



Annual Business Review

The strengths and overall benefits of the Company's four business segments in coordination, resource sharing and integrated planning continued to build up. Oil and gas operations were running smoothly and efficiently across the value chain. Main production indicators improved steadily, highlighting a number of major breakthroughs and discoveries in oil and gas exploration, record-high domestic production (TOE), significant breakthroughs in strategic planning, transformation and upgrading of the Refining, Chemicals and New Materials segment, an effective role of the Support & Services segment and in-depth industry-finance integration.

Oil, Gas & New Energies

In 2022, in view of a revival in demand, the surge in oil prices and the national guidance on promoting new energies, the Company boosted efforts in E&P activities and domestic reserves and production ramp-up to achieve steady growth of crude oil production, rapid growth of natural gas production and an acceleration in new energies.

reserve-replacing areas. In 2022, the Company posted 4 strategic breakthroughs and 15 major discoveries and identified 9 100-million-ton and 9 100-billion-cubic-meter plays.

Domestically, newly proven oil in place totaled 862.16 million tons and newly proven gas in place stood at 684.5 billion cubic meters.

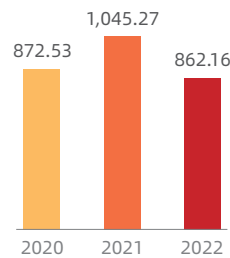
Domestic Exploration and Production

The Company reported a number of major breakthroughs and discoveries in exploration discoveries and achieved record-high domestic oil and gas output.

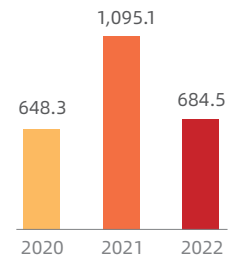
Exploration

Based on overall research and top-level design, exploration efforts were focused on risk exploration and preliminary prospecting in new plays and areas, highlighting concentrated exploration and refined exploration in reserve-adding and

Newly proven oil in place (Domestic)
(mmt)

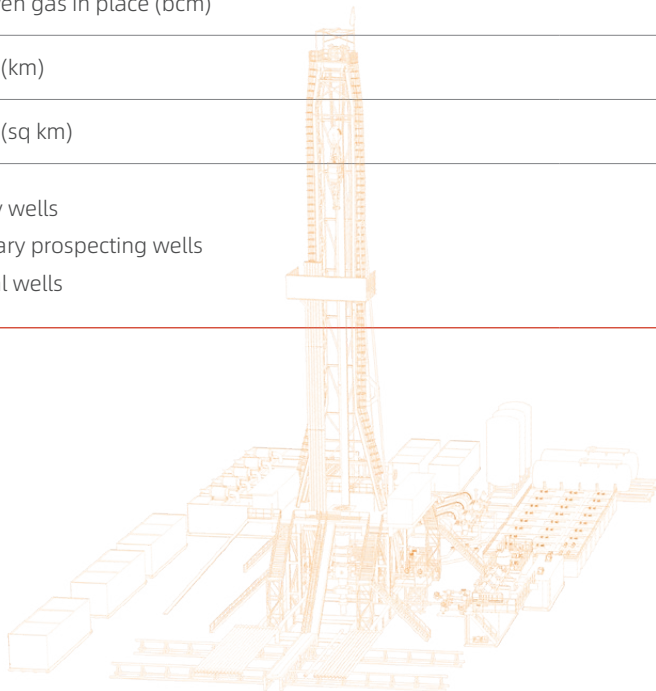


Newly proven gas in place (Domestic)
(bcm)



Reserves and Operating Data (Domestic)

	2020	2021	2022
Newly proven oil in place (mmt)	872.53	1,045.27	862.16
Newly proven gas in place (bcm)	648.3	1,095.1	684.5
2D seismic (km)	7,431	7,264	8,618
3D seismic (sq km)	15,815	14,379	20,236
Exploratory wells	1,658	1,496	1,325
Preliminary prospecting wells	882	776	658
Appraisal wells	776	720	667



Major Discoveries and Achievements in 2022



Oil

Two major achievements were made in the exploration in Ordovician deep carbonates of Fuman oilfield, Tarim Basin and in the Baoding Sag (shallow oil), Bohai Bay Basin among others. A number of 100-mmt plays were discovered and confirmed in the Fuman Ordovician (Tarim), Mahu Fengcheng Formation (Junggar) and Xinghua Tectonic Belt (Hetao) etc.



