

# Environment and Society



The company is committed to the principle of "people-oriented, quality foremost, safety first, environment prioritized" to achieve "zero defect, zero injury and zero pollution". We pay attention to people's livelihood and social progress, and strive for harmonious relationship between energy and environment, as well as enterprise and community.



The company continues to promote safe, environmentally-friendly and resource-saving operations, in order to promote the construction of ecological civilization and develop a resource-saving and environmentally-friendly enterprise. As a corporate citizen, we support community development where we operate and help to promote economic and social development.

## Safe Operation

We actively promote the building of a long-acting safety system and comprehensively enhance our work safety management. In 2018, the company maintained a safe production.

### Management System and Performance Assessment

In 2018, we enacted and amended nine regulations including *Regulations on Management of Production Safety* and *Measures for the Supervision and Management of Hazardous Chemicals*. We improved review on HSE management system, and put more efforts in rectifying problems found in review. We revised the detailed regulations based on the assessment of safety performance, and strengthened performance evaluation and accountability system for accidents.

### Safety Risk Management

We strengthened management and control over safety risks in the production process, implemented a dual-prevention mechanism covering risk prevention and control and hazard identification and treatment for production safety, and established a risk prevention and control classification system, so as to eliminate safety risks and potential hazards.

In 2018, we formulated and released the enterprise classification standard for safety risks, took targeted management and control measures in subsidiaries facing different types of risks, and conducted all-factor review and special review in subsidiaries concerned. In addition, the company compiled a checklist of management and control responsibility for company-level major safety risks, and formulated and implemented risk prevention and control mechanism with the aim to effectively prevent and control all types of safety risks.

### Hazard Control

We attach equal importance to both prevention and control of hazards, build a long-acting mechanism for hazard control, so as to ensure all hazards are timely and effectively treated, and enhance the fundamental safety level. In 2018, we continued to conduct treatment of pipeline hazards by carrying out targeted safety inspection on key projects including the Fourth Shaanxi-Beijing Gas Pipeline and Zhongwei-Jingbian Pipeline.

### Hazardous Chemicals Management

We exercised full-process management on hazardous chemicals covering production, storage and transportation. In 2018, we carried out targeted inspection on the progress of comprehensive safety management of hazardous chemicals in key subsidiaries including Daqing Petrochemical and Fushun Petrochemical.

### Supply Chain Safety

We include suppliers and contractors into our safety management, and have an all-process management from access, selection, training, use, to evaluation, so as to prevent and reduce accidents caused by suppliers and contractors. In 2018, the company continued to reduce production and operation safety risks by strengthening the management of external construction personnel qualifications, implementing construction site management, construction process control, contractor accident liability investigation and other mechanisms.

### Emergency Management

We make unremitting efforts to improve our emergency management system. In 2018, our emergency management system 2.0 was put on line, further enhancing our comprehensive emergency response capabilities.



Emergency drill



## Overseas Security Management

We constantly reinforce the operation of social security management system, strengthen social security risk prevention and control, and enhance emergency response capabilities. In 2018, we strengthened systematic management, implemented management on a regular basis, and braced ourselves for changes in local security situations in major countries. There were no fatalities in our overseas projects concerning social security.

## Environmental Protection

We make great efforts to reduce adverse effects on the environment and climate. By improving the resource utilization efficiency, implementing the Clean Air Act, and promoting energy conservation and emission reduction, we strive to achieve environmentally-friendly and resource-saving operations and vigorously advocate the construction of ecological civilization, in order to achieve harmony between energy and the environment.

## Environmental Risk Prevention and Control

We carry out environmental risk identification and assessment, and implement a risk prevention and control management model focusing on environmental forecasting, pre-warning and monitoring. We have established a sound risk management mechanism featuring "tiered management and hierarchic prevention and control", in order to ensure overall control over environmental risks. In 2018, no major environmental accidents were reported and all major pollutants reduction targets were reached.

