



Annual Business Review

The overall synergy of the Company's four business segments in efficient coordination, resource sharing, integrated planning and overall profitability continued to build up. Oil and gas operations were running smoothly and efficiently across the industry chain. Main production indicators improved steadily, highlighting a number of major breakthroughs and discoveries in oil and gas explorations as well as record-high domestic production. Significant breakthroughs were made in strategic planning, transformation and upgrading of the Refining, Chemicals and New Materials business. Support & Services segment played an effective role and industry-finance integration continued to deepen.

Oil, Gas & New Energies

In 2023, the Company made a range of E&P discoveries and breakthroughs, which effectively supported the steady rise in crude oil and natural gas production. The upstream landscape based on “three 100-mmt”, namely 100-mmt of domestic crude production, domestic gas output, and total hydrocarbon equity production overseas, was bolstered up at home and abroad, and the at-scale development of new energies picked up pace.

Domestic Exploration and Production

The Company secured a number of major breakthroughs and discoveries in exploration, with domestic oil and gas production hitting new highs.

Exploration

Focused on risk exploration and preliminary prospecting, the Company’s exploration activities in new fields and plays brought about 6 major breakthroughs and 11 important discoveries. Concentrated exploration in key regions and areas led to the identification of eight 100-million-ton and eight 100-billion-cubic-meter hydrocarbon plays. Domestically, CNPC’s newly proven oil in place totaled 773.86 million tons and newly proven gas in place reached 754.2 billion cubic meters.

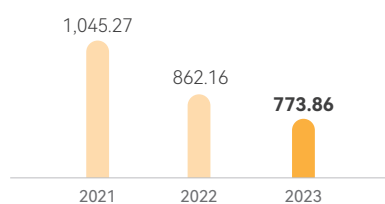
eight 100-million-ton hydrocarbon plays

eight 100-billion-cubic-meter hydrocarbon plays

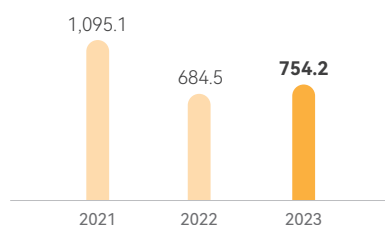
Domestically, CNPC’s newly proven oil in place totaled **773.86** million tons

newly proven gas in place reached **754.2** billion cubic meters

Newly proven oil in place (mmt)







Newly proven gas in place (bcm)



Reserves and Operating Data (Domestic)

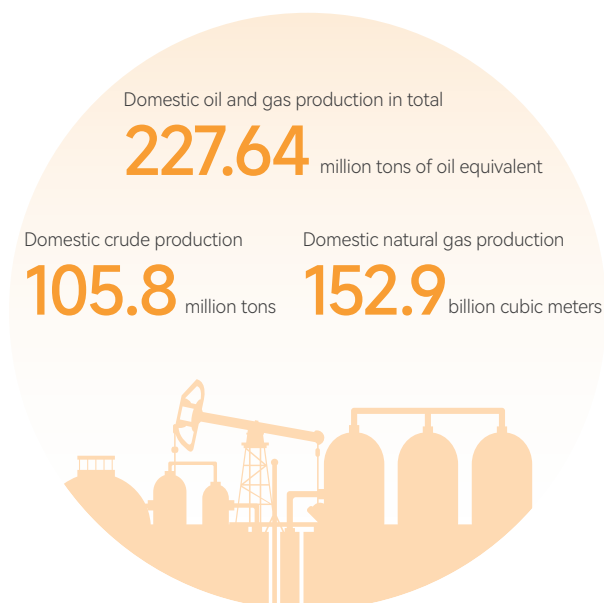
	2021	2022	2023
Newly proven oil in place (mmt)	1,045.27	862.16	773.86
Newly proven gas in place (bcm)	1,095.1	684.5	754.2
2D seismic (km)	7,264	8,618	3,604
3D seismic (sq km)	14,379	20,236	25,078
Exploratory wells	1,496	1,325	1,356
Preliminary prospecting wells	776	658	684
Appraisal wells	720	667	672

Major Discoveries and Achievements in 2023

 Oil	<p>The exploration at Tabei Uplift in Tarim Basin and Cangdong Sag in Bohai Bay Basin secured major breakthroughs. A number of 100–mmt hydrocarbon plays were identified, including the Longdong Area in Ordos Basin, Fuman Oilfield in Tarim Basin and Fengcheng Formation in the Mabei Slope of Junggar Basin.</p>
 Natural Gas	<p>The exploration at Kuqa Depression in Tarim Basin and Permian–Triassic reef–beach zone in Sichuan Basin led to major breakthroughs. The multi–strata natural gas exploration at Maokou Formation in central Sichuan, multi–type exploration at the syncline area of Maokou Formation in southern Sichuan, exploration at the Carboniferous–Permian structure of Well Qjatan 1 in the piedmont southwestern Tarim Basin, and natural gas exploration of Well Wantan 1 in western Junggar Basin all enabled important discoveries. A number of 100–bcm gas plays were identified, including deep coal–bed methane at coal seam 8# in Ordos Basin, limestone structure of the Taiyuan Formation, and tight sandstone structure of the Benxi Formation in central and eastern Ordos Basin.</p>
 Shale Oil	<p>The exploration at Jimsar Depression achieved an important discovery and strategic breakthroughs were made in the exploration at Gulong Sag in Daqing Oilfield and Cangdong Sag in Dagang Oilfield.</p>
 Shale Gas	<p>The deep shale gas exploration at Cambrian Qiongzhusi Formation in Sichuan Basin led to an important discovery.</p>

Oil and Gas Production

Domestically, the Company produced 105.8 million tons of crude oil and 152.9 billion cubic meters of natural gas, up by 0.80 million tons and 7.45 billion cubic meters year–on–year respectively. The total petroleum production hit a record high of 227.64 million tons of oil equivalent, up by 6.74 million tons year–on–year.