Natural Gas

Two major breakthroughs were achieved in the exploration of deep natural gas in the middle part of the southern margin of the Junggar Basin and shale gas in the eastern Sichuan Basin etc. A number of 100-bcm plays were discovered and confirmed, including the Northern Slope of the central Sichuan paleo-uplift (Sichuan Basin), continental tight gas, and the Taiyuan Formation limestone in (Ordos Basin).



Shale Oil

Important discoveries were made in shale oil exploration in Ordos Basin, Junggar Basin and Songliao Basin.



Shale Gas

A major breakthrough was made in shale gas exploration in new formations of eastern Sichuan Basin.

Oil and Gas Production

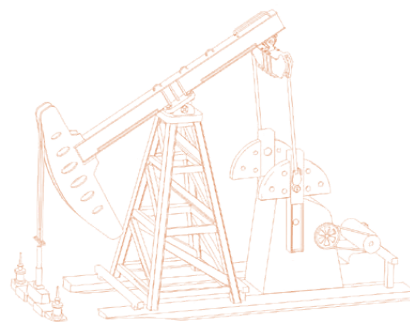
Domestically, the Company produced 105 million tons of crude oil and 145.5 billion cubic meters of natural gas, with an increase of 1.89 million tons and 7.66 billion cubic meters respectively YOY. The full-year production hit a record high at 220.9 million tons of oil equivalent, with an increase of 8 million tons YOY.

Development of Key Oil and Gas Fields

The Company ensured steady output growth in major domestic oil and gas fields despite the pandemic and floods by strengthening the coordination of production, transportation, marketing and storage activities. The oil and gas production of Changqing Oilfield was on the rise and stood above 65 million tons of oil equivalent. Daqing Oilfield continued to maintain crude output around 30 million tons. Tarim Oilfield hit a record high of oil and gas output with a year-on-year increase amounting to 1.28 million tons of oil equivalent. Southwest Oilfield saw a year-on-year increase in production amounting to 2.33 million tons of oil equivalent, marking CNPC's fourth field with an output above 30 million tons. Xinjiang Oilfield's crude output kept rising. Liaohe Oilfield maintained stable production of above 10 million tons despite flood disasters.

Stabilizing Production of Mature Fields

Focusing on mitigating decline rates and enhancing recovery efficiency, the Company improved mature field management, bolstered oil recovery and increased economically recoverable reserves through the measures for refined reservoir interpretation, waterflooding optimization and dormant well restoration, in addition to ongoing efforts in CCUS and development testing. In 2022, the natural decline rate of oilfields and the comprehensive decline rate were 9.12% and 4.05% respectively, down by 0.57 and 0.24 percentage points from a year earlier. Drainage gas recovery and other measures were stepped up in mature gas fields, a range of techniques such as sidetracking of mature wells and stratum review were implemented, and EOR tests for fractured gas reservoirs with edge water aquifers were applied to maintain a natural decline rate at 20% and a comprehensive decline rate at 13%, despite a high initial decline rate of unconventional wells and an ever-increasing output.



Domestic oil and gas production

220.90 million tons of oil equivalent



Domestic crude production

105.00 million tons



Domestic natural gas production

145.5 billion cubic meters



Ramping up Production Capacity

The Company leveraged technological progress to increase single well output and facilitated efficiency with strong management, in a bid to meet the objectives for its production ramp-up projects and ensure a positive pull on output, efficiency and cost reduction. The year 2022 saw an addition of 11.72 million tons to the Company's crude capacity and an addition of 27.83 billion cubic meters to its natural gas capacity.

Unconventional Hydrocarbons

The Company continued to step up unconventional E&P by enhancing the prediction and appraisal of sweet spots, pilot development and demonstration of profit-based capacity building.

