are based on 2017 benchmark.

#### Case Study: SINOPEC Zhenhai Sets up Goals of Green Enterprise

**Green products:** To promote the supply of National VI oil products, ensuring to lead the industry with the supply of high-quality clean refined oil products; develop bio-jet fuel, biodegradable plastics and other green petrochemical products.

**Comprehensive utilisation of resources:** By 2020, the comprehensive energy consumption of refining sector will maintain the lowest level of peer enterprises in China, and the comprehensive energy consumption of ethylene per unit will maintain the leading position in terms of industry's energy efficiency; the water consumption of existing equipment will be reduced by 1% per year.

**Pollutant emission reduction:** By 2020, the total discharge of major pollutants will be reduced by more than 25%. The total discharge of all pollutants will meet the requirements of pollutant discharge permit, and the emission intensity will be in the industry-advanced position; the qualified rate of discharged waste water will be 100%; The qualified rate of controlled exhaust gas will be 99.8%; the proper disposal rate of hazardous waste will be 100%; there will be no major or higher environmental pollution incidents.



## Topic 2: Green Energy and Products

We rely on technological innovation to promote the upgrading of three major synthetic materials (synthetic resin, synthetic rubber, synthetic fibre) and the R&D of new materials, develop fine chemicals and biochemicals in an orderly manner, and develop new eco-friendly and resource-saving products, providing high-quality clean energy and petrochemical products for sustainable development of the society.

### Technological innovation system

The Innovation-driven Development is one of the five development strategies of the Company. We pursue "promoting supply-side structural reform" as our main task and focus on key tasks including oil & gas exploration and development, product structure adjustment, and R&D of high-end chemical products. At present, we have 4 State Key Laboratories, 5 National Engineering Research Centres, 2 National Energy R&D (Experiment) Centres and 2 State-Certified Enterprise Technology Centres.

In 2018, we invested about RMB 12.88 billion in technological R&D, and obtained 4,434 authorised patents. We established a new energy research institute and started project research on new energy, new materials and other fields. Three technologies including "Efficient Catalyst and Complete Technology for Dilute Ethylene Value-added Conversion" won the second prize of National Science and Technology Progress Award. Our new structural molecular sieve material obtained the structural code granted by the International Zeolite Association (IZA), realising the breakthrough in the field of new structural zeolite synthesis by domestic industrial enterprises.

Tips: Dilute ethylene comes from the exhaust gas of refining & chemical facilities with the annual amount up to 19 million tonnes, equivalent to more than 2 million tonnes of pure ethylene. Due to the high cost of refining and purifying it into pure ethylene, most enterprises use it as a low-level fuel gas, causing serious waste of resources. By catalytic reaction, dilute ethylene can be directly converted into high value-added chemicals. Since the concentration of effective components in dilute ethylene is low, and the composition of impurities is complex, it is necessary to break through a number of technical bottlenecks. After decades of continuous innovation, Sinopec Corp. has achieved the breakthrough in the conversion of dilute ethylene to ethylbenzene. The technology has been licenced and applied to 21 manufacturing companies, and the overall technical indicators have reached the international leading level.

High-quality green energy

China promotes the oil quality improvement as a way of reducing pollutant emissions and building a beautiful country. In recent years, we have been accelerating our gasoline and diesel quality upgrading, ensuring to be at the forefront of the industry with supply of high-quality clean refined oil products. In 2018, we completed the development and industrial transformation of the independently IPR alkylate oil production technology, providing technical support for the production of gasoline and diesel that meet the National VI emission standards. In October 2018, the gasoline and diesel produced by all refining subsidiaries for vehicles reached the National VI emission standards; marketing subsidiaries strengthened the oil replacement of the pipelines, oil depots and service stations to ensure providing the refined oil with national VI quality by January 1, 2019.

Indicators	National VI Emission Standard	National V Emission Standard
Content of benzene in gasoline	0.8%	1%
Content of aromatics in gasoline	35%	40%
Content of olefins in gasoline	15%	24%
Content of polycyclic aromatic hydrocarbon in diesel	7%	11%

Tips: Olefins is prone to photochemical reactions, which accelerates ozone formation. It also tends to form gel and coke in the engine and engine intake system, reducing engine efficiency and increasing vehicle emissions. Aromatics can increase the formation of deposits in engine intake system and combustion chamber and lead to increased CO and HC emissions.

Items	2018
National Technology Invention Award	1
National Science and Technology Progress Award	3

#### Green and high-performance chemical products

The chemical products of Sinopec Corp. range from synthetic resins, synthetic rubber, synthetic fibres to refined chemical products. As the largest producer of chemical products in China, we have carried out technology research and product development with the goal of providing safe, green and high-performance products since 2006. In 2018, we focused on the "basic + high-end" combination to provide safer, greener and higher-performance chemical products.

##### In the field of synthetic resins

In terms of high-end resins, we launch at least 10 brands of high-security and eco-friendly new products every year. The output of high-end resins reached 2,700 tonnes in 2018.

As for special materials for automobile parts, we focus on producing low-VOC and low-odor products by optimising catalyst selection and polymerisation conditions adjustment, to improve the ride comfort and safety of drivers and passengers. The output of products reached 70,000 tonnes in 2018.

In terms of household and pharmaceutical products, we take the lead in launching low content of extractables (50% reduction) and high-transparency propylene polypropylene copolymer products with low processing temperature, which possess obvious advantages of more safer in human body contact and energy saving. We develop high density polyethylene products with low-odor features, and the packages made from them are better in line with safety requirements of human body contact. The output of the type products reached 40,000 tonnes in 2018.

In the field of pharmaceutical fibre and household products, we develop plasticiser-free polypropylene fibre materials. The products do not contain plasticisers, organotin and highly concerned substances (SVHC) that have an impact on people and the environment. The finished products can be widely used in personal care, infant health products and surgical isolation clothing and other fields. Based on this fibre material, antibacterial materials have been further developed which can be used in the medical treatment areas. The output of the type products reached 70,000 tonnes in 2018.

##### In the field of synthetic rubber

We take the lead to produce green tire materials with high value-added rubber (SSBR for short), which has excellent performance in terms of fuel consumption, wear resistance, wet skid resistance and low noise, etc. We continue to promote the production of plasticiser-free thermoplastic elastomer SEBS for medical, electrical insulation, food packaging and bonding, etc., becoming the world's third company with industrial production capacity. In 2018, the racetrack produced by SINOPEC Baling with SEBS was applied to the sports venues of Nanjing Foreign Language School in Jiangsu Province, becoming the first recyclable racetrack produced in China by using SEBS. It has been applied to many colleges and universities in Huai'an, Jiangsu Province.

##### In the field of synthetic fibres

The ultra-high molecular weight polyethylene fibre produced by Sinopec Corp. is in the leading position in China, forming more than 50 series products. In 2018, the fibre was successfully applied to the immersed tunnel hoisting of the Hong Kong-Zhuhai-Macao Bridge. The Company has become the largest product supplier in China. The quality of carbon fibre products produced by the Company has been continuously improved, and the products have been applied in many fields. The carbon fibre sucker rods have been used in SINOPEC Shengli Oilfield Company and SINOPEC Zhongyuan Oilfield Company, with remarkable energy-saving benefits of oil wells.

**In the field of lubricants**

We have successfully developed biodegradable industrial gear oil with excellent biodegradability and corrosion resistance, which obtains the European Eco-label certification and meets the US VGP (Vessel General Permit) standard. The food-grade lubricating grease has passed the US NSF certification. In line with the increasingly strict international marine environmental protection requirements and the trend of low vulcanisation of marine fuel oils in future, we have developed medium and low-alkali marine cylinder oil 5025 and other products with the environmental data approaching to the international level and obtaining certification from the world's largest marine engine manufacturer.

### Topic 3: Intelligent Operation

We promote informatisation through building intelligent factories, intelligent oil and gas fields, intelligent pipelines, intelligent service stations, and e-commerce platforms such as EPEC and Sinopec Chememall. According to the informatisation development plan of Sinopec Corp., we will establish 10 intelligent factories by 2020 and build "three clouds" by 2023, i.e. management, manufacturing and service, so as to support the upgrading of the intelligent manufacturing in the whole industry chain, which will promote development of trade, logistics and finance with new commercial forms and improve the lean management level.

#### Digital management

In 2018, we strengthened digitalisation of production and operation platforms to optimise production and improve the function of forecasting and early warning, as well as to enhance safety and environment management. The independently-developed petroleum and petrochemical industry internet platform (ProMACE) was selected in the list of 2018 Industry Internet Pilot Demonstration Project by the Ministry of Industry and Information Technology.

- Sinopec scientific research knowledge management system was built and launched to build a 10 million-node exploration and development knowledge map, thus improving the efficiency of scientific research and innovation.
- We promoted the construction of production informatisation and Sinopec E&P Business Cooperation Platform (EPBP) in oilfield subsidiaries, and have boosted business collaboration and data sharing. Moreover, we realised unattended production sites of oil wells and station warehouses, and achieved real-time monitoring, automatic warning and remote control of oil & gas production operation management.
- In refining and chemicals subsidiaries, we promoted the systems of operation management, process management and large unit management, etc., which improved collaborative production and lean management. We applied the operation management in 7 subsidiaries with the average qualified rate of device operation reaching 95%; applied the process management system in 7 enterprises with the device pre-inspection efficiency increased by 60%; connected the data of 325 units of 32 refining and chemicals subsidiaries to the large unit management and training system, which realising centralised control and expert remote diagnosis of centrifugal compressor units.

#### Intelligent plants

In 2018, we conducted technical upgrade in pilot intelligent factories and completed two pilot upgrade projects in SINOPEC Maoming and SINOPEC Zhenhai comprehensively, of which, SINOPEC Zhenhai realised the real-time monitoring and early warning of equipment and instrument operation, which successfully prevented the unscheduled shutdown caused by instrument malfunction. The intelligent factory 2.0 technical solution and promotion model was formulated based on the ProMACE platform, and the intelligent factories were also launched in six subsidiaries including SINOPEC Shanghai, SINOPEC Qilu, SINOPEC Tianjin, SINOPEC Jinling, SINOPEC Qingdao and SINOPEC Hainan.

From 2015 to 2018, five subsidiaries including SINOPEC Jiujiang, SINOPEC Zhenhai, SINOPEC Maoming, SINOPEC Puguang Gas Field and SINOPEC Shanghai were awarded as the state-level intelligent manufacturing demonstration pilots. Sinopec Corp. has taken the lead to build intelligent factories in terms of intelligent manufacturing of process industry.

#### Intelligent pipeline

We have developed Sinopec Intelligent Pipeline Management System, ranking the first corporate-level pipeline management system in China. The underground pipelines and station depots can be visualised from multiple dimensions by technical means such as three-dimensional modeling, panoramic imagery and video surveillance. The system can cover all data of the 34,000 km pipeline.

In 2018, we promoted the system application and realised the functions covering assessment of hidden hazards. The system automatically labels relevant emergency resource information under emergency conditions and automatically correlates information of the pipeline on accident points and its surrounding environment, thus improving emergency response capacity.