Development of Key Oil and Gas Fields

The Company achieved steady output growth in major domestic oil and gas fields by strengthening the coordination of production, transportation, marketing and storage activities. In 2023, oil and gas production of Changqing Oilfield was on the rise and stood above 66 million tons of oil equivalent. Daqing Oilfield continued to maintain crude output at around 30 million tons. Tarim Oilfield produced more than 33 million tons of oil equivalent with steady growth. Natural gas production at Southwest Oil and Gas Field reached a new level, hitting 40 billion cubic meters. Xinjiang Oilfield achieved steady growth in production by strengthening the management of mature fields and production ramp–up in new blocks. Liaohe Oilfield boosted its E&P efforts, and saw production increase versus the previous year.

Stable Production from Mature Fields

CNPC introduced a campaign to turn mature oil and gas fields into the ballast of its overall production. Following a “5–Focus” technical route, it strives to build high–efficiency injection/production systems for various reservoirs, work on comprehensive transformation of development systems, and carry out significant cost cutting. The Company aims to form a sound development order, and build an integrated oilfield development system combining fundamental concepts, technical management, talent teams, as well as standards and protocols, so as to promote the transition from piecemeal fixes to a holistic approach to capacity re–planning. Over the past year, CNPC reshaped its concepts and methods to revitalize mature fields and enable

constant growth of oil and gas production. By debottlenecking complex wells, working on water injection wells, addressing unproductive wells, and building carbon-negative wells, the Company turned mature fields into a new “growth driver”.

Production Capacity Building

As CNPC continued to improve its professional management of capacity building, relevant projects progressed as planned and key projects delivered robust results as a whole. The year 2023 saw an additional 10.445 million tons in its crude production capacity and 28.76 billion cubic meters in natural gas.

Unconventional Hydrocarbons

In line with the strategic planning of “deepening E&P in the East and accelerating E&P in the West to boost both oil and gas production and tap both conventional and unconventional resources”, CNPC boosted the E&P of unconventional resources, and enhanced relevant R&D. These efforts enabled the accelerated and cost-effective development of shale oil and gas, fast expansion of tight gas reserve and production, together with strong momentum in coal-bed methane growth, supporting the speedy development of unconventional operations.



Shale oil

The shale oil capacity building project at Changqing Oilfield made steady headway. Progress was made further to build on the 1 Mt/a Qingcheng shale oil field. Two shale oil national demonstration areas in Gulong (Daqing Oilfield) and Jimsar (Xinjiang Oilfield) respectively are under construction. The Company produced 3.92 million tons of shale oil in 2023.



Tight gas

Changqing Oilfield continued to expand the scope of tight gas development while pushing ahead with production adjustment in mature fields and cost-effective capacity building in new ones. E&P activities for tight gas at Southwest Oil and Gas Field delivered early results. The Company produced 45.1 billion cubic meters of tight gas in 2023.



Shale gas

Mid-and-deep shale gas production stood above 10 billion cubic meters for four years. Deep shale gas fields in areas like Luzhou are under construction. The Company produced 14.81 billion cubic meters of shale gas in 2023.



Coal-bed methane (CBM)

Development adjustment and rolling capacity building made orderly progress at mature fields in medium and shallow structures, such as Fanzhuang and Baode. Pilot testing and mature field production tests for deep CBM gathered pace in the Ordos Basin. Capacity building at cooperation blocks such as Mabi was further enhanced. The Company produced 4.31 billion cubic meters of CBM in 2023.

Gas Storage Facilities

The Company continued to expand the capacity of existing gas storage facilities and made headways with the evaluation and building of new ones. In 2023, there were 4 capacity expansion projects for existing facilities, and 9 new gas storage projects under construction. By the end of the year, 18 gas storage facilities have been completed and put into operation.

In 2023, the total gas injection stood at 17.17 billion cubic meters, with a cumulative peak-shaving capacity of 19.60 billion cubic meters.

Domestic E&P Projects with International Partnership

The Company deepened cooperation with international partners, including Shell, TotalEnergies and Chevron, on E&P in China regarding low-permeability reservoirs, heavy oil, shallow-water reservoirs, sour gas, high-temperature and high-pressure gas reservoirs, CBM, and tight gas, steadily advancing joint E&P projects.

In 2023, the total oil and gas output of CNPC’s E&P operations in China with international partnership reached a record high of 12.69 million tons

of oil equivalent, including 2.32 million tons of crude oil and 13 billion cubic meters of natural gas. On December 19, 2023, annual gas output of Changqing Oilfield’s South Sulige Project reached 4 billion cubic meters, marking a new milestone for CNPC’s international cooperation in upstream operations. The gas production in Changbei project grew steadily. Southwest Oil and Gas Field’s Chuandongbei (CDB) project also registered rapid growth in gas production.

