



## Propelling innovation-driven development creating a dynamic development engine

### Challenges and opportunities

UN 2030 Agenda puts forward the requirement to foster innovation. Today, innovation is the primary engine of development. Increasingly, innovative and scientific advancements like artificial intelligence are shifting the economic paradigm and pushing countries and companies to look at new ways to facilitate growth.

China is now transitioning to a "new normal", placing innovation at the heart of the country's development agenda in an effort to accelerate supply-side structural reform and activate domestic power and energy for future growth.



Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation



## Our action

By implementing the innovation-driven strategy comprehensively, Sinopec Corp. is trying to create a "new engine" for development by utilising innovative technology, products and services, and a new business model.

### Improving the quality and efficiency of traditional industries through technological innovation

In 2016, Sinopec Corp. formulated and implemented regulations and specific rules for technological projects, expenditure, achievement transformation & promotion, and incentive mechanisms. Focused on developing our enterprise and contributing to the society, we upgraded our technical operations for the exploration and efficient extraction of oil and gas, optimised refined oil products, implemented measures to lower the cost of basic chemicals, improved high-end chemicals proportion, and produced quality products. In 2016, Sinopec Corp. promoted a batch of new technologies for lowering the ratio of diesel to gasoline, increasing the output of jet fuel and so on. We also developed a series of new flexible and eco-friendly polypropylene products with high strength, and lowered the production cost of chemicals per tonne for three consecutive year.

Indicators	2014	2015	2016
Number of National Technology Invention Awards	2	2	4
Number of patent applications	4,968	5,246	5,612
Number of granted patents	3,011	3,769	3,942
Total number of domestic and overseas granted patents	14,580	18,349	22,291
Investment in R&D (RMB billion)	5.62	5.65	5.93
Number of R&D personnel	9,997	10,964	12,470

### Tackling technological difficulties to upgrade the quality of refined oil products

We use technological innovation to upgrade the quality of our oil products and provide society with clean oil products. In 2016, we enhanced our efforts on innovation to tackle the technological problem of solid acid alkylation, a technology used in the production of clean oil products and one of the toughest problems in the petrochemical industry. We upgraded the quality of our gasoline and diesel for vehicles to meet the National V emission standards. Our subsidiaries upgraded their facilities and units for desulfurisation and hydro-desulfurisation of gasoline to provide Beijing with oil products that meet Beijing VI emission standards and that has been supplied for Beijing since March 1, 2017.



### Boosting integration of industrialisation and informatisation to upgrade the traditional manufacturing industry

"Made in China 2025", "Internet Plus" and big data technology contribute to the integration of industrialisation and informatisation in China, driving our traditional manufacturing industry towards high-end, intellectual and green development.

- Our intelligent pipeline management system is put into operation, realising the digitalisation and visualisation of long-distance and interplant pipelines more than 30,000 kilometres. This helps us quickly respond to natural disasters, eradicate hidden problems, and improve the delicacies of varying management levels.
- We embarked on research into the Petrochemical Industry Intelligent Plant Standards and finalised construction plans of intelligent oil and gas field. The utilisation rate of advanced control systems and the automated collection of production data from four intelligent pilot enterprises increased by 10% and 20%, respectively, which enhanced our safety and environmental protection, energy conservation and emissions reduction, efficiency and cost reductions.

Intelligent plants to be constructed during the 13th Five-Year Plan period

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Operational costs to be lowered

20%

During the 13th Five-Year Plan period, we will construct three to five demonstration oil and gas fields and 10 intelligent plants. We will conclude construction of the intelligent pipeline system, lower operational costs of intelligent oil and gas fields and intelligent plants by 20%, and increase labour productivity by 20%. We will also realise a 6% decline in comprehensive energy consumption per RMB 10,000 output value of intelligent plants.

### Establishing an informationalised business ecosystem

By integrating customer data with our material purchase system, chemical sales, lubricant, and fuel oil, we have established uniform e-commerce and customer relation management (CRM) platforms, including EPEC (for chemical product purchase), ChemEmail (for chemical product sales), Lubricant CRM, Fuel Oil Ship Network, and Sales CRM. We have constructed a corporate cloud platform to provide cloud resource services, and established customer, product, and order centres—along with other sharing service platforms—which provide technical support for the establishment of a customer big data analysis model, the exploration of potential customers, and the implementation of precision marketing.