#### Intelligent service stations

We actively advance the construction of intelligent service stations, leverage internet technologies such as big data, cloud computing, mobile payment, and the Internet of Things (IoT) to build comprehensive service stations that provide services people and vehicles, apply the equipment automation, business digitalisation, and intelligent service in the stations to facilitate the transformation of the service station from traditional single-purpose oil product sales to a service station system project with comprehensive service resource integration.

We have established pilot stations in Beijing, Tianjin, Jiangsu, Zhejiang, Hunan and Guangdong, etc., and gradually launch the mature functions of pilot stations (convenient payment, self-service equipment, unified marketing management, etc.) in service stations.

- Based on the "Internet + Supply Chain", the new model of e-commerce operation SC2B (Supply Chain to Business) which relies on the industrial foundation, we built the EPEC industrial product e-commerce platform and the Sinopec Chememall chemical product sales platform, thus promoting vertical and horizontal integration between industries, between enterprises, and between enterprises and industries.

#### Statements from stakeholders

The EPEC standards and the integration and interconnection of information systems between the EPEC platform and industrial enterprises effectively promote the transformation and upgrade of industrial enterprises, informatisation upgrade, technological innovation, sustainable development and trade integration.

- Dragana, Beijing Representative Office of United Nations Industrial Development Organisation (UNIDO)



#### Topic 4: Targeted Poverty Alleviation

The 2030 Agenda for Sustainable Development proposes SDGs including eradicating poverty in all its forms everywhere, eliminating hunger, ensuring inclusive and equitable quality education. China has been engaged in an unprecedented battle against poverty and is expected to basically eliminate absolute poverty by 2020. Advocating "Big enterprise undertakes greater responsibility", Sinopec Corp. conducts targeted poverty alleviation to facilitate the battle against poverty. Focusing on infrastructure construction, industrial development, education support, labour training and healthcare, we help impoverished areas and local people to improve their capability of sustainable development. By the end of 2018, Sinopec Corp. and its subsidiaries undertook the task of poverty alleviation in 758 counties and villages and helped invest RMB 228 million. Yuexi County in Anhui Province under the Company's poverty alleviation programmes, passed through national evaluation and inspection, which means that the county with 400,000 populations has been lifted out of poverty.

Amount of fund introduced and invested by the Company (RMB): 228 million

Number of registered people helped by the Company: 32,250

Number of poverty alleviation programmes through industrial development: 1,500

Amount of agriculture products sold with the support of the Company (RMB): 146 million

Number of participants of professional skill training (person-time): 3,149

Number of people relocated: 545

Number of students who received subsidies: 1,374

#### Poverty alleviation through industrial development

Taking the distribution characteristics of natural resources in different regions, we carried out the construction of planting and breeding bases. With our efforts, the Beautiful Village Homestay Programme, the Batik Programme and the Programme of Fish Farming in Ricefield have become one of poverty alleviation demonstration programmes in Fenghuang County, Anhui Province. We cooperate with Gansu Academy of Agricultural Sciences to develop high-tech agriculture and launch quinoa and sweet sorghum planting demonstration programmes in Dongxiang County, Gansu Province. In addition, we integrate natural water resources in Tibetan Plateau with Sinopec Corp.'s 27,000 EasyJoy convenience stores and enable Tibet Glacial Water to market national wide, realising sales turnover of RMB 1.58 billion, taxes and fees of RMB 163 million and job opportunities for 732 people.

Carry out poverty alleviation through consumption and encourage internal procurement. Suitable products are directly introduced into Sinopec EasyJoy convenience stores. Sinopec subsidiaries in Gansu and Hunan signed cooperation agreements with poverty-stricken areas to carry out agricultural and livestock products sourcing conferences with the theme of poverty alleviation. EasyJoy convenience stores have sold the poverty alleviation products in coastal cities. Organise professional salesmen to guide the sales work in poverty-stricken counties to enhance the sales of local specialty agricultural products. In 2018, we organised special exhibitions in Hangzhou for selling over 130 kinds of specialty agricultural products from poverty-stricken counties.

Cooperate with China Social Poverty Alleviation Network, China Foundation for Poverty Alleviation (CFPA) to help sell agricultural products from targeted poverty alleviation counties and sell these products on the Company's e-commerce platforms.

#### Poverty alleviation through promoting employment

The specific job fairs were held in Tibet, Qinghai, Gansu and other provinces, recruiting 114 unemployed students from poor families.

#### Improvement of people's livelihood

In Yuepuhu County located in Xinjiang, we implemented comprehensive courtyard renovation for 6,391 households to develop the courtyard economy. In Dongxiang County in Gansu Province, we renovated 832 dilapidated houses to ensure the people's residence safety.

#### Poverty alleviation through education support

In 2018, we invested RMB 25.83 million in education to improve education infrastructure, purchase education and teaching equipment, and provide 1,374 student subsidies. We set up "Spring Bud" classes to help school-deprived girls return to school. We also have organised the Summer Camp themed with "Great Wall Lubricating Oil · Chinese Astronauts Experience Camp" for 11 consecutive years, and helped over 70 students to participate in winter camps so as to broaden the vision of outstanding students from impoverished areas.

#### Poverty alleviation through providing better healthcare

We aided the construction of the hospital on the world's highest altitude in Baingoin County, Tibet and continued to undertake Sinopec Lifeline Express Programme, which helped a total of 44,000 patients restore vision. We cooperated with Unimed Healthcare Poverty Alleviation Project in telemedicine to introduce public welfare resources to targeted poverty-stricken counties. Through the project, we provided diagnosis and treatment services for 63 patients with major diseases and trained more than 100 doctors in 2018.

#### 2018 Honours for Poverty Alleviation

- Sinopec Corp. won the honours of "National Poverty Alleviation Case" by The State Council Leading Group Office of Poverty Alleviation and Development, "Gansu Province's Model of Poverty Alleviation" by Gansu Province, and "Recommended Case of Targeted Poverty Alleviation" by People's Daily.
- SINOPEC Xinjiang Oil Marketing Company was acclaimed for the contributions to development of Xinjiang by the Labour Union of Xinjiang Uygur Autonomous Region.
- Zhongke (Guangdong) and SINOPEC Maoming was awarded the Copper Cup of "Guangdong Poverty Alleviation".

- SINOPEC Changling and SINOPEC Baling was acclaimed for the contributions to local poverty alleviation by Yueyang City, Hunan Province.
- SINOPEC Luoyang received the honour of "Benevolent Enterprise for Targeted Poverty Alleviation" by Luoyang City, Henan Province.
- SINOPEC Yunnan Oil Marketing Company received the honour of "Advanced Supporting Company for Poverty Alleviation" by Deyi Township, Midu County, Yunnan Province.
- 13 employees were awarded the title of "Advanced Individual on Poverty Alleviation".

Safety

23

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The Company attaches great importance to safety management. We strictly abide by laws and regulations such as the Work Safety Law of China, implement HSSE management system and set up all-dimensional safety management rules covering safety accountability, safety behaviors, safety training, risk management as well as hidden safety hazards treatment, operations and occupational health, etc. We built emergency management and command system and enhanced our identification, prevention and control of safety risks, evaluation and management of hidden safety hazards and strengthened safety awareness of employees and contractors, sparing no effort to prevent varieties of safety accidents.

For more details of risk management system and HSSE management system, please refer to the section of Sustainability Management System in the report.

Chairman message:

We must keep in mind that "development should not come at the cost of safety", uphold the philosophy that "lucid waters and lush mountains are invaluable assets" and improve safety and environmental protection, striving to achieve harmonious coexistence and coordinated development between enterprises, society and environment.

Work Safety

Risk identification and management

In 2018, we issued the Regulations on Dual- Channel Prevention Mechanism of Hierarchical Safety Risks Management and Hidden Hazards Treatment in Work Safety and the Guidelines on Risk Identification for Frontline Positions, amended the Guidelines on Safety Risk Assessment, and promoted the application of the safety risk assessment platform (PHAMS Platform) to quantify risk. The Company and the subsidiaries identified 1,140 work safety risks, and 30 of them were assessed as major risks. We categorised and managed major risks in a hierarchical order, assigned risk management personnel at all levels, and formulated management measures for reducing risk values. The risks of general difficulty in control are managed by subsidiaries, the risks of greater difficulty in control are managed and guided by company leaders, and the risks of major difficulty in control are managed and guided by the Chairman of the Company. In 2018, the total amount of corporate risk values was reduced by 12.2%.

Safety management measures

Considering the work safety accidents happening in China in 2017 and the standards for identifying major hidden hazards by the Ministry of Emergency Management of China, we formulated the Guidelines on Rules of Sinopec Hidden Hazards Identification for Major Work Safety Accidents (For Trial Implementation) in 2018. Moreover, in order to tackle hidden hazards in tank areas of primary and secondary hazardous sources, we formulated the Guidelines on Renovation of Atmospheric-Pressure Storage Tanks for Flammable and Combustible Liquids (For Trial Implementation). In addition, we organised subsidiaries to work on hidden safety hazards inspection and treatment. The conference for advancing work on hidden safety hazards inspection and treatment is held quarterly to guide and coordinate subsidiaries to enhance safety hazards management.

In 2018, we promoted the construction of the safety management information platform and the comprehensive application of key modules such as risk management and hidden hazards screening and treatment. We optimised the three-year plan for safety technology, carried out safety technology research, and promoted the application of research projects such as mobile monitoring systems for high-risk operation, hydrogen sulfide elimination, and quick connectors for hazardous chemicals loading and unloading. We moved forwards the trigger point for emergency treatment to warnings of abnormal operating conditions and process equipment to improve the efficiency of information transmission and disposal of emergencies. We carried out risk investigation, assessment and control of hazardous chemicals, established safety risk distribution files for hazardous chemicals, and rectified hidden dangers of hazardous chemicals and hazardous chemical processes. We established and improved leak detection mechanism and leak management account, so as to deal with the leaks point-by-point.

We enhanced safety technology exchanges and held seminars to further improve management of abnormal conditions and

emergency treatment. Besides, we continuously carried out risk training about emergency knowledge and skill training for all staff as well as emergency plan drills to enhance the Company's capabilities of risk identification & assessment and emergency response. In 2018, the coverage ratio of safety training reached 100%.

#### Contractor Safety Management

In 2018, we identified major safety risks in contractor safety management including safety skills, safety awareness, and subcontract management, etc. and thus adopted the following measures:

- Implementing contractor safety commitment mechanism to promote self-management. We promoted special corporate auditing mechanism on contractor safety system and implemented audit disclosure system.
- Strengthening contractor safety training. We compiled contractor employee warning training programmes and implemented mandatory and targeted safety training. We promoted standardised construction of projects and improved three training bases in East China, South China and North China. The training base for safety operation of petroleum engineering projects has been constructed and used. We carried out on- site training for projects construction and maintenance work.
- Promoting typical demonstrations of contractor safety management system. We selected SINOPEC Guangzhou, which has achieved effective results as a model to promote standardisation of contractor safety management and operation safety management procedures and processes.
- Conducting normalised and continuous safety surveillance on contractor safety management. We urged contractors to rectify major problems identified and implemented accountability management for subsidiaries or individuals with repeated problems or inaction.
- Establishing a blacklist for contractors with regulation violations at both the Company level and the subsidiary level. We limited the bidding qualifications and implemented clearing mechanism for contractors with serious violations.