Overseas Oil and Gas Operations

In 2023, the Company continued to bolster its global operations in Central Asia–Russia, Middle East, Africa, the Americas, and Asia Pacific, aiming to maintain 100 million tons of oil equivalent for its overseas equity production. Its exploration efforts achieved a number of major discoveries, with overseas equity output standing at 100 million tons of oil equivalent for five consecutive years. By the end of 2023, the Company had a globalized oil and gas presence in 32 countries and regions around the world.

Oil and Gas Exploration

In 2023, the Company's efficient and concentrated exploration efforts led to a number of major discoveries overseas. A major breakthrough was made in Aram, Brazil. The 100-million-ton hydrocarbon play in Chad was further confirmed. Important progress was achieved in the Amu Darya project in Turkmenistan, the Aktobe project in Kazakhstan, and the Oman project.



1-mmcm industrial gas flow at the Amu Darya River project

On October 26, 2023, Well Aga-101D of CNPC's Amu Darya natural gas project at Turkmenistan's Agure Gas Field yielded over one million cubic meters of stable industrial gas flow during testing, producing 1.11 million cubic meters a day.

The Amu Darya Project in Turkmenistan is CNPC's largest overseas gas venture with 100% equity. Over the past 16 years, 45 gas fields have been discovered during the two phases of project development, forming six 100-bcm gas plays that produce 14 billion cubic meters annually.



Amu Darya Natural Gas Project



In 2023, the Company's overseas equity production

Oil and Gas Production

The Company adopts a project-specific decision-making approach to strengthen management throughout the project lifecycle and promote the R&D and application of new technologies. In 2023, the Company's overseas equity production totaled 103.823 million tons of oil equivalent, including 78.551 million tons of crude oil and 31.72 billion cubic meters of natural gas.

- ▶ Arrow Energy's new Harry Inlet Processing Facility (IPF) was successfully put into operation.
- ▶ A floating production storage and offloading (FPSO) vessel operating for Búzios 5 Project in Brazil became operational.
- ▶ The Mero-2 of Libra Project in Brazil started production.
- ▶ The Abu Dhabi Al Yasat Project Phase-II and the gas processing plant for the Halfaya Project in Iraq are ready to come online.
- ▶ The Niger Phase II integration project is technically ready for production.
- ▶ Phase I of LNG Canada project and the North Field Expansion project in Qatar progressed steadily.
- ▶ The Yamal LNG project also maintained stable operation.



Pipeline Construction and Operation

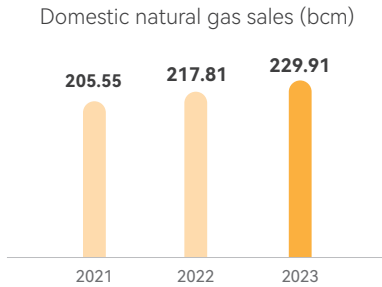
The Company's pipelines overseas maintained safe and stable operation. The transnational routes to northwest and southwest China delivered 22.677 million tons of crude oil and 48.86 billion cubic meters of natural gas throughout the year. The Niger-Benin Crude Pipeline and the Coastal Gas Link Pipeline (CGL) in Canada are mechanically complete and ready for production.

Refining and Chemicals

The production and operation of CNPC's refining and chemicals projects overseas remained steady and orderly, processing 36.869 million tons of crude oil throughout the year. The refinery in Chad and the Shymkent Plant in Kazakhstan achieved remarkable results in management and operation performance.

Assets Management

In 2023, the Company's overseas portfolio continued to optimize with new breakthroughs in a number of major oil and gas cooperation projects. We successfully signed the agreements for North Field Expansion project in Qatar, the operatorship transfer of West Qurna 1 oilfield, and the extension of Contract 76 of CNPC Aktobemunaygaz in Kazakhstan. The equity assignment agreement on Bokhtar Project in Tajikistan was also signed. Much progress was made on asset transfer regarding joint venture cooperation in Indonesia and Kazakhstan, further enhancing the quality of overseas assets.



Natural Gas Marketing

Driven by economic recovery and the trend of domestic and international gas prices, gas demand continued to pick up in 2023. Amid unexpected challenges posed by extreme weathers, geopolitical conflicts and uncertainties in gas imports, the Company improved its market-oriented marketing system and strengthened market research to achieve steady growth in natural gas sales. The full-year domestic sales totaled 229.91 billion cubic meters, up by 5.6% year-on-year.



The full-year domestic sales



year-on-year increase

By the end of 2023

the Company's natural gas marketing network has covered 31 provinces, municipalities and autonomous regions across the country. Throughout the year, end-user sales totaled

54.22 billion cubic meters

up by

9.3% versus 2022

Natural Gas Market Expansion

The Company pursued market expansion in a high-quality manner, with a focus on coastal markets such as Bohai Rim, Yangtze River Delta and Pearl River Delta, and also on key sectors such as new materials, steel, building materials, ceramics and glass. We strive to propel the integration of wind and solar power with gas-fired power generation, and push for further marketization of the natural gas industry. Marketing efforts also worked on business development among end users, adding about 890,000 new end users throughout the year.

LNG

The Company further optimized its planning for LNG terminals and paced up the preliminary work on a number of LNG terminals, such as the Fujian Terminal, and Jiangsu Terminal Phase III including jetty & tank expansion projects. The distribution pipeline for the Fujian LNG Terminal has started construction. The Company worked to enable offshore LNG refueling for ships, striving to provide regular bonded refilling at Shenzhen Port. It also performed the first ever ship-to-ship bunkering for bulk carriers at the outer anchorage of Zhoushan Port in Ningbo, making it one of the few energy enterprises in the world capable of STS bunkering operations.

