Make cities and human settlements inclusive, safe, resilient and sustainable

Ensure availability and sustainable management of water and sanitation for all

Ensure access to affordable, reliable, sustainable and modern energy for all

Make cities and human settlements inclusive, safe, resilient and sustainable

Ensure sustainable consumption and production patterns

Take urgent action to combat climate change and its impacts

Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

UN 2030 Agenda calls for making cities and human settlements sustainable, combating climate change, improving energy efficiency and protecting eco-environment. Global citizens are increasingly aware of the importance of mitigating negative impacts on safety, water resources, air quality and the environment.

The Chinese government has proposed to construct a clean, low carbon, safe and highly efficient modern energy system, and focused on guaranteeing the safety of people’s livelihoods. China’s 13th Five-Year Plan also states that it is important to “enhance the protection of ecological environment, increase resource utilisation rate, and provide more quality ecological products for the people”. The aforementioned presents higher requirements for enterprises to guarantee safe production and environmental protection.
Maintaining safe and stable production and operation

Sinopec Corp. complies with laws and regulations including the Safety Production Law and adheres to the idea that “development must not come at the expense of safety”. We have implemented HSE management system, designed a safety index appraisal system, and built an emergency management and command system. We also enhanced our identification, prevention and control of risks, and have taken steps to assess and manage potential safety hazards. We regularly introduce initiatives to increase employees’ awareness on safety and to prevent accidents and protect our employees and local residents.

Combating climate change

Tackling climate change requires social attention and participation. Sinopec Corp. is transitioning to lower-carbon economic model and has integrated carbon reduction measures to its production and operations.

Substantially developing clean energy

We promote natural gas exploration and extraction to improve our output. Fuling shale gas field has built up an annual capacity of 7 billion cubic meters.

Carbon capture and methane recycle

We continue to implement CO$_2$ flooding pilot tests and promote methane recycling from associated gas, test oil and gas, oil gathering and transportation systems and gas stations. In 2016, we injected 300,000 tonnes of CO$_2$, which resulted in 50,000 tonnes crude oil, and recycled 200 million cubic meters of methane.

Promoting the commercialisation of bio-jet Fuel

Following the first bio-jet fuel-powered commercial flight in 2015, we started to build commercial production unit with an annual capacity of 100,000 tonnes in 2016.

Enhancing carbon management

In 2016, we continued to conduct carbon accounting and verification. We participated in carbon emission trading, built a trading team, upgraded carbon assets management, and optimised carbon trading strategies, facilitating environment protection and resource conservation. We finished the carbon footprint research on asphalt, aviation kerosene, lubricant, and caprolactam, and finalised carbon quota distribution baseline research for products such as ethanol, arene, pure terephthalic acid and ethylene glycol. Shengli Oilfield waste heat recovery project applied for CCER, reducing carbon emissions by 5,000 CO$_2$-equivalent tonnes per year.

Sinopec clean management of production and consumption processes

Our actions

Maintaining safe and stable production and operation

In 2016, Sinopec Corp. cleared safety hazards detected in all oil and gas pipelines and promoted hazard detection and elimination of the tank fields. We enhanced communication with governments and pipeline patrol inspectors to prevent overstocks from occurring. In 2016, we invested RMB 290 million in safety training. We organised training programmes on occupational health and safety for safety directors and safety inspectors. We promoted safety emulation measures and have constructed a training camp for frontline workers. We also held public safety trainings for overseas employees to improve their risk response capability.

Responding to climate change and promoting environmental protection

Sinopec Corp. implements the green and low-carbon growth strategy and obeys Environmental Protection Law and other related laws and regulations. We integrate energy conservation, emissions reduction and carbon reduction management systems to tackle climate change and promote clean production and environmental protection initiatives to build an efficient and green enterprise. In 2016, we continued to support the Global Compact Network China and participated in organising the SDGs-China Summit, playing a key role in encouraging Chinese enterprises to follow a sustainability roadmap. We have enhanced our management system and revised regulations focusing on the pollution prevention of industrial wastewater, flue gas and waste residue, and have upgraded our environmental monitoring management and environmental contingency management systems. We have set specific 2020 goals for energy conservation, environmental protection and carbon reduction. Our investment in environmental protection measures was approximately RMB 6.4 billion.

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Case study

Action Plan of Transporting Natural Gas to Yangtze River economic belt

We promote natural gas development and plan to double the annual production capacity of 40 billion cubic meters by 2030. We have constructed important resource bases along the Yangtze River economic belt and have also accelerated the construction and connectivity of our pipeline network facilities. Through our natural gas pipeline from Sichuan to East China, clean energy will be continuously transported to the Yangtze River economic belt, benefiting more than 70 cities in six provinces and two municipalities, covering over 200 million residents.
Managing pollutant emissions

Sinopec Corp. has improved the production techniques, processes and equipment to control pollutant emissions. We recycle flue gas, wastewater and waste residue to bolster circular economy. In cases where wastes cannot be recycled, we use harmless processes to mitigate any adverse impact on the environment.