#### Case Study: Contractor Safety Management

In 2018, a contractor safety accident occurred in one of the subsidiaries of Sinopec Corp. After the accident, Sinopec Corp. set up a working group consisting of Sinopec's work safety management department, the subsidiary's safety and environmental protection department, and contractor personnel to investigate the cause and immediately launched a series of arrangement including hidden hazards detection, improvement of employees' safety awareness, and contractor safety skills training. We included the contractor's safety risks into the list of Sinopec Corp.'s major risks. The senior management of the subsidiaries was allocated to organise the compilation of guidelines on identification and control of safety risks in processes of construction, inspection, repair, operation and maintenance which guides safety management of contractors.

#### Logistics Safety

In 2018, we identified hazardous chemicals transportation was a major risk and formulated safety management regulations on hazardous chemicals carriers, and standardised admission, auditing and assessment of carriers and means of transport. By analysing the characteristics of transportation volume, transportation points, transportation routes and types of hazardous chemicals, we formulated corresponding systems, standards and management measures to clarify the requirements for loading and unloading and transportation of hazardous chemicals. Based on Sinopec Corp.'s supply chain and logistics platform, we have built a safety management platform for hazardous chemicals transportation, which integrates functions such as hazardous chemicals transportation resources database, process monitoring, early warning, emergency plan push and statistical analysis. We formulated the Regulations on Safety Surveillance of Hazardous Chemicals Carriers, analysed the conditions of highway and waterway oil products carriers and vehicles, and have implemented unified monitoring for vehicles and ships of hazardous chemicals transportation. In 2018, the Company hasn't received any safety accident of hazardous chemicals transportation reported.

#### Cyber Security

In 2018, we identified major informatisation risks including cyber-attacks, internal network authority management, computer virus infection and data security. We formulated the Emergency Plan for Cyber Security Incidents, the Rules for Major Fault Emergency Management, the Special Action Plan for Internet Application Safety Management, and improved the IT infrastructure emergency plan. We organised five coordinated emergency drills throughout the year. Moreover, we worked with external technical experts to carry out network application monitoring and safety technical protection, and strengthened testing for application system safety defense and emergency response and system recovery, so as to ensure safe and stable operation and data security of e-commerce platforms and major application systems. We conducted safety inspection and established internet application safety archives. Besides, we organised the cyber security technology competition in the Company and trained talents of cyber security technology. In 2018, the Company had no external network intrusion incident and major cyber security incident.

#### Public security

We strictly followed the principle of "without risk assessment, none institution establishment, project bidding, or personnel deployment is permitted" to carry out public security. We have formulated the Regulations on Overseas Public Security, which stipulates risk classification, risk assessment, risk prevention, emergency management and hierarchical treatment. We considered the different risk levels, local social and natural conditions before site selection for overseas subsidiaries and equipped security personnel for them. In addition, we strengthened collection and analysis of public security information to improve the timeliness, pertinence and effectiveness of security forecast/warning.

In 2018, we established the security information warning mechanism and released special prompts to overseas employees for emergencies. Subsidiaries/projects in extremely high-risk areas were equipped with security officers from professional security agencies in China and security consultants were assigned to local government agencies/projects to assist in short-term security training

and improve security equipment. In 2018, a total of 43 security consultants and security officers were dispatched. Overseas employees were equipped with SOS emergency contact cards and offices were equipped with first-aid kits and the emergency evacuation routes and assembly locations were marked. Besides, we conducted health risk assessment to guarantee the medical service, psychological care and stress relief for overseas employees.

Climate Change

29

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We practice the green and low-carbon development strategy, actively respond to climate change, and integrate energy conservation, emission reduction and carbon reduction into an overall management system. We promote clean production and protect the environment for building a resource-saving and eco-friendly green enterprise.

### Climate-Related Risks

Attaching importance to climate change will help relieve bottleneck constraints on the current resources, accelerate fostering new economic growth, which will accelerate the transformation of economic development pattern and contribute to promoting the industrial transformation and upgrading. As an energy and materials provider, Sinopec Corp., on one hand, focuses on the development of major businesses and provides clean, high-quality and affordable energy and petrochemical products to promote social development and meet people's living needs; on the other hand, the Company pays high attention to the climate-related risks and opportunities to the enterprise's development.

#### 1. Policy and Regulation

- Consensus has been reached on combating climate change. Series of International, national and regional laws and regulations enacted to limit GHG emissions, together with more stringent climate-related regulations that might be formulated in future, will affect global demands for fossil fuels. They may also increase corporate capital expenditure and affect future corporate profits and strategic growth opportunities.
- China has made a set of commitments that are to be reached by 2030: to achieve its peak CO<sub>2</sub> emissions (and to make every possible effort to peak earlier), to lower CO<sub>2</sub> emissions per unit of GDP by 60 to 65 percent from the 2005 level, and to increase the share of non-fossil fuels in primary energy consumption to around 20 percent.
- China launched the national carbon emission trading system in 2017. The energy and chemical industry is expected to be gradually incorporated into the system.

#### 2. Market and technology

- Technology innovations that support the transition to a lower-carbon, energy-efficient economy system will increase the Company's R&D costs.
- People's attention to climate change may lead to public choice of low-carbon products and services.

#### 3. Reputation

- Stakeholders pay more attention to ESG (environment, society and corporate governance) performance of the Company. The Company's low-carbon transformation may fall short of stakeholders expectation which may impact our reputation.

#### 4. Operation

- Extreme weather events such as typhoons, hurricanes or floods caused by climate change may cause direct asset damage to the Company's production and operation. The supply chain disruptions caused by climate change may also exert indirect impacts.

## Our Actions

Actions to addressing climate change can foster Sinopec Corp. new growth drivers, help accelerate the Company's low-carbon energy transition and promote high-quality development. Sinopec Corp. has actively implemented Green and Low-carbon Development Strategy, continuously strengthened the integrated management of energy and environment, launched Green Enterprise Campaign, speeded up Energy Efficiency Improvement Plan, promoted clean production and strengthened carbon assets management to embrace the Climate-Related opportunities.

### Improving energy efficiency

- We promoted informatisation of the energy management system and the system has been built in 9 refining and chemicals subsidiaries. Through optimising online operation of steam power, the real-time monitoring and dynamic optimisation of the operation processes of boilers, steam pipeline network and gas pipeline network, etc. have been achieved. In 2018, over RMB 30 million were saved by these efforts.
- We advanced Energy Efficiency Improvement Plan by adopting measures such as recycling natural gas and utilising distributed energy sources etc. In 2018, 481 projects were implemented and 706,000 tonnes of standard coal were saved annually. More specifically, 159,000 tonnes were saved in E&P sector, 239,000 tonnes saved in refining sector and 274,000 tonnes saved in chemical sector.
- We carried out energy conservation inspection of construction projects. In 2018, a total of 49 projects were inspected, focusing on the integrity of energy consumption calculation, the feasibility of energy conservation measures and the compliance of energy measuring instruments, to eliminate high energy-consuming and inefficient projects.
- We adopted the mature and applicable energy-saving technologies. In 2018, a total of 280 technical reformation projects were implemented, saving energy equivalent to 280,000 tonnes of standard coal. More specifically, Gudong Oil Extraction Plant of SINOPEC Shengli Oilfield Company adopted the technology of injection-production-transmission integrated operation, which was awarded as National Demonstration Project for Energy-Conservation; SINOPEC Maoming optimised the technology with the equipment energy consumption 37% lower than design specification, and increased the high value-added product yield at the same time; SINOPEC Shijiazhuang implemented 30 projects for energy conservation, reducing the comprehensive consumption of energy per RMB 10,000 of production value by 6.6% and saving energy of 25,000 tonnes of standard coal throughout the year; SINOPEC Qilu achieved energy consumption reduction by over 35%, saving energy of 11,900 tonnes of standard coal.

Tips: As required in Energy Efficiency Improvement Plan, the subsidiaries set the targets of energy efficiency improvement for the next year at the end of each year. The implementation progress of the Plan is reported monthly, the existing problems of subsidiaries are reported and discussed quarterly, and the annual assessment is conducted in accordance with Rules for the Implementation of Energy and Environmental Performance Assessment.

Consumption of comprehensive energy per RMB 10,000 of production value

2018: 0.496 tonne of standard coal

2019: 0.494 tonne of standard coal

2020: 0.492 tonne of standard coal

#### Natural gas

Energy Production and Consumption Revolution Strategy (2016-2030) of the China proposes to realise the continuous growth of low-carbon energy such as natural gas in 2021-2030, significantly reduce the use of high-carbon fossil fuels and increase the use of natural gas in key areas with air pollution prevention target. In accordance with national strategic requirements of gas development, the Company formulates a strategic plan for effective and rapid development of natural gas, and builds an imported resources pool combining long, medium and short terms with spots and futures on the base of strengthening stability of domestic production. Moreover, we deploy infrastructure moderately in advance, accelerate the development of terminal business, and endeavor to build a production, supply, storage, and marketing system with optimised resource allocation, efficient operation of pipeline network, powerful guarantee gas supply and strong risk resistance, to achieve high-quality and sustainable development of natural gas sector.

In 2018, the Company continued to strengthen the refined management of gas reservoirs in main gas fields in order to meet the social demands for natural gas. According to the characteristics of gas fields in different regions, we formulated exploration and development plans to extend the stable production period of gas fields and improve gas recovery rate. According to the overall deployment of gas popularisation in the Yangtze River Economic Belt, the Company ensured stable production of gas fields in western Sichuan etc., improved external pipeline, increased market supply, and stabilised gas supply for the Belt. We also improved gas pipeline network across the country, started the expansion project of Shandong LNG terminal, and promoted the second-phase expansion of Tianjin LNG and the preliminary work of the Guangxi LNG expansion project.

#### Using alternative energy sources

We actively use low-carbon energy, promote coal-to-gas practice, and apply geothermal energy, solar power, residual heat and steam. In 2018, all production and living facilities of SINOPEC Lubricant Marketing Company were powered by clean energy. SINOPEC Northwest Oil Field Company carried out oil-to-electricity operation and saved 14,000 tonnes of standard coal. SINOPEC Jiangsu Oilfield Company promoted the application of "water-source heat pump + solar heating" and "air-source heat pump + auxiliary electric heating" to replace boilers, replacing over 2,000 tonnes of crude oil. SINOPEC Zhongyuan Oilfield Company adopted geothermal heating in office areas and residential areas in four factories, saving energy of 11,000 tonnes of standard coal throughout the year. SINOPEC Hainan Marketing Company built distributed photovoltaic power stations on the roof of service stations to provide self-use electricity and upload surplus electricity to local grids. SINOPEC Pipeline Storage & Transportation Company reclaimed residual heat from surrounding thermal power plants and refineries in 4 station depots. SINOPEC Zhenhai developed mutual cooperation on steam and low-temperature heat supply with 15 surrounding enterprises.