As of the end of 2023, the Company has two LNG terminals in Jiangsu and Tangshan respectively, with annual gasification and loading volume totaling 16.33 billion cubic meters. In 2023, the Company has 15 LNG plants in operation, with a total processing volume of 2.83 billion cubic meters.



Jiangsu LNG terminal at night

New Energies

The Company continued to build a development model for deep integration of oil and gas E&P and new energies. With a focus on shifting its role in marketing, fast-paced project construction, and collaborative efforts with business partners, the Company seeks to achieve the transition towards an integrated energy company covering oil, gas, heat, electricity and hydrogen energy. New energies capacity has reached 11.5 million tons of coal equivalent per annum.



Hydrogen Energy

In line with the market demand for hydrogen energy, the Company rolled out hydrogen purification projects and increased the supply of high-purity hydrogen. Throughout the year, CNPC's high-purity hydrogen capacity increased by 3,600 t/a to 6,600 t/a. In 2023, the hydrogen purification project of Sichuan Petrochemical began to deliver up-to-standard high-purity hydrogen, and the hydrogen pilot project based on alkaline water electrolysis of Dushanzi Petrochemical was also put into operation.



Geothermal Energy

In 2023, the coverage of CNPC's geothermal heating services grew by 10.45 million m² and added up to more than 35 million m² in total. The first medium-and-deep geothermal heating project in Beijing was completed and brought online.



Wind and Solar Power Generation

As of the end of 2023, CNPC's total installed capacity has exceeded 5 million kilowatts. A 1.1-million-kilowatt photovoltaic plant of Tarim Oilfield was completed in Kashgar. Another 100,000-kilowatt photovoltaic plant of Tarim Oilfield was connected to the grid in Qiemo County. The Meizi Wind Farm of Jilin Oilfield became fully operational.



CNPC's first wind power project became fully operational

On March 17, 2023, with the successful grid connection of Meizi Wind Farm in Jilin Oilfield, CNPC's first large-scale wind power project became fully operational.

The project, comprising 18 wind turbines with a total installed capacity of 78,000 kilowatts, is designed to generate 260 million kilowatt-hours of electricity annually based on 3,395 equivalent full-load hours. All the electricity generated will be consumed by Jilin Oilfield to produce oil and gas, reducing CO₂ emissions by 202,000 tons a year and facilitating Jilin Oilfield's low-carbon production.



Beihu wind farm, Jilin Oilfield

Refining, Chemicals, Marketing & New Materials

In 2023, the Company stepped up the transformation and upgrading of its refining and chemicals operations, and further optimized the business structure. Leveraging production ramp-ups, the Company processed 190.15 million tons of crude oil, and produced 123.21 million tons of refined products and 8.00 million tons of ethylene throughout the year, as its supply capacity for high-quality energy and chemical products continued to increase. CNPC enhanced its efforts to produce and develop new materials. The new materials output reached 1.37 million tons, growing more than 50% for two consecutive years. Based on in-depth market research, we focused on retail, wholesale & direct sales, and non-fuel business, with domestic sales of refined products totaling 123.619 million tons.



190.15 million tons of crude oil

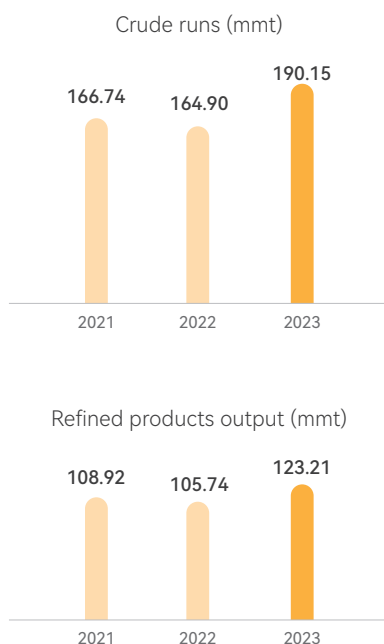
123.21 million tons of refined products

8.00 million tons of ethylene throughout the year

1.37 million tons of new materials

Refining and Chemicals

Following a market-oriented approach, the Company continued to push ahead with production ramp-up, optimize its product portfolio, improve the operational stability of its refining and chemical plants, and propel the transformation and upgrading campaign with the construction of key projects. New materials project was accelerated, which ensured a steady growth in output.



Refining and Chemicals Operating Data (Domestic)

	2021	2022	2023
Crude runs (mmt)	166.74	164.90	190.15
Utilization rate of refining units (%)	81.6	80.8	85.6
Refined products output (mmt)	108.92	105.74	123.21
Gasoline	49.39	43.51	49.78
Kerosene	11.29	8.58	15.04
Diesel	48.25	53.65	58.40
Lube oil output (mmt)	1.89	1.68	2.24
Ethylene output (mmt)	6.71	7.42	8.00
Synthetic resin output (mmt)	10.90	11.62	12.55
Synthetic fiber output (mmt)	0.02	0.03	0.03
Synthetic rubber output (mmt)	1.04	1.04	0.97
Urea output (mmt)	2.42	2.55	2.30
Synthetic ammonia output (mmt)	2.00	2.05	1.88



Refining-chemical Integration Project, Guangdong Petrochemical

Optimization of Product Portfolio

Seizing the opportunities of market recovery, the product portfolio of refining and chemical operations continued to optimize, with a focus on increasing high-end, high-value products and maximizing profitability across the industry chain. 20 of the 28 key technical and economic indicators for the Company's refineries improved from a year earlier.