## Sustainable Use of Resources

We attach great importance to the protection and rational utilization of resources. We have been striving to reduce the consumption of fossil fuels and increase energy efficiency by reducing energy intensity. Compared with 2010, the proportion of natural gas consumption in our total energy consumption in 2018 increased by 7.2 percentage points, while the proportion of raw coal consumption in our total energy consumption decreased by 6.4 percentage points. We endeavor to improve water utilization efficiency and realize sustainable use of water throughout various steps in our production and operation activities. Through innovation in land-saving, we make careful and efficient use of land during production, make good use of land in various ways, proactively reclaim land, carry out environmental treatment and recovery in mining areas, and enhance land use efficiency. In 2018, the company reduced energy consumption by 860,000 tons of standard coal, water consumption by 12.13 million cubic meters, and land consumption by 1,253 hectares.



**0.86** mmt of standard coal

Energy saved



**12.13** million cubic meters

Water saved



Jilin Oilfield closed oil and water wells in the buffer zone of the Chagan Lake National Preserve to protect the local ecosystem

## Control of Wastes and Pollutants Discharge

We strictly monitor and control discharge of waste and pollutants in the production process, strengthen waste management, and reduce discharge of pollutants in the air, land and water. We actively promote collection measures and recycling technologies for drilling wastes, and clean operation technologies at our oil and gas fields, significantly reducing wastes and pollutants. In 2018, the company had its drilling wastes recycled or handled through harmless treatment to 100%, and achieved 100% clean operation coverage.

## Ecological Environment Protection

We are committed to striking a balance between business development and environmental protection. We strictly comply with the laws and international standards on environmental protection, take full precautions to avoid environmental impact, and work hard to restore the environment to its original state in case of any adverse impact. We make an all-out effort to identify and address environmental pollution and ecological damage, and reduce the impact on the ecological environment by various means, including reducing noise and emissions. We do our utmost to reduce the occupation of cultivated land, protect water and land, and restore vegetation. Various measures are taken to restore the ecological environment in the working areas and protect biodiversity.

### Recycling technologies for drilling wastes

The company conducts whole-process management and control over solid wastes such as oily sludge and drilling wastes. Drilling wastes in environmentally sensitive areas are collected on site without contacting the soil, and oil-based drilling wastes are recycled and disposed of after bio-safety treatment.

## Major measures for ecological protection

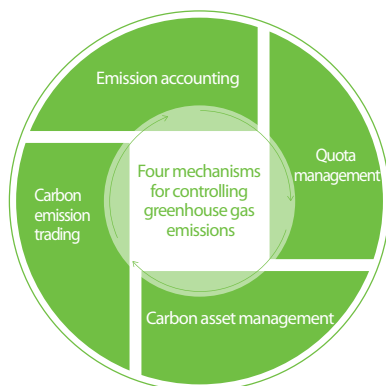
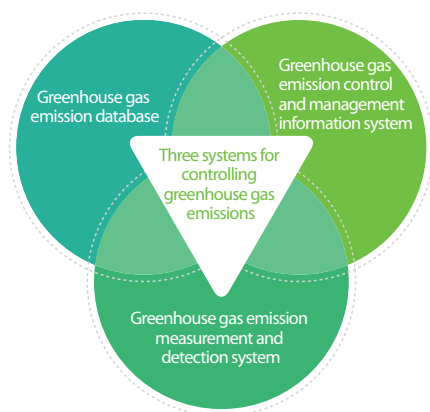
Ecological protection and restoration	Ecological monitoring and assessment	Ecological protection demonstration programs
<ul style="list-style-type: none"> <li>■ Carry out green mining activities</li> <li>■ Restore the vegetation and plant sand-fixing and windbreak forests in Gobi Deserts</li> <li>■ Promote comprehensive treatment of desertification, rocky desertification and soil erosion</li> <li>■ Implement natural forest protection system</li> </ul>	<ul style="list-style-type: none"> <li>■ Continuously monitor and assess the ecological impact of oil and gas development and pipeline construction</li> </ul>	<ul style="list-style-type: none"> <li>■ Green ecological oil and gas fields</li> <li>■ Ecological petrochemical industrial parks</li> <li>■ Green energy corridor along the Belt and Road</li> <li>■ Clean energy towns</li> <li>■ Nature reserves</li> <li>■ Participate in afforestation activities</li> </ul>