The development target of Nature Gas

Indicators	2018	2019	2020	2023
Natural Gas (billion cubic metres)	27.5	28.7	33.0	42.0
Percentage in oil equivalent (%)	39	42.3	43.5	49.5%
Production of shale gas (billion cubic metres)	6.62	7.3	10.0	11.3

#### GHG emission management

The Company attaches great importance to GHG emission, sets emission reduction targets and measures, continuously carries out carbon capture and methane recovery, and promotes the development of alternative energy such as bio-aviation coal, biodiesel and photovoltaic power generation. In 2018, the Company emitted 172 million tonnes (CO<sub>2</sub> equivalent) of GHG with an increase of 2.07 percent year-on-year\*.

#### Methane emission reduction

The Company has set a goal of recycling more than 200 million cubic meters of methane annually by 2023, and has taken various measures to reduce methane emission:

- For wells/stations far away from the oil gathering and transportation network, vehicle-mounted CNG or LNG facilities are used for recovery.
- Part of wells/stations adopts connecting pipes (or makeshift pipes) to enter the oil gathering and transportation network for recovery.
- Adopting technologies such as "testing during entrance" to recover natural gas during the testing process.
- Adopting oil and gas multiphase flow, oil jacket connecting unit or casing gas recovery unit, low-power gas generator and supercharger to recover casing gas.
- Adopting oil and gas airtight gathering and transporting process and large tank pumping unit to recover oil tank gas.

In 2018, the Company recovered methane about 226 million cubic metres

Reducing GHG emissions accordingly 3.35 million tonnes of CO<sub>2</sub> equivalent

#### Flaring reduction

The flaring system is the key facility to ensure safety. When certain emergency occurs in the production process, the gas materials need to be discharged into the flaring system for burning in order to ensure production safety and prevent subsequent accidents. However, flaring emissions will cause environmental pollution and energy waste. We worked hard to reduce the loss in petroleum processing and reduce environment pollutions from flaring. Adhering to the principle of safety production foremost, reducing organised emissions or venting, and economic recovery and utilization, the Company formulates rules of flaring emissions and recovery, includes the operation management of flare system into the process and equipment management system, and establishes the supervision and assessment system. In 2018, we formulated flaring flow speed standards for different weather conditions to reduce flaring and venting in natural gas purification plants, optimised flaring plans for different sections, layers, gas reservoirs and well depths to prohibit venting and flaring when testing new wells, implemented gas recovery in distant scattered wells and casing gas recovery.

In 2018, the flaring from E&P sector amounted to 104 million cubic metres

Decrease by YoY 6.3%

Flaring gas recovered 141 million cubic metres

(\*Mainly due to the increased energy consumption incurred from the quality upgrading of refined oil and from the operation of new environmental protection facilities; in addition, the relevant data of Shanghai Secco is included into the Company's statistics after it is acquired by the Company's subsidiary.)

#### Carbon capture

In 2018, we continued to conduct CO<sub>2</sub> capture and recovering among E&P sector and refining & chemicals sectors. Refining and chemicals subsidiaries captured 1.01 million tonnes of CO<sub>2</sub> and oilfield enterprises injected 240,000 tonnes of CO<sub>2</sub> to enhance oil recovery (EOR). Since we carried out CO<sub>2</sub> capture and recovering work, 2.45 million tonnes of CO<sub>2</sub> have been captured accumulatively and 3.44 million tonnes have been injected for EOR.

#### Developing alternative energy

In 2018, we continued to implement residual heat utilisation with the calorific value equals to 750,000 GJ per year, and deployed the distributed solar photovoltaic power generation projects generating 5.171 GWh of electricity annually, equivalent to saving 28,000 tonnes of standard coal per year and reducing 68,000 tonnes of CO<sub>2</sub> emissions. SINOPEC Zhenhai started the construction of China's first commercial production unit of 100,000-tonne bio-jet fuel. Biodiesel R&D and production was advanced and the pilot project was conducted to inject B5 biodiesel into vehicles in Shanghai transportation system and specialty vehicles. At the same time, we selected renewable energy projects and promoted the infrastructure construction of hydrogen production, purification and hydrogenation demonstration stations. The Company has set up demonstration stations for refueling and hydrogen charging in Guangdong province. In 2018, the Company joined the Hydrogen Council and signed strategic cooperation agreement with domestic enterprises to build hydrogen refueling demonstration stations for the 2022 green Winter Olympics.

The Company implemented residual heat utilisation and distributed solar photovoltaic power generation projects, which was equivalent to saving 28,000 tonnes of standard coal

Reducing carbon dioxide emissions 68,000 tonnes per year

#### Carbon asset management

The Company carries out GHG emission reduction assessment, the KPI is composed of 2 indicators such as total carbon emissions, emission intensity and other 7 indicators including carbon accounting and carbon trading etc. We advance the carbon assets information system construction, and start the construction of carbon assets management information system in E&P, refining and chemicals sectors to enhance the statistical efficiency of CO<sub>2</sub> emissions. In 2018, the pilot subsidiaries participated in carbon trade and completed total carbon quota, that accumulated rich experience for the Company to participate in the national carbon trading market. The carbon trading volume reached 1.06 million tonnes, with carbon trading turnover of about RMB 24.11 million.

Tips: B5 biodiesel, made of oil of aquatic plants such as oil-bearing crops, oil-bearing wild plants, engineered microalgae, animal fats or waste food oil, etc., is a renewable fuel instead of petroleum-made diesel. The Company has selected two service stations in Shanghai as pilot stations. B5 biodiesel on the market is mixed by 5% biodiesel and 95% petroleum-made diesel. According to the research of Shanghai Tongji University, after using B5 biodiesel, vehicle's engine runs normally and NO<sub>x</sub> emission is equivalent to that of petroleum-made diesel, the emissions of air pollutant including heavy metal particulars and fine particles are reduced by over 10%, and the rate of de-NO<sub>x</sub> is over 80%.

Environment

37

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The Company is committed to achieve the maximisation of resource efficiency and the minimisation of pollution emissions by the advanced management and technology for achieving harmonious coexistence and coordinated development between the Company, communities and the environment.

### Environment-related Risks

Environmental protection has been incorporated into China's national strategies. The Chinese government proposes that "stringent laws and regulations ought to be observed to protect the ecological environment", successively issues laws and regulations for the prevention and control of air, water and soil pollution etc., implements the pollutant discharge permit system and strengthens environmental protection supervision. Environmental protection standards and the total amount of pollution discharge permits are strictly controlled. The Chinese government has issued Outline for the Development of Yangtze River Economic Belt, focusing on strengthening ecological environmental protection of the Yangtze River and the Outline proposes higher requirements for environmental management of our subsidiaries alongside the Belt. At the same time, there arise new development opportunities for those enterprises that attach importance to environmental pollution prevention and treatment. Building green enterprises has become the core competitiveness of enterprise's sustainable development.

### Our Actions

The Company gives priority to protecting environment, strictly follows Environmental Protection Law of the State as well as laws, regulations and regulatory documents on prevention and treatment of air, water and soil pollution, establishes dynamic management and control mechanism as well as work process of environment-related risks which covering identification-assessment-control- hidden hazard treatment-reevaluation. The production subsidiaries commit to treating the generated waste water, exhaust gas and waste residue effectively through their own environmental protection facilities or through the third party.

In 2018, according to the State's Opinions on Enhancing Ecological Environmental protection completely and Win the Battles for Pollution Prevention and Control and based on the pollutant discharge management system of Sinopec Corp., we formulated Green Enterprise Campaign Three-Year Implementation Plan for Pollution Prevention and Treatment. The Company sent subsidiaries Letter of Energy Efficiency & Environmental Protection Responsibility to set the targets on pollutant emissions, emission reduction and pollutant treatment, all of which are assessed annually. We conducted HSSE checks and specific environmental supervision, implemented assistance for key subsidiaries for better performance, compiled and carried out Guidelines on Pollution Prevention and Treatment of Enterprises along the Yangtze River to satisfy the requirements on environmental protection along the River.

The refining and chemicals subsidiaries and enterprises under the Company's control have completed the application for pollutant discharge permit in accordance with national regulations, while other subsidiaries and branches are actively promoting the discharge verification and application of the permit as required. The subsidiaries and branches licensed with discharge permit upload pollutant discharge reports on the official website of local relevant authorities and are supervised by those authorities and the public. The subsidiaries of the CIR project in Kazakhstan actively carried out environmental monitoring, regulated waste residues management and treatment, and reported environment management as required. No major environmental accidents occurred and no major environmental fines were imposed throughout the year either. Mansarovar Energy Colombia Ltd., a JV of the Company, was awarded the green enterprise certification for water source protection and utilisation from ICONTEC, an international green enterprise certification organisation.

We communicate with local residents during the operation process and established Public Open Day mechanism. For all construction projects that may have an impact on the environment, we communicate with local residents about the possible impact of the project. In 2018, all the major construction projects including E'ancang gas pipeline project, West Sichuan Gas Field capacity construction project, SINOPEC Zhenhai expansion project, etc., were conducted environmental impact assessment. We solicited public opinion by disclosing the assessment reports with local communities on newspapers, online notice, announcements and questionnaires, and submitted the feedback on the website of national environmental protection authorities. All construction projects won support from local residents.



#### Air emissions

We manage the generation, treatment and discharge of air pollutants, install online environment monitoring facilities to ensure monitoring air pollutants emission on real-time, and control the volumes as licensed in the pollutant discharge permit. In 2018, the Company established and optimised air pollutants management system discharged Sulfur dioxide and nitrogen oxides 67.2 thousand tonnes and 99.8 thousand tonnes respectively all year long.

- Over 910 sets of facilities and over 11 million LDAR inspection points of all refining and chemicals subsidiaries and branches were included into leak detection and repair system management. Through automatic monitoring, alarming when excessively discharge and analysing the discharge trend of key pollution sources under the State's control, we promote the subsidiaries' pollutants discharge standard level.
- We continued to upgrade and revamp environmental protection facilities, renovated coal-fired boilers for ultra-low emission, completed the renovation of processing furnaces for low-NO<sub>x</sub> combustion, and implemented VOCs treatment in tank areas, loading/unloading sites and sewage plants.
- We carried out environmental protection campaigns in Beijing, Tianjin and Hebei regions and the surrounding areas, Fenwei Plains and the Yangtze River Delta to ensure prevention and treatment of air pollution in autumn and winter seasons.
- We have completed the revamp of 27,300 service stations and 280 oil depots for oil and gas recovery, forming closed-loop management for airtight loading/unloading system, and reducing VOCs emissions. Each year, we entrust the third party to test oil and gas recovery facilities in oil depots and service stations to ensure compliance discharge.

#### Case Study: SINOPEC Jinling Keeps Improving Clean Production

Through applying clean production technology and measures, SINOPEC Jinling realised all sewage oil refined, all storage tanks water airtight sheared, discharged air from facilities overhaul all recovered, so as to reduce the loss rate of storage and transportation to 0.046% and the processing loss rate to 0.36% which ranks the advanced level. In 2018, the Company implemented a number of enhancement projects and accomplished all storage tanks treatment of VOCs.