In response to the sulfur limits of the International Maritime Organization (IMO), the Company ramped up R&D and production of low-sulfur marine fuels, producing 6.60 million tons of low-sulfur fuel oil in 2023. We also made active endeavors to increase the output of specialty products. Production of petroleum coke and lube oil achieved fast growth.

CNPC continued to push for the R&D and production of new chemical products and specialty chemicals. In 2023, 137 new chemical products were developed, with a total output of 1.22 million tons.

Guangdong Petrochemical was fully operational

On February 27, 2023, the world's largest single set of styrene plant came online, producing 800,000 tons per annum. It marked the moment when Guangdong Petrochemical's integrated project became fully operational across all processes and began to produce up-to-standard products after a successful commissioning. With an annual capacity of 20 million tons of crude runs, 1.2 million tons of ethylene production, and 2.6 million tons of para-xylene output, the plant has entered full production.

As a national key project under the Guangdong-Hong Kong-Macao Greater Bay Area strategy, Guangdong Petrochemical is the largest integrated refining and petrochemical project in China designed to produce a full range of petrochemical products. The project will help create a new opening-up paradigm for Guangdong Province under the Belt & Road Initiative and reduce dependency on imported chemical feedstocks in the home appliance and electronics sectors. It will improve the petrochemical industry chain in eastern Guangdong with a positive impact on the local mid-and-downstream sectors, worth approximately RMB 560 billion. It will also push China's refining and petrochemical industry towards the middle and higher end of the industry chain and value chain.

Construction of Large Refining & Chemical Bases

By the end of 2023, the Company has eight large integrated refining and chemical complexes and fourteen 10 Mt/a refineries in China. A number of key petrochemical projects made significant progress. Guangdong Petrochemical has entered commercial operation after successful commissioning. Two large ethylene projects of Jilin Petrochemical and Guangxi Petrochemical made steady headways. And Dushanzi Petrochemical's Tarim ethane-to-ethylene project (Phase II) was approved and began construction.

Development and Application of New Materials

The Company continued to increase its efforts in the planning, R&D and capacity ramp-up for new materials. The full-year production of new materials was 1.37 million tons, covering a number of flagship products such as, etc. The α -olefin, ABS, nitrile butadiene rubber, SBR Company's metallocene-based polyolefins, medical-grade polyolefin, PETG copolyester and petroleum needle coke enjoyed a leading position in China. New materials acceleration program delivered remarkable results.



Dushanzi Petrochemical's functionalized SBR project started production

On July 18, 2023, a 25,000 t/a functionalized SBR project started production successfully at Dushanzi Petrochemical, which is its key project of the year to improve quality and efficiency. Dushanzi Petrochemical is capable of producing dual end-functionalized SBR on a continuous and steady basis, marking a new breakthrough in China's high-performance rubber sector.

As a key research topic in the area of new materials under the 14th Five-Year Plan, functionalized SBR is of

great significance for the development of green tires, upgrading tire performance, energy conservation and environmental protection. The successful start-up of the project symbolizes that Dushanzi Petrochemical has already obtained the technology to produce dual end-functionalized SBR. In the future, it is poised to supply various high-end functionalized SBR products of even greater performance to domestic tire manufacturers, and contribute to the upgrading of domestic tire products.



Dushanzi Petrochemical plant

A mechanism for development & advancement of new materials has been put in place to support technological breakthroughs. The proprietary 1,000 t/a solution-process POE pilot unit was successfully commissioned with key product indicators comparable to those of foreign products. The commercial test of a 1,000 t/a combined 1-octane/1-hexene production project has achieved initial success. And our carboxylated nitrile butadiene rubber project has also completed commercial test.

Marketing and Sales

In 2023, the Company strengthened market expansion, and bolstered the quality and efficiency of its marketing business to write new chapters for the high-quality development of marketing operations.

In line with the principle of maximizing efficiency of the industry chain, the management of shipment, distribution, marketing and transportation plans was strengthened to improve the coordination between production and sales, enhance alignment of production and marketing, boost synergy between fuel & non-fuel business, and enable tiered and categorized account management. The full-year domestic sales of refined products reached 123.619 million tons.

In view of the changes in market demand, the Company seized the opportunities in electric vehicle and hydrogen energy sectors and leveraged its marketing network to push ahead with the charging stations and the demonstration projects for hydrogen refueling stations. In this way, it endeavors to build an integrated energy service provider of oil, gas, hydrogen, electricity and non-fuel products, with world-wide recognition and a leading position in China. In 2023, 93 new service stations started construction, and 188 new service stations became operational. Also, 10 hydrogen refueling stations and 507 battery charging/swapping stations were completed. As of the end of 2023, the Company operates a total of 22,755 service stations across the country.



The Company improved its marketing & sales system and promoted digital marketing and specialty product sales based on market research. In 2023, the Company sold 40.51 million tons of chemical products, up 8.4% year-on-year.

Based on a coordinated approach to "in-store sales, direct sales, online sales and branching out" and the integrated marketing for fuel & non-fuel products, the Company boosted the synergy between fuel and non-fuel sales, consolidated online and offline channels, developed a "convenience store +N" business model based on realities on the ground, improved the appeal of non-fuel products and promoted transparency in procurement. Catering to the needs of customers, we seek to further polish service quality and enhance customer experience throughout the whole process, thus raising customer satisfaction. The sales revenue from non-fuel products totaled RMB 36.83 billion in 2023.