Reducing wastewater discharge

In 2016, our subsidiaries upgraded and revamped sewage treatment plants, improving their treatment system, introducing an anaerobic denitrification function and installing Advanced Oxidation Process (AOPs) equipment. In areas where water resources are scarce, they installed ancillary sewage recovery equipment and hyperhaline water treatment equipment to meet a zero discharge rate. Our discharge of sewage meets relevant requirements, with a 3.86% decline in COD emissions and a 3.48% decline in ammonia nitrogen compounds.

Reducing flue gas emission

In 2016, we enhanced our prevention and treatment of air pollutants. We strengthened the reconstruction of desulphurisation and denitrification by upgrading catalytic cracking, sulphur recovery units, the heating furnaces and coal-fired boilers in our refining subsidiaries to meet ultra-low gas emission requirements. As a result, sulphur dioxide and nitrogen dioxide emissions were reduced by 4.07% and 4.53%, respectively.

We formulate a comprehensive treatment plan for volatile organic compounds (VOCs). The refining subsidiaries treat flue gas by focusing on the storage and blending of organic materials and the loading, wastewater recovery and treatment, and industrial controlled emissions. We use a range of environmental management modules including online monitoring and statistical analysis, and leakage detection and recovery modules to achieve goal. Our sales subsidiaries have also been promoting the revamp of oil depots and service stations to reduce VOC emissions.

Reducing waste residue disposal

In 2016, we enhanced our waste residue treatment and disposal. Our oilfield subsidiaries integrated methods to prevent slurry falling onto the ground in the process of well-drilling, and recycled waste slurry from drilled wells in ecologically vulnerable areas. The detritus was utilised for general hardening, brickmaking and hardening roads, realising harmless treatment and resource reuse. The refinery and petrochemical subsidiaries also implemented a sludge drying project. 100% of our waste residue meets all relevant requirements after treatment.

Protecting biological diversity

Sinopec Corp. complies with all laws and regulations covering the protection of biological diversity such as the Environmental Protection Law. In construction projects that may affect the environment, we evaluate their impact by assessing ecological reserves, forests and wetlands as well as fauna and flora, and formulate measures to mitigate or eliminate their impact during the preliminary project appraisal process, construction and operation. In 2016, our subsidiaries assessed biological diversity in major projects, analysed the impact on the fauna and flora in Ecological Red Line Areas, forests and wetlands, and then implemented the environmental friendly project plan.

When our natural gas branch deployed the Qingning Gas Transmission Pipeline Project (a major gas transmission pipeline connecting Shandong and Jiangsu province with about 553 kilometers), they analysed fauna and flora in national reserves and 9 city and county-level reserves, 7 water conservation districts, 51 ecologically vulnerable rivers, Ecological Red Line Areas, and areas within 500 meters of the project. They then conducted a thorough examination of the pipeline routes, looking at the width of the construction work belt and assessing the construction period to determine which approach would most minimise adverse impacts on the natural environment, vegetation, and wild animals.

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Sinopec Corp. focuses on saving energy and reducing consumption in all business operations. Seven refining and petrochemical subsidiaries have completed their energy management systems and integrated it with the laboratory information management system, the production information management system, and the customer relations management system. By examining the cost of energy in our combustion systems, quantifying the pollutants we discharge and measuring our carbon dioxide emissions, we can make economic benefits appraisal, assess the environmental impact of our activities and optimise our combustion structure. In 2016, we reduced our consumption of comprehensive energy by 1.59% per RMB 10,000 of production value.

Enhancing energy conservation monitoring and advancing Energy Conservation Plan
In 2016, we enhanced measures to monitor our energy utilisation rate in large-capacity machine units and power equipment in refineries and petrochemical subsidiaries. We upgraded the water injection systems, oil pump systems and transmission systems in all oilfield subsidiaries. We also constructed an energy benchmarking system. Our subsidiaries continued to reduce their carbon and pollutant emissions by implementing energy conservation measures at the source. In 2016, we implemented 418 energy conservation projects, saving the equivalent of 565,000 tonnes of standard coal.

Zhenhai Refinery and Petrochemical Branch promotes energy efficiency
The Zhenhai Refinery and Petrochemical Branch ("Zhenhai Refinery") formulated a three-year rolling plan for energy conservation projects and implemented Total Productive Maintenance (TPM). 216 proposals were submitted to the management, covering daily operations and management, operational management of energy-saving facilities, electricity management, and steam system operation management. After implementing the suggestions Zhenhai Refinery saved the equivalent of 71,000 tonnes of standard coal. Zhenhai Refinery ranked first in an "Energy-efficiency leaders" competition held by China Petroleum and Chemical Industry Association that examined the comprehensive energy efficiency of ethylene products. According to a global ethylene unit appraisal report released by the Solomon Performance Appraisal Institution, the performance of ethylene unit at the Zhenhai Refinery ranked the first top group in the world.

Enhancing water resource management
In 2016, we enhanced the analysis and examination procedures for water resources, water intake, water utilisation and water saving measures, and sought to simultaneously design, construct and operate industrial water saving facilities in all major projects. We enhanced water saving management across our entire production process, and implemented water utilisation plans and target-based management. We also improved our industrial water recycling rate and wastewater (sewage) recovery rate and reduced fresh water consumption. The demand for industrial water was down by 1.1% year-on-year.