## Water resources

### Water consumption

We attach great importance to water resources management. We implement strict management of total water intake plan, establish the annual target for water consumption, make early warning and adjustment when the total volume of water intake increases too fast. Develop new technology, new process, new equipment and new materials for water conservation, improve the efficiency of industrial water utilisation system to reduce losses and waste during production and ancillary production processes. We strengthen recycling and comprehensive utilisation of waste water to resourcing waste water. Promote subsidiaries and branches to use municipal reclaimed water and desalinate sea water instead of using fresh water. In particular, subsidiaries in coastal areas develop economical seawater desalination technology and seawater-cooling technology to make use of seawater. Subsidiaries located in areas implementing water tax reform comprehensively utilise unconventional water sources such as waste water and desalinated seawater to enjoy tax-free or tax-relief policy, realising utilisation of water resources and cost reduction.

- According to the characteristics of the block, oilfield subsidiaries formulate targeted measures to reduce inefficient-circulating water injection and promote the "sewage-to-clean water" project to save fresh water. Gas field subsidiaries recover fracturing fluids to reduce sewage discharge.
- Refining and chemicals integrated subsidiaries stabilise the quality of sewage from the source of sewage by separating and treat oily sewage, salty sewage and high-salt sewage to improve recovery.
- Subsidiaries in which the waste water recycling cost is higher than the purchase price of fresh water conduct water utilising optimisation diagnosis, formulate economic operation plans, reduce water utilising costs, and improve the recycling rate of waste water.

Since the issue of Implementation Plan for Water Pollution Prevention and Treatment Action in 2016, the volume of fresh water for industrial use has decreased by no less than 1% annually. The volume of fresh water for industrial use of 2018 was 657.46 million cubic metres.

The volume of fresh water for industrial use in different segments

E&P: 115.2

Refining: 192.4

Chemical: 304.15

Others: 45.71

### Sewage discharge management

We inspect production, discharge and treatment of waste water, carry out risk assessment of various water, and implement hidden hazards treatment. We review the compliance with National and local sewage discharge standards, install online environment monitoring facilities to ensure real-time monitoring. In 2018, the subsidiaries implemented the targets of waste water discharge and emission reduction set in Letter of Energy Efficiency & Environmental Protection Responsibility, promoted the upgrade of sewage sites, improved the pre-treatment effect, equipped with de-nitrogen and de-phosphorus facilities as well as online monitoring facilities to detect the amount of nitrogen and phosphorus, and enhanced the treatment capacity of sewage sites. In addition, water-conservation trainings and skill competitions were organised to improve employees' capabilities. During the year, 19.4 thousand tonnes of COD and 2 thousand tonnes of ammonia nitrogen were discharged.

#### Case Study: "Zero Discharge" of Extracted Water in Yuanba Gas Field

SINOPEC Southwest Oil & Gas Company actively explored the comprehensive utilisation technology of extracted water in sulfur-bearing gas fields. After more than one year of research and development, the "pre-treatment + cryogenic distillation + recycling" process was successfully developed and applied in Yuanba gas field in May 2018. The low-temperature distillation station of extracted water was completed and put into operation, realising zero discharge of extracted water in Yuanba gas field. It is estimated that 150,000 m<sup>3</sup> of water can be recycled every year.



#### Solid waste

The subsidiaries implement strict classification management and assessment of non-hazardous and hazardous waste, promote the philosophy of recycling economy following the principle of "reduction, reclamation, detoxification", and push forward comprehensive utilisation of solid waste. In 2018, the Company treated 2.229 million tonnes of solid waste and 505.3 thousand tonnes of hazardous waste, and the proper waste disposal rate reached 100%.

- We carried out special inspection and supervision of solid waste management, conducted comprehensive check of solid waste landfills, organised soil and groundwater monitoring to ensure anti-seepage well-functioned, and disposed leachate legally, to prevent incidents of environmental pollution.
- We promoted clean production and solid waste reduction technologies and achieved the reduction target through enhanced process control.
- We compiled the list of hazardous waste for each sector, studied utilisation and compliance treatment plans, improved storage facilities, to enhance the hazardous waste standardised management. We promoted the development of monitoring platforms for hazardous waste transportation and strengthened the supervision over the third party during the process of hazardous waste treatment.

#### Case Study: Resource Utilisation of Mud Cuttings

Combined with the characteristics of the area in which the oil and gas fields are located, oil and gas recovery is carried out by pyrolysis, brick making from residue sintering, curing paving and other ways to develop the resource utilization of mud and rock cuttings. In order to reduce the ecological cost and environmental pressure of oil and gas exploration and development, we should persist in realizing the utilization of solid waste resources and harmless utilization under the premise of safety, environmental protection and economic feasibility, so as to turn waste into treasure.

#### Statements from stakeholder

"Through thorough inspection and internal communication, we have made tailor-made resource utilisation plans for 127 kinds of solid wastes, set the target that solid waste treated rate to reach 100% and comprehensive utilisation rate to reach 80%, which contributes to building green enterprise."

- Liu Chunxiang, Director of Safety and Environmental Protection Department of SINOPEC Tianjin

#### Land resources

We strengthen the management of land resources in accordance with the principle of intensive, efficient and green land use. Oilfield subsidiaries take great efforts in implementing the intensive mode of well deployment during exploration, reduce the occupied area of single well. We conduct evaluation on safety and environmental risks of idle land such as discarded well sites and delist it from exploration or conduct reclamation for that without safety and environmental risks. In 2018, the total amount of land delisted was 2784 acres, of which 2768 acres of unpolluted land delisted and 14 acres reclaimed. A total of 330 abandoned well sites were treated, among which, Sinopec Northwest Oil Field Company reclaimed 53 wells and 7 stations located in the populus euphratica forest reservation area.

#### Oil Spills

We carry out oil spillage risk analysis and evaluation, strengthen emergency drills and skill training, improve oil spillage emergency plans, and build a professional team. In 2018, SINOPEC Shengli Oilfield Company assessed and identified that the distribution of oil exploration and development facilities, pipe networks, power grid and ships in the sea area were highly concentrated, and there were multiple risks such as collapse, damage and rust caused by a long period corrosion of marine environment and climate around the beach of oil field. Given this situation, the Company organised oil spillage risk analysis and impact evaluation, amended and added the emergency plan system, and formulated refined treatment plans for spills in open waters, semi- open waters, beach and land areas, as well as the emergency treatment plan for spills in beach and shallow sea areas.

### Biological diversity

In accordance with the relevant regulations of Environmental Protection Law and Convention on Biodiversity, we formulate Measures for the Environmental Protection Management of Sinopec Corp., urge subsidiaries to strictly follow relevant requirements of national laws and regulations on ecological protection, and strengthen pre-project evaluation and verification, formulate ecological protection and restoration plans, and strictly implement management during construction and production, reducing disturbance to ecological environment and protecting biodiversity. All subsidiaries should strictly implement national and corporate regulations to integrate biodiversity protection into the evaluation, decision-making and production operations of projects construction.

As for projects that may have negative impacts on the environment, we evaluate the impacts on ecological protection areas, forests, wetlands, as well as animals and plants during the periods of pre-project evaluation, construction and operation. Targeted measures were formulated correspondingly to mitigate or eliminate impacts. We adopt the methods of stratified excavation, separate stacking and stratified backfilling in pipeline construction. We restore the land as much as we could after construction. We select the directional drilling method as far as possible. When implementing large excavation, we choose to work during the dry season to minimise the impacts on river waters. In 2018, no incident of biodiversity damage occurred.

### Case Study: Ecological Protection in Baimashan Forest Park Project

Baimashan Forest Park is listed as the secondary level of the ecological redline area of Jiangsu Province. The pipeline of Sinopec Corp. crosses the area for about 360 metres from east to west. After evaluation, we concluded that the pipeline crossing sections were mainly the farmland and highways, and a small amount of forest land. The related ecosystem in engineering areas was simple and didn't serve as habitats for flocks of birds, and there were sparse wild animals and no wildlife under special national protection. We adopted the following measures for ecological protection, recovery and compensation:

- We minimised the width of the construction belt when crossing the forest. The width of the general construction belt is controlled within 14 metres, and the construction width within the forest land was controlled within 12 metres. Construction time was limited to about 5 days.
- We delimited the scope of construction and no tree was cut beyond the construction belt. Only weed-grown land was occupied for temporary construction materials storage and no forest land was occupied.
- We strengthened management and training of construction personnel, and strictly prohibited construction workers from poaching wild animals.
- We carried out financial compensation and ecological compensation in accordance with the principle of "if occupation then compensation". Grass and low shrubs were planted within 5 metres on both sides of the pipeline in the forest section, and trees were planted out of the 5 metres area after projects construction.

### Statements from stakeholders

Development can never be achieved at the cost of ecological environment. We must be both an energy supplier and an ecological environment protector.

- Head of Da'niudi Gas Field No. 1 factory

Contributing to Society

45

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Sinopec Corp. serves a number of fields related to people's livelihood. While promoting business development and economic performance, the Company pursues an openness and win-win cooperation and drives the sustainable development of value chain partners.

#### Value Chain Management

The businesses of the Company cover 66 out of 96 industries in China. Each industry is connected with hundreds of entity enterprises which constitutes an industrial ecological network of Sinopec Corp. We pursue sharing values and strengthen cooperation with value chain partners such as contractors and suppliers. We build digital supply chain through E-commerce platforms such as EPEC and Sinopec Chememall, which make the whole process from raw material procurement, manufacturing to products delivery become visible, reliable, and traceable to build an open, fair, justice and honest market environment.

#### Promoting the establishment of credit system

In supplier management, we strengthen the development of credibility system by optimising supplier qualification review and dynamic mechanism of suppliers' performance evaluation, and increasing penalties for defaults. More specifically, the quality assurance accounts for 15-30% of the total score of the review and evaluation, after-sale service accounts for 5-10% of the total score, which helps suppliers improve quality constantly.

By the end of 2018, 20,319 suppliers passed qualification review. 6,000 items of materials and equipments provided by 2,580 suppliers were upgraded while 5,102 items provided by 753 suppliers were downgraded. 68 suppliers were punished, of which 22 were disqualified and 22 were suspended. The Company signed strategic cooperation agreements with those suppliers with advanced technology, excellent performance and good social responsibility contribution. In 2018, the Company has 86 strategic partners accumulatively.

In contractor management, we have formulated the Management Measures for the Construction Project Market Creditability System of Sinopec Corp., and built a supervision and management platform for our construction projects tendering and bidding to strengthen the assessment of the creditability system. Contractors who violate the regulations shall be punished by suspending bidding, questioning, warning or blacklisting, etc. In 2018, 26 contractors were blacklisted or suspended.

#### Statements from stakeholders

EPEC explores a unique path to take advantage of e-commerce platforms and creates the development principles of innovation, coordination, green, open and shared growth. Besides encouraging and supporting all kinds of enterprises on this platform to promote structural adjustment and transformation, it provides clean products and better service for society, and meet the requirements of the people. It also helps manufacturers and suppliers be more resource-efficient and environment-friendly enterprises, and promotes the sustainable and healthy economic development, thus better fulfilling the social responsibility.

- Zhang Qiang, Chief Representative of Beijing Representative Office of ASME (American Society of Mechanical Engineers)

### Improving capability of safety & environmental protection

In supplier management, we improve supplier on-site qualification criteria, define HSE evaluation contents, integrate ISO 14000 and ISO 18000 accreditation, establishment of emergency management system for safe production and labour protection measures, and emissions and waste disposal into the standards of review. We also increase the scoring weight of health, safety and environment management in on-site evaluation. The Company holds supplier trainings regularly to publicise Sinopec requirements on environmental protection and safety management. In 2018, over 3,000 suppliers were trained.