CNPC completed the Potevio New Energy deal

On September 7, 2023, CNPC acquired 100% of the equity interest of Potevio New Energy, an electric vehicle charging firm through China Beijing Equity Exchange. As part of the effort to build an integrated energy service provider of oil, gas, hydrogen, electricity and non-fuel products, this deal will help improve the new energy network of service stations and create a "charging+" ecosystem. CNPC will contribute to the development of high-quality national charging infrastructure by improving its charging network, expanding facility capacity and building up service capabilities.

In the next three years, the Company will seize the window of opportunity in the new energy sector to complete the strategic deployment of charging business nationwide and become a leading company in charging infrastructure and battery swapping. We will further improve the business ecosystem of "people, vehicles and life" based on service stations, making it easier to power cars, travels, and people's happy lives.

International Trade

Faced with challenges posed by geopolitical conflicts, complex macroeconomic situation and wild volatility in international oil prices, the Company worked with national oil companies from major petroleum producing countries to establish long-term partnerships, which ensures high-quality and efficient access to oil and gas resources from the four strategic channels and secures the stable operations of our industry chain and supply chain. The Company's three international operation hubs for oil and gas trading continued to improve and a 3D marketing network connected by air, land and sea was put in place to build a world-class global energy trader. The Company traded 500 million tons with sales revenue of USD 280.4 billion in 2023.



CNPC's LNG fleet gained new momentum

On July 25, 2023, PetroChina International, COSCO Shipping Energy Transportation and Hudong-Zhonghua Shipbuilding (Group) signed the Shipbuilding & Charter Contract (Phase III) for the construction of two 174,000m³ LNG vessels in Shanghai. CNPC's LNG fleet will add new capacity for energy imports from the sea.

In recent years, PetroChina International has worked with its business partners in building eight 174,000 m³ LNG vessels. Among them 4 vessels, namely Shao Lin, Wu Dang, Kun Lun and E Mei, have already been delivered. These LNG vessels are supporting CNPC's maritime transportation needs and providing a guarantee for LNG imports.



Crude Trading

The Company bolstered its capabilities to ensure crude imports by optimizing the allocation of resources, developing an unimpeded trading system, and diversifying access to crude oil resources. The Company's cross-regional benchmark oil trading reached a record high as the coordination among its global trading teams strengthened.



Refined Products Trading

The Company ensured unimpeded access to export markets and fulfilled its export plan efficiently. The marketing network continued to improve as a consolidated approach to the management of its global jet fuel trading teams. CNPC actively pushes forward the technological transformation and upgrading of its refineries, and carries out the long-term planning for overseas refineries in a systematic manner.



Natural Gas Trading

The Company watched international natural gas markets closely and reduced procurement cost by seizing the opportunities in LNG spot trading, and optimizing the shipping schedule. CNPC's trade resources continued to diversify to ensure the smooth operation of the natural gas industry chain.



Chemicals Trading

As market expansion for chemicals exports advanced actively and the overseas marketing network continued to build up, new breakthroughs were made in the export of many chemical products such as polypropylene and o-xylene.



Maritime Shipping

CNPC formed a shipping company to build a world-class cargo owner fleet, so as to secure maritime oil and gas transportation across oceans.

Support & Services

The Company maximized its expertise and implemented the “dual-driver” (management + technology) approach to bolstering service quality and market competitiveness in areas like oilfield services, engineering & construction, equipment manufacturing and research & consulting, in a bid to support high-quality corporate development.

Oilfield Services

In 2023, in line with the guidelines of "safety, compliance, efficiency and profitability", CNPC's oilfield service segment continued to deepen reforms, and upgrade operation management, which improved its value creation capabilities, and facilitated the building of a modern engineering and technological system. A number of important and impactful wells, e.g., Shendi Take 1 ultra-deep well in the Tarim Basin, were drilled with high efficiency, demonstrating new endeavors in boosting reserve and production growth as well as strengthening strategic support.

Oilfield Services Data

		2021	2022	2023
Geophysical Prospecting	2D seismic data acquired (kilometers)	34,565	37,837	18,789
	3D seismic data acquired (square kilometers)	86,496	80,376	83,335
Drilling	Wells completed	12,019	12,440	9,452
	Drilling footage (million meters)	28.60	31.47	24.90
Well logging	Well logging operations (well-times)	88,017	99,460	94,205
Mud logging	Mud logging operations	10,334	11,241	9,609
Downhole operations	Downhole operations (well-times)	121,330	106,844	112,898
	Formation test (layers)	11,291	12,256	13,258
Offshore engineering	Offshore drilling footage (meters)	217,000	309,000	422,000



In 2023, CNPC acquired data of

18,789

kilometers of 2D lines

83,335

square kilometers of 3D profiles

Geophysical Prospecting

Based on the wide adoption of “broad band, wide azimuth and high density” seismic prospecting techniques, the Company continued to innovate key technologies for data acquisition, promote the use of vibroseis and nodal exploration systems, and build a stronger seismic team of intelligent operations. In this way, it seeks to embrace a new era of intelligent nodal acquisition and provide solid guarantee for high-efficiency exploration.

In 2023, CNPC acquired data of 18,789 kilometers of 2D lines and 83,335 square kilometers of 3D profiles.