## Climate Change

We support the *Paris Agreement* adopted by the 2015 United Nations Climate Change Conference, embrace the goal of limiting global warming to less than 2 °C by the end of this century. To this end, we actively respond to climate change, devote ourselves to low-carbon development, and share the practice of greenhouse gas emission control with industry peers and all sectors of society.

### Carbon Emission Management

We pay close attention to greenhouse gas emissions and include combating climate change in our development plan. In 2018, following the instructions of the *National Greenhouse Gas Emissions Accounting and Reporting Technical Guidelines*, we improved the operation of the information system for greenhouse gas accounting and reporting, coordinated the accounting of greenhouse gas emissions, and completed the greenhouse gas emission inventory for each business area, covering direct and indirect emissions such as fuel combustion emission, production process emission, fugitive emission and greenhouse gas recovery and recycling.



CNPC greenhouse gas emission control system and mechanism

### Low-carbon Energy and Low-carbon Technologies

As an advocate and participant of the low-carbon economy, we actively develop natural gas, coalbed methane, shale gas, biomass energy and other low-carbon energies, produce and supply clean products, and work hard to achieve clean production and consumption processes. We carry out researches on carbon emission reduction technologies such as CO<sub>2</sub> flooding and storage, assessment of carbon sequestration potential in saline layers and oil reservoirs, and CO<sub>2</sub> capture for flue gas from captive power plants. Our first CCUS-EOR base for the whole process of CO<sub>2</sub> separation, storage and EOR was built in Jilin Oilfield. By the end of 2018, its accumulated CO<sub>2</sub> storage reached 1.385 million tons. The "Supporting technology for CO<sub>2</sub> flooding and storage and its application" won the first prize for technological progress from the National Energy Administration.

### Carbon Emission Reduction During Production

We pay high attention to optimizing our own energy consumption structure. We also care about carbon emissions and carbon footprint during production and operation. In condition-permitting areas like Huabei Oilfield and Tarim Oilfield, we use renewable energies such as geothermal energy and solar energy to reduce carbon emissions during production.

### Market-based Mechanism for Carbon Saving

We actively participate in carbon trading activities to achieve carbon emissions reduction through market-based mechanisms. We are the co-founder of the Tianjin Climate Exchange (TCE), the first comprehensive emissions trading institution in China. The energy saving and emissions reduction projects developed by TCE can reduce energy consumption by more than 200,000 tons of standard coal annually, equivalent to over 500,000 tons of carbon dioxide in emission reduction.

### Forestry Carbon Sink

We support the construction of carbon sink forest and forestation activities in China. The company established the China Green Carbon Foundation together with the State Forestry Administration. Meanwhile, we set up the Forestation Committee to ensure continuous forestation in our production areas and living quarters. As of 2018, green coverage in CNPC's production areas reached 293 million square meters and green coverage in living quarters reached 44.59%.

## Involve in OGCI activities to address climate change

As the only Chinese member of the Oil and Gas Climate Initiative (OGCI), CNPC is deeply involved in international cooperation to address climate change, and coordinates with other OGCI members and initiatives in response to climate change and low carbon transition.

We actively participate in the endeavors under the OGCI framework.

### Research on low carbon cooperation strategy and standard setting

- **Low carbon strategy:** Participated in the formulation of *OGCI-2040 Low Emissions Roadmap* and OGCI methane emissions control objectives, as well as in the completion of the *Study on the Potential of Agriculture, Forestry and Other Land Uses in Reducing Carbon Emission*.
- **Clean utilization of natural gas:** Jointly carried out the verification and monitoring of methane emission across the full industrial chain of oil and gas production globally.
- **CCUS commercialization:** Participated in CCUS commercialization policy research and developed special CCUS commercialization programs for different regions and countries.
- **Standard setting:** Led the development of *Carbon Dioxide Capture, Transportation and Geological Storage - Quantification and Verification (ISO/TR 27915)*, laying the technical foundation for the benefit evaluation and carbon market access of carbon dioxide sequestration projects.