In contractor management, we have formulated the Management Measures for Performance Assessment of Construction Projects, in which HSE (including safety management, environmental protection and occupational health of contractors) assessment score of construction projects accounts for 25%. The "one-vote veto" system is adopted for projects construction with major accidents in safety and environment, and the corresponding stage and annual performance will be evaluated as zero.

Supplier		2016	2017	2018
Percentage of qualified by QHSE management system (%)		24.8	26.7	26.0
Qualified by the quality management system (ISO 9000)	Number	8,517	9,265	9,614
	Percentage (%)	59.9	52.9	47.3
Qualified by the environmental management system (ISO 14000)	Number	3,755	5,442	6,071
	Percentage (%)	26.4	31.1	29.9
Qualified by the occupational health and safety management system (ISO 18000)	Number	4,465	4,839	5,621
	Percentage (%)	31.4	27.7	27.7

Contractor	2016	2017	2018
Percentage of contractors qualified by the QHSE management system	100%	100%	100%

## Advancing Win-Win Cooperation with Customers

### Quality management

We abide by the Product Quality Law and other relevant regulations, strive to practice the quality goals of "quality first and quantity sufficient, customer satisfaction". Sinopec Marketing Company establishes the quality management system aligned with GB/T19001 standards. More specifically, 7 subsidiaries have passed the third-party certification of ISO 9000 quality management system. We continue to build risk prevention system to eliminate quality risk from procuring external refined oil and set up the quality assessment mechanism and a negative list. For the suppliers which provide stable quality products, we optimise the quality assessment process. In 2018, more than 28,000 samples passed inspection held by national, provincial and municipal testing institutes. SINOPEC Lubricant has established a quality management system integrating different industries standards based on ISO 9001 so as to meet the product and service specific requirements of customers from different industries. In 2018, SINOPEC Lubricant produced 37,993 batches of lubricating grease, all of which passed the factory inspection. 120 batches of products were randomly inspected by the national and local administrative organs, all of which were qualified in quality.

SINOPEC Lubricant won the national honor of "Star of Integrity" from Publicity Department of the CPC Central Committee and National Development and Reform Commission (NDRC).

Awarding scripts of "Star of Integrity" for the SINOPEC Lubricant: For the past 60 years, they acted as a national strategy promoter, and industrial development booster. Leading the technological development and serving the society are their unchanged original aspiration. They are not only the leaders of honest operation among Chinese enterprises, but also the one dedicating to the Chinese aerospace dream.

### Service improvement

We tap the potentials of service station network, promote the new business mode of "internet + sales + service" to offer diversified services and provide services including automobile service, insurance and fast food; we expand cross-border e-commerce business to provide overseas customers with diversified high-quality products. For Sinopec chemical products sales, the links between production, sales and research are closely connected to provide tailor-made service for customers. In 2018, the Company continued to fulfill the establishment of customer service platforms. Ten new vertical procurement zones on the EPEC platform has been built, which integrated connection with a hundred of strategic suppliers' information systems, and improved the procurement efficiency and customers' loyalty; Sinopec Chememall platform set up marketing strategies such as "tailored programme for customer, tailored marketing policy for product". The Company made further progress on development of integrated logistics system, including building supply chain and logistics platform, completing the pilot construction of refined oil logistics in Southern China and crude oil logistics in Eastern China. Besides, our B2B payment function on financial service platform had been improved to provide comfortable and convenient services for consumers. Besides, our B2B payment function on financial service platform had been improved to provide comfortable and convenient services for consumers. In 2018, 240,000 customer satisfaction questionnaires were distributed by Sinopec Marketing Company, and 3,253 questionnaires were distributed by Sinopec Chemical Sales Company. SINOPEC Lubricant entrusted the third party to analyse and identify customer satisfaction by internet data analysis methods so as to improve customer service.

Indicators	2016	2017	2018
Number of fuel card holders (million)	114	132	146
Customer satisfaction for refined oil products (%)	83.21	84.09	85.08
Customer complaint settlement rate for refined oil products (%)	100	100	100
Number of EasyJoy convenience stores	25,591	25,775	27,259
Customer satisfaction for chemical products (%)	91.3	91.5	93.1
Customer complaint settlement rate for chemical products (%)	100	100	100
Customer satisfaction for lubricant (%)	85.0	85.0	87.0
Customer complaint settlement rate for lubricant (%)	100	100	100

### Customers' privacy protection

We attach importance to the protection of customer privacy. For the online business hall of fuel card, refined oil e-commerce website, wechat marketing platform and other internet applications, we carry out screening and identification of risks and hidden hazards, and eradicate network security accidents. We also improve the maintenance function of customer information, and entrust the Information Security Level Protection Evaluation Centre of the third party to conduct data security evaluation on major information systems.

### Promoting Industry Development

The Company actively engages and cooperates with external partners in the formulation of industry standards, safety and environmental protection, technological innovation and other aspects to promote the development of the industry.

- We undertake the National comprehensive standardisation project of intelligent manufacturing and completed 10 drafted standards and R&D on standard verification platform in 2018. The Standards we released on EPEC become the first industrial products and manufacturers evaluation standards in China, and created an open, transparent and healthy industry ecological environment.
- We work with local governments and research institutes to develop operation safety risk prevention and control technologies for petrochemical terminals, and 5 achievements have been made including Safety Requirements for Petrochemical Terminal Operation. We assist the Ministry of Environment and Ecology in carrying out environmental supervision in key areas of refined oil to improve environmental protection.
- Focusing on the cutting-edge area of chemical industry and new materials, we work with universities to set up joint R&D centres to promote innovative development of enterprises. In cooperation with automotive manufacturers and industry associations, we explore how to achieve a good match between engine oil and new engine equipment under new emission requirements. By cooperating with automotive manufacturers, we also develop special lubricant products for new energy vehicles, and work with China Society of Automotive Engineers to prepare standards on oil for electric vehicles.

### Community Engagement

With principles of "integrity, standardised operations, win-win cooperation, serving the local communities and making contributions to local economy", the Company continuously promotes local social and economic development by investment, tax contribution, providing job opportunities and domestic procurement etc. In 2018, we paid RMB 324.6 billion of taxes and invested RMB 6.664 billion to boost the development of local community, culture, education and healthcare so as to improve people's livelihood.

The employees' localisation rate of joint venture Mansarovar Energy Colombia Ltd. reached 98% and domestic procurement rate reached 89%. Taxes paid by subsidiaries of CIR projects was nearly USD 230 million, and the proportion of localised employees exceeded over 98% on average. More specifically, domestic procurement rate of ARMAN subsidiary was 94%, and that of BOL Joint Operation Company was 95%, which was much higher than local government requirement. The Company pays attention to local training. In 2018, KKM subsidiary of CIR project organized business trainings for 211 person-times, industrial safety trainings for 367 person-times and dispatched 14 local employees to China for training on production technology, cost reduction, efficiency improvement and industrial safety, etc. ARMAN sent 2 employees to China for training. Joint operation company BOL organised trainings for 1,400 person-times. In addition to trainings required by laws, joint venture KOA provided training on professional skills. In 2018, joint venture KOA won an Award of Best Employer in Petroleum Industry by Aktobe government, Kazakhstan.

### Statements from stakeholders

Talking with Kazakhstan employees, we truly experience their recognition, love and gratitude toward Sinopec Corp. It demonstrates that host countries have been benefit from our overseas projects for multi-aspects, including local industry development and increase of job opportunities and personnel training.

- Mr. Zhu Xu, a social supervisor of the Company



## Public Welfare

### Sinopec Lifeline Express

Since 2004, we have been participating in the Lifeline Express Programme to provide free surgery for vulnerable cataract patients. Among all four existing Health Expresses, Sinopec Lifeline Express is the only one donated by Chinese enterprise. Meanwhile we have established an ophthalmic microsurgery training centre and 20 Sinopec Cataract Treatment Centres to provide long-term treatment services for vulnerable cataract patients in local areas by donating medical equipment and training doctors. In 2018, Sinopec Lifeline Express provided free surgery for 3,456 patients in Shangqiu, Henan Province, Yili, Xinjiang and Zhaoqing, Guangdong Province. The Company has accumulatively cured over 44,000 cataract patients free of charge and donated over RMB 154 million.

### Sanitation Workers' Stations Programme

We start Sanitation Workers' Stations Programme in 13 provinces (autonomous regions and municipalities), including Beijing, Tianjin, Hebei and Yangtze River Delta. We provide a total of 18,000 sanitation workers with cooling service in hot summer, warming service in cold winter and drinking water. The Programme was rewarded as one of Best Practices in achieving UN SDGs by the Global Compact Network China.

### Assist in danger and help in need, contribute to local communities

The Company takes advantages of our business features and professional team, to actively make contribution to safe and stable development of the community in operation region. In summer and autumn each year, SINOPEC Marketing companies set up special supply stations of oil products for farmers in villages, towns and rural areas to deliver oil to villages and support farmers to win big harvest.

Subsidiaries like SINOPEC Shengli Oil Field made good use of their advantage to establish emergency rescue work mechanism with local government departments such as maritime authorities and fire protection as well as organisations of the same industry, so as to prepare for social aid and rescue works such as hazardous chemicals fire protection and oil spilling disposal, etc.

Our joint venture Mansarovar Energy Colombia Ltd. promotes cocoa planting, animal husbandry, milk storage and transportation, rainforest restoration and other co-engagement projects in local areas, which makes 30% of local residents having decent lives. It carries out School Aid Plan and sets up 7 projects for local schools, such as building internet infrastructure, nearly 5,000 students involved and get benefit. It also assists the construction of local hospitals and medical facilities to help children with major diseases and disabilities.

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### Warm Stations Programme

Every year, we launch Warm Stations Programme to assist people heading home in Chinese Spring Festival. In 2018, Warm Stations Programme continued to deploy in Guangdong, Guangxi and Jiangxi, etc. More than 5,000 volunteers

provided free hot water, hot porridge, medicines and medical services in 238 service stations, helping 600 thousand returnees.

#### Volunteer Service Programme

We continue our volunteer services, engaging in activities of community service and concerns for left-behind children and lonely elderly by leveraging multi-provincial and multi-enterprise cooperation. In 2018, a youth volunteer programme of "Petroleum Knowledge to Schools" covered more than 1,200 students from over 30 classes in Beijing. A team led by Jin Zhijun, academician of the Chinese Academy of Sciences and retired senior manager of Sinopec, introduced technological knowledge and ecological environmental protection of shale gas development through a live broadcasting co-hosted by Gmw.cn.

#### Statements from stakeholders

SINOPEC Yanshan explores the advantages, organises volunteer service team to communicate with local people the petrochemical science and environmental protection tips and provide convenient services to the local community.