Shale oil: The capacity ramp-up for shale oil made steady progress in Changqing Oilfield; the integrated E&P plan for the national shale oil demonstration area in Gulong, Daqing was smoothly implemented; the national shale oil demonstration area in Jimsar, Xinjiang saw a remarkable improvement in its production indicators. The Company produced 3.036 million tons of shale oil in 2022.

Tight gas: Changqing Oilfield continued to expand the test scope for tight gas development while pushing ahead with adjustment to mature fields and production ramp-up in new fields; E&P activities in tight gas gathered pace in Southwest, Jilin and other oilfields. The produced 41.13 billion cubic meters of tight gas in 2022.

Shale gas: Deep shale gas development in Luzhou made a major breakthrough with a 10-bcm/a ramp-up project under way; the shale gas field in southern Sichuan maintained a rapid growth in production. The Company produced 13.92 billion cubic meters of tight gas in 2022.

Coal-bed methane: Focused on southern Qinshui Basin and eastern Ordos Basin, the Company made new breakthrough in deep CBM E&P through enhanced evaluation and pilot testing. The annual CBM output was 3.01 billion cubic meters.

Gas Storage Facilities

The Company continued to expand storage capacity of existing gas storage facilities and made headway with the evaluation and building of new facilities. In 2022, there were 8 capacity expansion projects and 7 new gas storage projects. As at the end of 2022, 15 gas storage facilities have been completed and put into operation. The gas injection stood at 15.7 billion cubic meters with a cumulative peak shaving capacity of 15.9 billion cubic meters in 2022.

Foreign E&P Projects in China

In 2022, the oil and gas output of CNPC's joint E&P operations in China continued to grow, reaching 12.65 million tons of oil equivalent, including 2.89 million tons of crude oil and 12.2 billion cubic meters of natural gas.

The Company deepened the cooperation with international partners, including Shell, Total and Chevron etc., in E&P activities in China around low-permeability reservoirs, heavy oil, shallow-water reservoirs, sour gas, high-temperature and high-pressure gas reservoirs, CBM, and tight gas. By the end of 2022, the Company had 29 joint E&P projects in operation with foreign partners.

The key joint E&P projects demonstrated excellent results in production and operation. The Changqing Changbei Phase-II Project made progress in production ramp-up as the output exceeded 3 billion cubic meters for 15 consecutive years. The Southwest Chuandongbei Project produced more than 2 billion cubic meters for four consecutive years. The Changqing Sulige South Project made technical breakthrough with the annual output hitting a record high. The Dagang Zhaodong Project achieved growth in both production and reserves for new wells and a drop in decline rates for mature wells. The crude oil output of the Liaohe Haiyue Project reached a new high. The Jilin Da'an Project maintained the efficiency and profitability through effective measures for cost reduction.

Overseas Oil and Gas Operations

In 2022, the Company continued to bolster its global operations in Central Asia-Russia, Middle East, Africa, the Americas, and Asia Pacific. A number of major breakthroughs in E&P activities were achieved with overseas equity oil and gas outputs staying at 100 million tons of oil equivalent for four consecutive years. By the end of 2022, the Company's global oil and gas business covered 32 countries and regions around the world.

Oil and Gas Exploration

In 2022, the Company reported a number of major overseas discoveries. A world-class giant oilfield was taking shape in Alam, Brazil; two 100-million-ton hydrocarbon accumulations were identified in Chad and Niger.

Oil and Gas Production

The Company used a project-specific approach to dynamic analysis in production activities and boosted reserves and production ramp-up. In 2022, the Company's overseas equity production reached 102.33 million tons of oil equivalent, including 77.04 million tons of crude oil and 31.75 billion cubic meters of natural gas.

The Mero 1 block of the Libra Project in Brazil and the Arrow Energy's Surat Gas Project Phase I were successfully put into operation; the surface works of Amu Darya Territory B West Gas Field in Turkmenistan became operational ahead of schedule; the first LNG shipment was exported from the Coral FLNG vessel in Area-4, Mozambique; the LNG project Phase I in Canada advanced steadily.