### Establishment of OGCI Climate Investments China

In 2018, CNPC jointly established the Climate Investments China with OGCI Climate Investment Fund to invest in China's domestic low carbon market, promote research, demonstration and popularization of low carbon technologies and business models in China, and explore opportunities for low carbon transition in the petroleum industry.

### Exchange and communication with peers

Senior representatives of the company attended the OGCI 2018 annual meeting and exchanged expertise and experience with peers on issues such as the role of natural gas in energy transition in developing countries, improvement of energy efficiency and strengthening of international energy cooperation.



## Social Responsibility

We remain committed to combining our business growth with local sustainable development, attaching importance to people's livelihood and social progress, sharing development opportunities and resources with the local community. In 2018, we continued to carry out targeted poverty alleviation and aid programs, and participated in community building through various ways, including education and training, healthcare, etc.

### Targeted Poverty Alleviation

We have responded actively to the initiatives of the United Nation's *2030 Agenda for Sustainable Development* and to the Chinese government's policies on poverty alleviation, with a special focus on improvement of people's livelihood, industrial development, intellectual development and medical care. By combining our business strengths with local resources and market advantages in areas receiving assistance, we have taken targeted measures to help them develop the local economy on their own. In 2018, we invested RMB 97.49 million in 44 projects, including infrastructure reconstruction, education and training, healthcare, and industrial collaboration, in 13 counties and districts from seven provinces (municipalities and autonomous regions) of China, namely Xinjiang, Tibet, Qinghai, Chongqing, Henan, Jiangxi and Guizhou, directly benefiting more than 80,000 people.



CNPC worked with CFPA in launching the "Internet + Poverty alleviation" Initiative to help sell melons online for farmers in Balikun, Xinjiang

### Supporting Education

We carry out various activities and give young people equal opportunities for education. Specifically, we set up scholarships, offer grant loans and subsidies to students from underprivileged families, improve teaching conditions for impoverished regions, and support scientific and cultural activities as well as relevant competitive activities. In 2018, we granted CNPC Scholarships worth a total of RMB 3.99 million to 635 students. In addition, we explore new models to support education, and call on the public to pay attention and work together to achieve education equality. In cooperation with China Foundation for Poverty Alleviation (CFPA), Beijing Normal University Group and Tencent Foundation, we sponsor the Xuhang Educational Program and the Teacher Training Program to help students from poor families complete their studies.

### Promoting Local Development

We adhere to the principle of open cooperation for mutual benefit, expanding our joint-venture cooperation with local capital in the upstream, midstream and downstream sectors. During the process of developing and running our projects, we help to nurture local suppliers and contractors, thereby creating jobs, driving the growth of related businesses, and giving back to local people. The company has cooperated with the government of Xinjiang Autonomous Region in extensive areas such as exploration and development, refining and chemicals, oil and gas marketing. In the past five years, we have invested a total of RMB 224.7 billion in Xinjiang, and increased local employment by adding more than 6,200 jobs.

## Contributions to the Development of Overseas Communities

We respect the cultures and conventions of the host countries, and are committed to establishing long-term and stable cooperative relations with the host countries. As a corporate citizen, we incorporate our development into local socio-economic growth and create socio-economic value to jointly promote the development and prosperity of local communities.

### Enhancing Communication with Local Communities

We have set up environmental protection and community relations departments in many overseas areas to promote cooperation with local governments, NGOs and community representatives. By holding conferences, issuing reports and paying visits, we have strengthened communication and coordination to achieve a win-win situation in cooperation.