- Yanshan Youth League Committee of Fangshan District, Beijing

Human Rights

53

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The Company complies with laws and regulations on human rights protection, Chinese Human Rights Action Plan and International Human Rights Conventions, resists any acts of disregard or abuse of human rights. We prohibit child labour by strictly obeying related legal requirements of prohibition of child labour in countries and regions where we operate; we respect employees' right of personal freedom and right to leave and oppose forced labour; we respect rights and interests of female employees and minor nationalities and strictly prohibit any form of discrimination due to gender, region, religion belief, nationality, etc.; we promote employment, value common development with employees and provide necessary resources and favorable working environment for our employees to realise their career development according to related laws and regulations such as Labour Law and local rules; we safeguard employees' rights and interests, strengthen social security and consultation, and promote decent work.

#### Chairman message:

We should be responsible for our employees, always adhere to the people-oriented development, and do better on serving what the employees expect, so that we can inspire our talent, gather the positive energy, accelerate the reform and development and achieve shared growth through collaboration. We should build up talents-supportive strategy to nurture successors with both capability and morality, provide better environment for talent growth, enhance the value of human resources, and cultivate more entrepreneurs, scientists, technological leaders and country experts.

#### Our Actions

##### Employee protection

We adhere to the principle of equal consultation. Concerning the issues on the basic rights and interests of employees, such as labour reward, rest and vacation, social security and safety protection, the labour union extensively solicits the opinions of employee representatives and submits to the Workers' Congress for approval.

We guarantee the right of normal work, rest and vacation of employees, and create a warm, healthy, green and safe working environment for them. We don't restrict employees' choice of new jobs, nor do we restrict their personal freedom in any way. We definitely forbid any forced labour.

We enhance development of a better salary and welfare security system, build diversified incentive system. In accordance with the relevant regulations of China and local governments, the Company participates in local social insurances such as pension insurance, medical insurance, work-related injury insurance, maternity insurance, unemployment insurance, and establishes an enterprise annuity system. For the employees from subsidiaries with difficulty in business operation, the Company helps them to find new jobs through adaptability training or recommend to other enterprises etc.

We establish the female employees' committee under the Labour Union, strengthen work safety protection, and constantly improve working environment and conditions for them. We also implement regulations on female employees' leave during maternity and lactation periods as well as the regular medical examination system, and care for their physical and mental health. The Company values the construction of a diversified workplace, and the proportion of female employees has been increasing. In 2018, the proportion of female employees was 35%, of which the proportion of female managers was 12.67%.

##### Occupational health

We position the health of employees in the core of corporate development, and set the goals of "zero injury", "all dust and poison concentration in the workplace should comply with the standards" and so on. We integrate our health management resources to promote the integrated management of occupational health, physical health and mental health of employees on the basis of occupational disease prevention and control. In 2018, our subsidiaries inspected and monitored the harmful factors including harmful substances in 90,000 workplaces and dust in 4,000 work spots. For work spots that exceeded the standards, we carried out treatment and re-examination to ensure the health and safety of employees. After continuous treatment, the detection coverage rate of dust and toxic substances was more than 99%, the qualification rate was more than 99%, and the occupational health risk was under control. In view of the rising trend of the number of employees suffering from cardiovascular and cerebrovascular diseases, we carried out health risk investigation of employees, timely assessed the staff health status and job adaptability, and took effective intervention measures to reduce the risk of post disease outbreak.

#### Career development

We firmly committed to a new talent development philosophy and implement overall design on the staff training based on the requirements of strategic deployment and long-term development for the capability of employees. In 2018, RMB 748 million was invested in vocational training, and covering 75% of the total.

- We focus on all kinds of talent teams building, talent growth channels building and establishment of talent selection and evaluation mechanism.

>As for managers, comprehensive trainings for 35, 40 and 45-year-old personal are carried out.

>As for technical experts, we develop leading experts training programmes and expert seminars. We also promote the training of young technical personnel by implement a series of key technical backbone training projects.

As for skilled operators, besides professional qualification trainings and job adaptability training carried out by >subsidiaries, we launch a programme of comprehensive training for skilled masters and organise the training projects for top skilled talents in different types of work.

- Targeting the talents and personnel with doctor degree introduced in recent three years, we carry out comprehensive ability training classes and innovative ability training classes.

- Headquarters of the Company launch the programme to introduce talents from the top 30 universities in the world. We formulate personalised and systematic training programmes according to each graduate's major, characteristics and development goals.

- The online course of Sinopec Online Academy (distance training platform) has been developed. In 2018, 1.23 million participants had logged in to study the courses, and the totaling learning time reached 600,000 hours.

Ethics

57

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The Company complies with all national laws and anti-corruption regulations, and laws and regulations of countries and areas where we operate. We keep promoting the enforcement of anti-corruption measures and carry out punishment and prevention mechanism in order to build a clean company.

Chairman message:

We should resolutely prevent the managers from abuse of power by using Sinopec Corp.'s platform and resources to do business. The work should focus on key areas and key processes such as engineering, construction, procurement, and product distribution.

Anti-corruption System

Integrity is the ethics that all the employees must follow. We have formulated the Code of Conduct, Implementation Rules of Gift Registration and other regulations. In 2018, the Company formulated Guidelines on Strengthening the Prevention and Control of Overseas Integrity Risk and Overseas Anti-Corruption Compliance Handbook, analysed overseas integrity risk based on relevant business, and formulate specific prevention and control measures.

Meanwhile, the management and employees who are the CPC members must strictly abide by the regulations of the Communist Party of China, including CPC Code of Integrity and CPC Self-Discipline, Regulations on Disciplinary Measures, and CPC Accountability Regulations, etc.

Each year, employees at key positions of the Company will sign the Business Ethics Agreement, promising to abide by business ethics. The Company signs the Letters of Responsibility for Business Ethics with the contractors and suppliers, and if there is any violation, they will be disqualified which means no business transactions with Sinopec Corp. within three years. In 2018, 20 suppliers were penalised by the Company.

We have established independent departments to take charge of inspection, investigation and treatment of corruption incidents. Employees can report by mail, telephone, e-mail and other means. We also developed a special processing procedure to register the reported incidents, verify the clues, and feedback the results to the whistleblowers. The information of whistleblowers is kept strictly confidential.

Transparent Operation

In 2018, we strengthened Business Information Disclosure System to link with ERP, contract management, expense reimbursement, e-commerce platform, e-tendering platform, EPEC and engineering management system and other systems, to facilitate big data analysis on risk prevention. We developed clean risk prevention and control information modules, preliminarily realising the functions of risk position management, risk information management, risk self-check management, early warning information collection and treatment, risk reminder management, process authority allocation and so on, which enhanced our ability of integrity risk prevention and control. In 2018, a total of 3.739 million pieces of information were disclosed, and contracts involved amounted to USD 98.05 billion and RMB 1.4 trillion.

#### Enhancing Anti-corruption Awareness

We organise trainings on anti-corruption for all senior managers and online trainings of laws and regulations on integrity for all employees every year, and compile corruption cases and hold seminars to strengthen anti-corruption awareness every year.

Anti-corruption trainings (million participants): 1.143

Coverage of anti-corruption trainings (%): 100%

Trainings on the Party's disciplines and regulations in respects of integrity and anti-corruption (participants): 596,000

## Key Performance

## Operational and Financial performance

Indicators	2016	2017	2018
Total assets (RMB billion)	1,498.6	1,595.5	1,592.3
Total liabilities (RMB billion)	666.1	741.4	734.6
Revenue (RMB billion)	1,930.9	2,360.2	2,891.2
Net profits attributable to shareholders of the Company (RMB billion)	46.42	51.12	63.09
Dividends declared (RMB billion)	30.15	60.54	50.85
Dividends pay-out ratio (%)	64.9	118.4	80.6
Taxes and fees paid (RMB billion)	316.1	328.3	324.6
Oil and gas production (mmboe)	431.29	448.79	451.46
Crude oil production (mmbbls)	303.51	293.66	288.51
Natural gas production (bcf)	766.12	912.50	977.32
Refinery throughput (million tonnes)	235.53	238.50	244.01
Ethylene output (thousand tonnes)	11,059	11,610	11,512
Total sales volume of refined oil products (million tonnes)	194.84	198.75	198.32
Chemical sales volume (million tonnes)	69.96	78.50	86.60

## Safety performance

Indicators	2016	2017	2018
Employee occupational health examination coverage (%)	98.9	99	99
Health check-up and health file coverage (%)	98.9	99	99
Number of newly diagnosed cases of occupational diseases	19	21	15
Safety training coverage (%)	100	100	100
Number of accidents reported	3	4	2
Number of deaths	2	3	3



## Environmental performance

Indicators	2017	2018
Environmental compliance rate of new projects (%)	100	100
Consumption of comprehensive energy per RMB 10,000 of production value (tonne of standard coal)	0.496	0.496
Crude oil consumption (million tonnes)	1.41	1.33
Natural gas consumption (billion cubic metres)	3.35	3.83
Electricity Consumption (billion kWh)	28.86	30.57
Coal consumption (million tonnes)	15.08	15.18
Fresh water for industrial use (million cubic metres) <sup>1</sup>	664.56	657.46
Oil & gas exploration and production segment	–	115.2
Water intensity (m <sup>3</sup> /barrel) <sup>2</sup>	–	1.99
Refining segment	–	192.4
Water intensity (m <sup>3</sup> /barrel) <sup>3</sup>	–	0.79
Chemical segment	–	304.2
Water intensity (m <sup>3</sup> /barrel) <sup>4</sup>	–	3.51
COD (1,000 tonnes)	–	19.4
Ammonia and nitrogen (1,000 tonnes)	–	2.0
Sulfur dioxide (1,000 tonnes)	–	67.2
Nitrogen oxides (1,000 tonnes)	–	99.8
Non-hazardous waste (1,000 tonnes)	–	2,229.0
Hazardous waste (1,000 tonnes)	–	505.3
GHG emission (million tonnes CO <sub>2</sub> -equivalent) <sup>5</sup>	162.66	171.52
Direct	123.05	128.57
Indirect	39.61	42.95



Indicators	2017	2018
Oil & gas exploration and production segment	30.55	31.26
Refining and chemicals segment	129.49	137.65
Marketing segment	2.62	2.61
CO <sub>2</sub> capture (thousand tonnes)	270	1,010
Methane recovery (million cubic metres)	220	226

1: Fresh water for industrial use means the water resources utilised for the first time in the process of industrial production of the Company.

2: Water intensity in oil and gas exploration segment = Fresh water consumption/domestic oil and gas equivalent production

3: Water intensity in oil refining segment = Fresh water consumption/ refinery throughput

4: Water intensity in chemicals segment = Fresh water consumption/ chemical sales volume

5: The Company conducts GHG emission (direct and indirect) accounting and verification according to ISO14064-1:2006 standards, covering six gases including carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydro fluoro carbons (HFCs), perfluorinated compounds (PFCs) and sulphur hexafluoride (SF<sub>6</sub>).

Others: According to the requirements of Environmental Social and Governance Reporting Guide of HKEx, listed companies should disclose the data of water consumption intensity and total packaging material used for finished products.

- Concerning water consumption intensity, since Sinopec Corp. has a wide range of businesses in upstream and downstream industry chains, including oil & gas exploration, development, refining, chemicals, marketing and international trade, etc., we cannot calculate water consumption density.
- Concerning the total packaging material used for finished products, since Sinopec Corp. has dozens of subsidiaries and covers a wide range of businesses, which use various packaging materials such as iron, steel, wood, plastics and woven bags, and various packaging types such as barrels, boxes and bags in different sizes; part of the packages can be recycled; we cannot calculate total packaging material used for finished products.