Drilling

The Company continued to upgrade and promote acceleration models, deepened integrated geological engineering, and strengthened R&D to debottleneck engineering and technical difficulties hindering efficient exploration and cost-effective production, which achieved great results.

In 2023, the Company spudded 9,129 wells and completed 9,452 wells, with a total drilling footage of 24.90 million meters.

Well Logging and Mud Logging

In 2023, the Company completed 94,205 well-times of logging. Its through-drill pipe logging operations were able to replace imported products with home-produced ones, and the proprietary CPLog equipment was employed in commercial operations overseas.

Based on in-depth geological research and targeted technological debottlenecking on mud logging, the Company adopted an integrated approach to geological engineering to optimize the trajectory design for various reservoir properties. In 2023, the Company completed mud logging operations for 9,609 wells.

Downhole operations

In 2023, the Company completed 113,000 well-times of downhole operations, including 75,000 sections/intervals of fracturing.

Electric fracturing was applied more widely to enable a more cost-effective and eco-friendly fracturing process and deliver significant improvements in efficiency and performance.

A number of high-yield oil and gas wells were identified as risk exploration and formation testing for ultra-deep wells continued to improve, leading to a number of major discoveries. Services capabilities required for snubbing operations were strengthened and 1,868 new wells were successfully commissioned.

Offshore Engineering

In 2023, CNPC Offshore Engineering spudded 148 wells and completed 134 wells, with a total drilling footage of 422,000 meters.

Further exploring external markets, the Company signed a three-year extension contract for platform operations with CNOOC and achieved a new breakthrough in market cooperation with Sinopec.



Shendi Chuanke 1 Well

Engineering and Construction

Throughout the year of 2023, China Petroleum Engineering Corporation performed 157 major projects in oil and gas field surface engineering, refining & petrochemicals, and storage & transportation, both at home and abroad. It ranked No.4 on the ENR's Top 10 Global Oil and Gas Contractors List, and No.31 on the ENR's Top 250 Global Contractors List (measured by revenue generated globally) in 2023.



Ten Projects Built by CNPC in 2023

- Integrated refining and chemical project of Guangdong Petrochemical
- Surface engineering and supporting facilities for Xinghua block (Xinghua 1) in Bayan field of Huabei Oilfield
- Bozi natural gas processing plant of Tarim Oilfield
- Yecheng 500,000 kw photovoltaic power plant of Tarim Oilfield
- Bidirectional gas pipelines for Shuangtaizi gas storage of Liaohe Oilfield
- Jiaozhou Bay offshore natural gas pipeline in Qingdao
- Nan'gang LNG Phase I in Tianjin
- Single-point mooring with double pipelines installation in Bangladesh
- Halfaya gas processing plant in Iraq
- Refining-chemical transformation and upgrading projects
 - Integrated refining-chemical transformation and upgrading project of Guangxi Petrochemical
 - 1.2 Mt/a ethylene plant of Jilin Petrochemical
 - Tarim 1.2 Mt/a ethylene plant (Phase II) of Dushanzi Petrochemical





Oil and Gas Field Surface Engineering

Projects like surface engineering for Bozi natural gas processing plant, Jia County block capacity building in Shenmu gas field, and Xinghua block in Bayan field were completed and put into operation on schedule. The Niger Phase II integrated project is ready for production. The gas processing plant for Halfaya Project in Iraq is mechanically complete. And the upgrading of Halfaya CPF1 & CPF2 gas compression system is under construction.

Storage & Transportation

The Eastern Russia-China Natural Gas Pipeline (Nantong - Luzhi Section) and the Shenzhen LNG Peak-Shaving Station are under construction. The LNG terminal, storage tanks (Phase I) and distribution pipeline for Nan'gang Contingency Reserve Project in Tianjin were put into operation, with the second phase progressing smoothly.

Refining & Chemicals Engineering

The integrated refining and chemical project of Guangdong Petrochemical is fully operational after a successful start-up. The 1.2 Mt/a ethylene plant project of Jilin Petrochemical made steady headway. The integrated refining and chemical project of Guangxi Petrochemical and the Tarim ethane-to-ethylene project Phase II (1.2 Mt/a) of Dushanzi Petrochemical have begun construction.

Overseas Market Development

The Company optimized its global portfolio, delivered good results in overseas market expansions, and broadened the horizon for business growth. CNPC signed the contracts for a number

of projects worth more than RMB 1 billion, including the East African crude oil export pipeline, the EPC contract for propane dehydrogenation unit and polypropylene unit of Sonatrach, ADNOC's Bab Line 9 production and processing facilities, and also the external facilities for its Bab and Bu Hasa P5 station. A diversified combination of core markets, e.g., Iraq and Algeria, solved the problem of over-dependence on any single market.

CNPC received National Quality Engineering Gold Award

The EPC projects of CNPC for Bab oilfield facilities and Halfaya oilfield surface facilities received the 2022-2023 National Quality Engineering Gold Award (Overseas). The Sinochem Quanzhou Petrochemical 1 Mt/a ethylene and refining renovation and expansion project with CNPC participation also received the 2022-2023 National Quality Engineering Gold Award.

In addition, CNPC's EPC projects for Karamaili Gas Field pressurization and cryogenic refrigeration, as well as the Hua'neng 400 MW offshore wind power project in Dafeng, Jiangsu, which the Company participated in, all received the National Quality Engineering Award.

