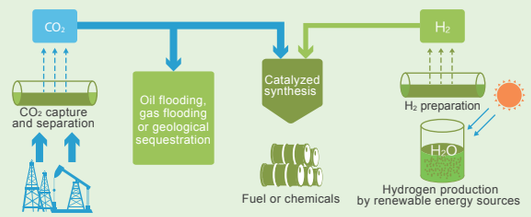
R&D on Low-carbon Technologies

R&D on key carbon emission reduction technologies are carried out, such as CO_2 flooding and storage, potential assessment for carbon sequestration in salt water layers and oil reservoirs, and CO_2 capture of flue gases from captive power plants. We have established China's first full-chain CCS-EOR base in Jilin Oilfield, covering CO_2 separation, capture and oil displacement, with 1.1 million tons of carbon dioxide sealed up underground.



CNPC's CCUS road map

- Industrial CCS-EOR
- Storage Capacity
- Coal-chemical Integration
- China's storage potential 1.3-1.5 billion tons

Strengthening Carbon Emission Reduction during Production

We pay high attention to improving energy consumption mix throughout the company while supplying clean oil products to customers. Methane emissions during the oil and gas production is being reduced by recovery and reuse of casing gas, green well completion, gas recovery from storage tanks and glycol dehydrators. Device leakage detection and repair is being conducted. CO_2 emissions generated by refining processes is being reduced through new technologies and devices.

Participating in Carbon Trading Market Development

CNPC actively participates in the development of market mechanisms for carbon trading. We are the co-founder of the Tianjin Climate Exchange, the first comprehensive carbon trading arm in China. China's first carbon neutral deal based on standardizing carbon verification was completed in 2009. The first carbon emission reduction (CER) at the energy efficiency market was certified in 2010. CNPC completed the first voluntary emission reduction deal in China in 2011 based on the PAS2060 carbon-neutrality standard. In 2015, we completed the largest CCER (Chinese Certified Emissions Reduction) transaction in China, with a trading volume of 506,125 tons.

Promoting Large-scale Forestry Carbon Sink

We support carbon sink forest construction and forestation activities of China. In 2008, we launched the carbon sequestration forestry project jointly with the State Forestry Administration (SFA) and seven provinces and cities, and established the China Green Carbon Foundation with SFA in 2010. In 2012, we funded RMB 6 million yuan for 13.33 hectares of carbon sequestration forest in Beijing. From 2013 to 2015, we invested a total of RMB 236.21 million yuan as green funds and planted over 6 million trees.

Low-carbon Development

Energize · Harmonize · Realize

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China National Petroleum Corporation

Strategic Objectives

CNPC supports the "2 degrees Celsius" target set by the Paris Agreement. CNPC is implementing the low-carbon development strategy, actively developing clean energy, reducing greenhouse gas emissions during production and gas value chain. CNPC aims to become a leading international energy company.

CNPC is expediting the development and improvement of its Roadmap for Low Carbon Development and increasing its input on R&D of low carbon technology. Meanwhile, we are carrying out comprehensive carbon footprint verification, and setting up the carbon emission management and control system. We will actively exercise the measures proposed in the Joint Declaration, push forward relevant works, and make due contributions to achieve the ambitious goal of OGCI.

Paris Agreement | National Climate Change Program | National Climate Change Plan 2014-2020 | CCUS Technology Innovation Alliance | Oil & Gas Climate Initiative

By 2020

The CO_2 emission gross per unit industrial added value will decrease by 25% compared to 2015. The greenhouse gas emission gross by the refining business will try to reach the peak value. Green and low-carbon development, energy conservation and emission reduction performance will be among the top rank in all China central companies.

By 2030

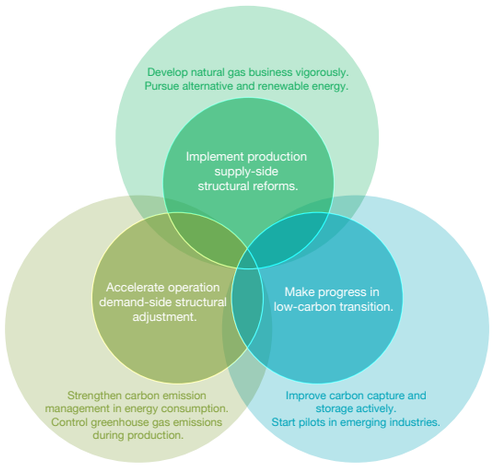
CNPC will continue to increase the supply of natural gas and other clean energy resources. The domestic natural gas output will reach 55% of the company's primary energy. The natural gas production capacity will be expanded and the increase of greenhouse gas emissions will be effectively controlled. Total greenhouse gas emissions will reach its peak value in advance.

By 2050

By following the low-carbon development principle, CNPC aims to reach the global low-carbon development level and will make significant contributions to the international agreements on climate change and the control of greenhouse gas emissions in China.

We

- Agree with keeping a global temperature rise this century below 2 degrees Celsius;
- Committed to green and low carbon development;
- Ready to share GHG control practices with the society;
- Promise to play a leading role in the oil and gas industry's response to climate change.

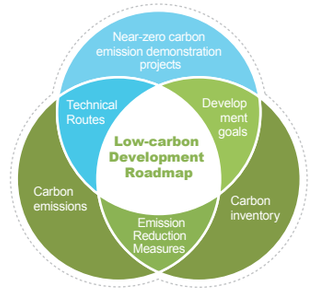


Strategic Deployment

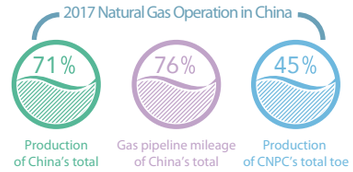
- Carry out production supply-side structural reforms to provide low-carbon and clean energy for the society.
- Pace up operation demand-side structural reforms to further control greenhouse gas emissions during production.
- Make low-carbon transition efforts to improve the level of the production terminals cleanliness.

Carbon Emission Control

We have incorporated addressing climate change into the company's development program. CNPC has started to work on the low-carbon development roadmap and emission management and control system with development goals, specific measures, and technical solutions. Focusing on carbon footprint verification, emission reduction and the construction of demonstration projects of near-zero carbon emissions, we aim to cut emissions of carbon dioxide and other greenhouse gases through whole-process control.



Developing Low-carbon Energies and Advancing Oil Products Upgrade



We actively develop conventional natural gas, coalbed methane, shale gas, biomass energy and other low-carbon energies. In 2017, we supplied 151.84 billion cubic meters of natural gas, accounting for 66.2% of the total natural gas consumption in China.