## Society performance

Indicators	2016	2017	2018
Social contribution per share (RMB/share)	3.606	3.778	3.966
Social contributions (RMB billion)	436.6	457.4	480.2
Total number of employees	451,611	446,130	423,543
Staff turnover rate (%)	0.37	0.50	0.8
Percentage of female employees (%)	35.95	35.9	35
Percentage of female managers (%)	12.88	12.76	12.67
Collective contract coverage (%)	100	100	100
Social insurance coverage (%)	100	100	100
Annuity coverage (%)	76.89	73.90	79.19
Percentage of minority employees (%)	3.62	3.8	3.8
Employee vocational training (person-time)	788,352	965,930	936,143
Investment in vocational training (RMB million)	659.33	739.56	748.08
Vocational training coverage (%)	67.5	72.4	75
Percentage of employees with membership of labour union (%)	100	100	100
Donations (RMB million)	133	152	180
Number of patients cured under the Lifeline Express Programme	3,248	3,126	3,456
Contributions to cultural education, community development and medical service (RMB million)	6,584	6,652	6,664

## Index

## The Environmental, Social and Governance Reporting Guide of Hong Kong Stock Exchange Checklist

Index	The Environmental, Social and Governance Reporting Guide of Hong Kong Stock Exchange	Sinopec Information Update for 2018
A1 Emissions	General Disclosure	P30, P38
	A1.1	P62-63
	A1.2	P62-63
Key Performance Indicators	A1.3	P62-63
	A1.4	P62-63
	A1.5	P31-35
	A1.6	P39, P41
A2 Use of Resources	General Disclosure	P31, P36
	A2.1	P62
	A2.2	P40, P62
Key Performance Indicators	A2.3	P31-32
	A2.4	P40
	A2.5	P63
A3 Environment and Natural Resources	General Disclosure	P36, P38
Key Performance Indicators	A3.1	P32-35, P38-43
B1 Employment	General Disclosure	P52, P54
Key Performance Indicators	B1.1	Refer to the Annual Report of 2018
	B1.2	-
B2 Health and Safety	General Disclosure	P22, P54
	B2.1	P64
Key Performance Indicators	B2.2	-
	B2.3	P24-26
B3 Development and Training	General Disclosure	P55
Key Performance Indicators	B3.1	P55
	B3.2	P55
B4 Labour Standards	General Disclosure	P54
Key Performance Indicators	B4.1	P54
	B4.2	-
B5 Supply Chain Management	General Disclosure	P46-47
Key Performance Indicators	B5.1	Refer to the Annual Report of 2018
	B5.2	P46-47
B6 Product Responsibility	General Disclosure	P48-49

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	B6.1	-
Key Performance Indicators	B6.2	P49
	B6.3	P50
	B6.4	P48
	B6.5	P49
	General Disclosure	P56
B7 Anti-corruption		
Key Performance Indicators	B7.1	-
	B7.2	P58-59
B8 Community investment	General Disclosure	P50
Key Performance Indicators	B8.1	P21, P51
	B8.2	P20, P50, P64

UNGC 10 Principles Checklist

Scope	UNGC's 10 Principles	Sinopec Information Update for 2018
Human Rights	Businesses should support and respect the protection of internationally proclaimed human rights; and make sure that they are not complicit in human rights abuses.	P05, P52, P54-55 P52, P54
Labour	Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining; the elimination of all forms of forced and compulsory Labour; the effective abolition of child Labour; and the elimination of discrimination in respect of employment and occupation.	P54-55 P54 P52 P54
Environment	Businesses should support a precautionary approach to environmental challenges undertake initiatives to promote greater environmental responsibility; and encourage the development and diffusion of environmentally friendly technologies.	P30, P38 P31-32, P34-35, P38-43 P34, P38, P40
Anti-Corruption	Businesses should work against corruption in all its forms, including extortion and bribery.	P56, P58-59

UNGC Advanced Level Criteria Checklist

Scope	Criteria for UNGC Advanced Level	Sinopec Information Update for 2018
Strategy Governance and Engagement	Criterion 1: Key aspects of the Company's advanced level sustainability strategy in line with Global Compact principles Criterion 2: Effective decision-making processes and systems of governance for corporate sustainability Criterion 3: Engagement with all important stakeholders	P02-03, P05 P10-11, P12, P18, P24, P30, P38, P46-47, P58 P46-47, P50
UN Goals and Issues	Criterion 4: Actions taken in support of broader UN goals and issue Criterion 5: Robust commitments, strategies or policies in the area of human rights	P09, P10 P05, P52, P54
Human Rights Implementation	Criterion 6: Effective management systems to integrate the human rights principle Criterion 7: Effective monitoring and evaluation mechanisms of human rights integration	P54 P10, P54



Scope	Criteria for UNGC Advanced Level	Sinopec Information Update for 2018
Labour Principles Implementation	Criterion 9: Robust commitments, strategies or policies in the area of Labour	P05, P52, P54
	Criterion 10: Effective management systems to integrate the Labour principle	P54
	Criterion 11: Effective monitoring and evaluation mechanisms of the Labour principle integration	P11, P55
	Criterion 12: Key outcomes of the Labour principle integration	P07, P11, P50, P54-55, P64
Environmental Stewardship Implementation	Criterion 13: Robust commitments, strategies or policies in the area of environmental stewardship	P05, P12-13, P28, P36
	Criterion 14: Effective management systems to integrate the environmental principle	P11, P38, P40, P43
	Criterion 15: Effective monitoring and evaluation mechanisms for environmental stewardship	P12, P31, P35, P39
	Criterion 16: Key outcomes of the environmental principle integration	P07, P11, P31-35, P38-43, P62-63
Anti-Corruption Implementation	Criterion 17: Robust commitments, strategies or policies in the area of anti-corruption	P05, P56
	Criterion 18: Effective management systems to integrate the anti-corruption principle	P58
	Criterion 19: Effective monitoring and evaluation mechanisms for the integration of anti-corruption	P58-59
	Criterion 20: Key outcomes of the anti-corruption principle integration	P07, P11, P58-59
Value Chain Implementation	Criterion 21: Implementation of the Global Compact principles in the value chain	P46-49
	Criterion 22: The COP provides information on the Company's profile and context of operation	Report Information
Transparency and Verification	Criterion 23: The COP incorporates high standards of transparency and disclosure	P66
	Criterion 24: The COP is independently verified by a credible third-party	-



GRI Sustainability Reporting Standards (GRI Standards) of GRI Global Sustainability Standards Board (GSSB) Index

Chapter of the COP		GRI Standards Index
Report Information		102-1, 102-46, 102-50, 102-51, 102-52, 102-54
Letter from the Chairman		102-14, 102-15
	Company Profile	102-2, 102-3, 102-4, 102-6, 102-7
About Us	Core Values	102-16
	Performance in 2018	102-45, 201-1,
	2018 Honours	
Stakeholder Engagement		102-21, 102-29, 102-31, 102-33, 102-34, 102-37, 102-40, 102-41, 102-42, 102-43, 102-44, 102-47, 102-48, 102-49, 103-1, 103-2, 405-1
Sustainability Management System		102-17, 102-18, 102-19, 102-20, 102-22, 102-23, 102-24, 102-25, 102-26, 102-27, 102-28, 102-30, 102-32, 103-2, 103-3
Topic 1 Green Enterprise Campaign		103-1, 103-2, 103-3
Topic 2 Green Energy and Products		103-1, 103-2, 103-3, 417-1
Topic 3 Intelligent Operation		103-1, 103-2, 103-3
Topic 4 Targeted Poverty Alleviation		103-2, 103-3, 203-1, 415-1
	Work Safety	103-1, 103-2, 103-3, 403-4, 410-1
Safety	Contractor Safety	103-2, 103-3, 416-1
	Logistics Safety	103-2, 103-3, 416-1
	Cyber Security	103-2, 103-3, 416-1
	Public Security	103-2, 103-3, 416-1
	Climate-Related Risks	102-15, 103-1, 103-2, 201-2
Climate Change	Improving Energy Efficiency	103-2, 103-3, 302-2, 302-3, 302-4, 302-5
	Natural Gas	103-2, 301-2
	Using Alternative Energy Sources	103-2, 301-2
	GHG Emission Management	103-2, 103-3, 301-3, 302-5, 305-4, 305-5

Chapter of the COP		GRI Standards Index
Environment	Environment-Related Risks	102-15, 103-1, 103-2

	Air Emissions	103-2, 103-3
	Water Resources	103-2, 103-3, 301-1, 303-1, 303-2, 303-3
	Solid Waste	103-2, 103-3, 301-3, 306-2, 306-4
	Land Resources	103-2, 103-3
	Oil Spills	103-2, 103-3
	Biodiversity	103-2, 103-3, 304-1, 304-2, 304-3
	Value Chain Management	102-9, 102-10, 103-1, 103-2, 414-1, 414-2
Contributing to Society	Advancing Win-Win Cooperation with Customers	103-1, 103-2, 417-1
	Promoting Industry Development	102-13, 103-1, 103-2, 103-3, 203-1, 203-2
	Community Development	103-1, 103-2, 103-3, 203-1, 203-2, 204-1, 413-1
	Public Welfare	103-1, 103-2, 103-3, 203-1
Human Rights	Employee Protection	102-35, 103-2, 103-3, 201-3, 401-2, 401-3
	Occupational Health	201-3, 401-2, 403-3, 403-4
	Career Development	201-3, 401-2, 404-1, 404-2
Ethics	Anti-corruption System	103-1, 103-2, 205-3
	Transparent Operation	103-2, 205-1
	Enhancing Anti-corruption Awareness	103-2, 103-3, 205-2
Key Performance		102-8, 102-11, 103-3, 201-1, 302-2, 302-3, 302-4, 305-1, 305-2, 305-3, 305-7, 306-2, 401-1, 404-1, 405-1
Index		102-55
Feedback		102-53

Feedback

Respected Readers,

Thank you for reading this Report. Your opinions and suggestions are important to us and can help us improve the preparation of future reports. Please help us by completing the following Feedback Form and sending it to the following address:

Secretariat of the Board  
China Petroleum & Chemical Corporation  
No.22 Chaoyangmen North Street, Chaoyang District, Beijing 100728, PRC

Your Information

Name:

Employer: \_\_\_\_\_ Title:

Contact Tel: \_\_\_\_\_ Fax: \_\_\_\_\_ E-mail:

Content	Very good	Good	Fair	Poor	Very poor
1. This Report completely and accurately describes the significant impact of Sinopec Corp. on the economy, society and environment.					
2. This Report responds to and discloses information about the concerns of stakeholders.					
3. The information, indicators and data disclosed by this Report are clear, accurate and complete.					
4. This Report's logic line, content, text and wording, and layout are well designed.					

Open-ended questions

1. What do you find most satisfying in this Report?
2. What other information do you think should be included in this Report?
3. What suggestions do you have for our preparation of the sustainable development progress report in the future?

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

China Petroleum & Chemical Corporation

By: /s/ Huang Wensheng

Name: Huang Wensheng

Title: Vice President and Secretary to the Board of Directors

Date: March 27, 2019