### Community Welfare

We take an active role to help improve the living conditions of local people, and donate to education, healthcare and other public welfare programs to achieve harmonious and mutual development.



### Key welfare projects for overseas communities in 2018

In Niger	<ul style="list-style-type: none"> <li>■ Built a Petroleum Museum</li> <li>■ Repaired the water tower of N'Gourti to solve the water supply problem of local residents</li> <li>■ Built mosques in the operation sites to ensure the surrounding religious communities can perform their prayers</li> <li>■ Donated 1 million XOF to the government for planting trees and environmental protection</li> <li>■ Donated 20 wells and 15 classrooms in the surroundings of operation sites to improve local people's livelihood</li> </ul>
In Sudan	<ul style="list-style-type: none"> <li>■ Cooperated with the Confucius Institute at the University of Khartoum on social welfare projects for the fourth consecutive year</li> <li>■ Provided funds and purchased books for the CNPC Library of the Confucius Institute at the University of Khartoum, benefiting nearly 50,000 students</li> <li>■ As a representative of Chinese enterprises operating in Sudan, we donated 100,000 Sudanese pounds to the Deaf-Mute Association to improve the living conditions of the disabled</li> </ul>
In Venezuela	<ul style="list-style-type: none"> <li>■ Provided nearly 100 hours of volunteer lectures and services to local Confucius Institutes</li> <li>■ Dispatched staff to support the medical services of China's hospital ship, Peace Ark</li> </ul>
In Peru	<ul style="list-style-type: none"> <li>■ Provided desks and chairs for community schools and shuttle services for the elderly students</li> <li>■ Provided on-site medical consultation services for citizens of Negritos</li> <li>■ Hosted football championship for children in the local communities</li> <li>■ Provided breakfast for 242 preschool children in the community</li> <li>■ Provided production technology training for community residents</li> </ul>
In Singapore	<ul style="list-style-type: none"> <li>■ Sponsored and held the New Year banquet for elderly people, inviting senior citizens from rest homes to celebrate the New Year</li> </ul>
In Kazakhstan	<ul style="list-style-type: none"> <li>■ Funded World War II veterans and their families who are living under poverty or living alone</li> <li>■ Funded local associations to develop cultural and artistic undertakings</li> <li>■ Provided New Year gifts for the elderly and children in Turkestan</li> </ul>
In Kyrgyzstan and Tajikistan	<ul style="list-style-type: none"> <li>■ Adopted a model of Corporate Sponsored University Training Programs where trained employees return to previous employment, selected more than 60 outstanding high school graduates, and funded their four-year undergraduate study in linguistics and oil and gas engineering at Xi'an Petroleum University.</li> </ul>

### Developing Local Economy

We place a strong emphasis on local resources and procurement of local products and services, and create opportunities for local contractors and service companies to participate in our projects, so as to boost and promote the development of local SMEs and create more income and employment opportunities for the local communities.

### Tax Payments According to Law

We strictly comply with the laws and regulations in the countries where we operate, make lawful and transparent tax payments to local governments, and make due contributions to local economic development. In countries where the EITI (Extractive Industries Transparency Initiative) standard is implemented, such as Iraq, Mongolia and other countries, our local companies actively participate in the multi-stakeholder groups and publish information on our projects and tax payments, as required by EITI yet beyond EITI's minimum disclosure requirements. We support and respond to the Base Erosion and

Profit Shifting (BEPS) initiative and the CNPC Tax Policy, and pledge to pay tax according to the law in areas where we operate and create value, in order to strive towards sustainable development and make due contributions to socio-economic development.

### Protecting Indigenous Rights

Before launching a project, we conduct assessments of its social and economic impact, eyeing the needs of the indigenous people, human rights, cultural heritage, and involuntary resettlement. We try our best to protect all rights and interests of the indigenous people. We uphold standard operation in land compensation, and make compensation plans according to the opinions of the local governments, our partners, and the local villagers. Specifically, compensation is paid before land use, and the compensation information is released timely to ensure operational transparency.