In the field of engineering and construction, the National Quality Award is a state-level honor intended to commend quality engineering projects across industries and disciplines. The Gold Award is the highest honor to recognize quality of engineering and construction in China.



As of the end of 2023, the Company's energy equipment has been sold to

Energy Equipment Manufacturing

The Company deepened the reform of its equipment manufacturing management system and set up Kunlun Manufacturing (Equipment Manufacturing Business Department) to strengthen professional management and integrated planning, optimize lean manufacturing, and bolster R&D debottlenecking in core technology and key equipment, so as to move towards the mid and high end of the industry. The Company's supply chain and marketing network continued to improve, with a strong overseas presence in key oil and gas producing regions in Central Asia, Latin America, the Middle East, Africa, and Asia Pacific. As of the end of 2023, the Company's energy equipment has been sold to more than 90 countries and regions around the world.

Focusing on technological debottlenecking and commercial application of R&D results, the Company strives to tackle challenges in new technologies, new energies and new materials, and further strengthens the research and development of core technologies and key equipment.



The world's first automatic drilling rig for 12,000-meter borehole was included in the Top Ten Mega-Projects of China's central SOEs, providing important support for the exploration and development of 10,000-meter deep and unconventional oil and gas resources.



Electrochemical energy storage and CO₂ supercritical injection compressor units for CCUS operations were put into use to facilitate the low-carbon transformation and upgrading of oil and gas fields.



A dozen of products including titanium alloy drill pipes and high-temperature butterfly valves filled the gap in the domestic market.



Alkaline electrolysis plants with a capacity of 1,200 standard cubic meters of hydrogen production, high-pressure hydrogen storage tanks, hydrogen compressor, and steel pipes for the transportation of hydrogen mixture were developed for real-world scenarios to support the entire hydrogen industry chain from production, storage, and transportation to utilization.

The Company continued to explore the international market of energy equipment. In the Middle East market, 10 hybrid power fast desert moving drilling rigs were exported to the United Arab Emirates, the largest order in five years, and another order for 10 fast moving drilling rigs was secured from Saudi Arabia. Mud pumps were exported to Egypt, Niger and Romania for the first time. Great progress was made for transportation pipelines in Mongolia, Colombia, the Netherlands, and Argentina. Compressors won the bids in Turkmenistan and Brazil. In a word, equipment manufacturing business expanded overseas markets and added new customers.

Capital & Finance

The Company has a complete set of financial licenses, with business operations covering in-house financial services, banking, financial leasing, trust, insurance and insurance brokerage etc. Centered on the alignment of financial services with production needs, the Company's capital & finance business continued to innovate marketing model, strengthen fundamental management and improve risk management, so as to serve CNPC's core business with better performance.

CPF Performance

Functions such as cash concentration, settlement, fund monitoring and financial services are performed through China Petroleum Finance Company, to support the centralized fund management and the efficient utilization of funds. CPF facilitates the transition to green and low-carbon development by promoting green credit such as PV Power Loan to prop up emerging sectors of strategic importance. It also offers tailored financing products like Gas Storage Loan, Exchange Connect and Commercial Paper Finance to back the high-quality development of the Company's core operations.

Banking

Bank of Kunlun serves the core business of energy operations in line with the ideals of "becoming a professional, efficient and customer-centered financial caretaker". Sticking to the business path of exploring the "smaller-sized, difficult, specialized and in-depth" areas of financing, the Bank launched Cloud Counter services, as well as developed and optimized feature products like Tax E-Connect and CNPC E-Connect. Targeting clients along the industry chain, the Bank continued to strengthen its capabilities in financial services and improve the quality and efficiency of development.

Trust

Kunlun Trust continued to explore the road of reform and innovation in energy trust. Leveraging its cross-market resources, it plays an active role in raising funds to support upstream and downstream projects across the industrial chain. Kunlun Trust's industry-finance integration portfolio accounts for 37.2% of its total trust assets under management.

Financial Leasing

Kunlun Financial Leasing deepened marketing efforts for its

core leasing business with a strong commitment to industry-finance integration. The LNG vessel, electric fracturing and other equipment leasing projects were launched to support the green and low-carbon development. The credit rating model, financing capacity evaluation model, and regional risk monitoring model were developed to enable intelligent risk management, as well as improve the analysis, evaluation and identification of risks. A total of RMB 18.4 billion was provided throughout the year.

Insurance

The overseas captive insurance business expanded to 55 projects in 23 countries. The number of banking partners of Generali China Life Insurance increased to 25. Generali China Insurance launched the PV Value Chain Risk Solution and the Solar Irradiation Index Insurance to support the healthy growth of the photovoltaic industry with high-quality products and services, providing a "CNPC Solution" to new energy insurance.

Insurance Brokerage

With a mission to mitigate risks and create value for its clients, Kunlun Insurance Brokerage Company further streamlined, standardized and digitalized its insurance management. The gas insurance business was launched successfully. Looking into the needs of new energy operations, we also provided green insurance services for a number of clean energy projects.

Industrial Capital Investment

Based on the dual approach of "fund investment + direct investment", Kunlun Capital Company focuses on emerging sectors of strategic importance and industries of the future. In 2023, it signed and delivered 8 investment projects that synergize strongly with existing business. An actively managed fund was launched and began to invest in external business, with a number of new fund offers in the pipeline. A "R&D + Industry + Capital" model is taking shape, which facilitated the commercialization of two internal technological innovations.