CNPC deepwater oil and gas discovery in Brazil

On November 10, 2022, CNPC announced that it had successfully completed formation testing in Well 1-BRSA-1381-SPS (Curaçao-1), the first exploratory well in the Aram Block of the Santos Basin in partnership with Petrobras.

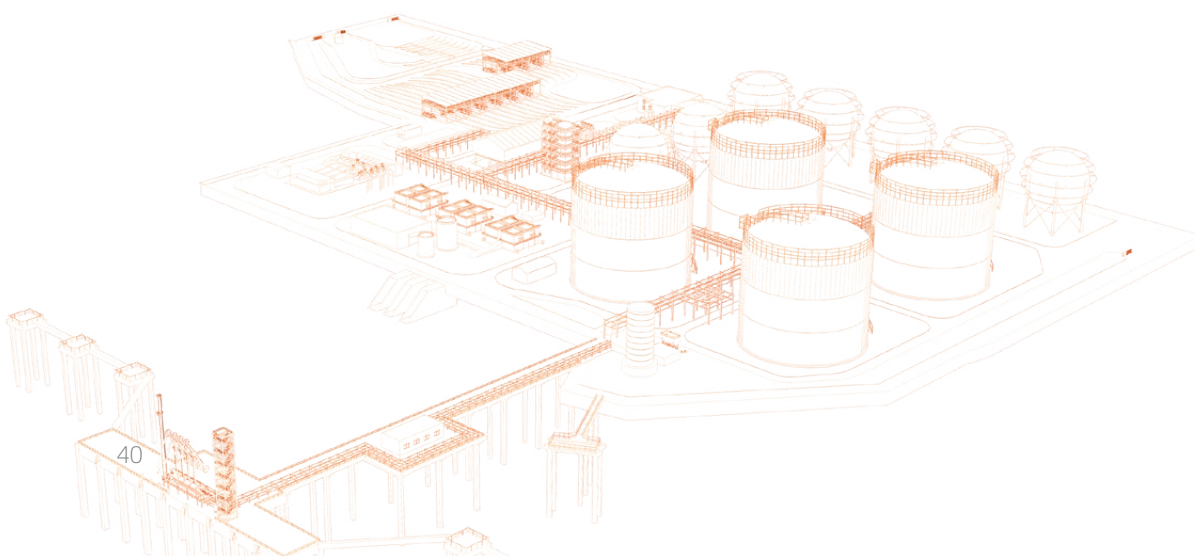
On October 16, 2022, Well Curaçao-1 completed a three-round phase test and achieved high-yield oil flow. Based on the dynamic production data collected during the test, further analysis and appraisal was conducted to confirm the Alam block's resource potential and development prospects.



CNPC world-class deepwater oilfield project starting production in Brazil

On April 30, 2022, Guanabara, a floating production storage and offloading (FPSO) vessel operating for the Libra Project at the Unit 1 of Mero field offshore Brazil started production, marking a new stage of production growth.

Deployed after the FPSO Pioneiro de Libra for early production, FPSO Guanabara is the first major production platform operating at the Mero field, Libra with the capacity to produce 180,000 barrels of oil per day and 12 million cubic meters of natural gas per day, making it the largest FPSO in Brazil.



Pipeline Construction and Operation

The Company's overseas pipelines maintained safe and stable operation. The transnational routes in northwest and southwest delivered 21.28 million tons of crude oil and 51 billion cubic meters of natural gas throughout the year. The Niger-Benin Crude Pipeline construction progressed well with the laying of its undersea pipelines completed. The 15-bcm expansion project of the Kazakhstan South Natural Gas Pipeline was put into operation ahead of schedule. The Chad Phase II debottlenecking project became operational as scheduled.

Refining and Chemicals

The production and operation of the Company's overseas refining and chemicals projects remained steady and orderly,

processing 38.558 million tons of crude oil throughout the year. The refinery in Niger completed an overhaul. The Shymkent refinery in Kazakhstan streamlined its governance structure to ensure smooth operation.

Assets Management

The Company's overseas asset structure continued to optimize to bolster the operational efficiency; an equity purchase agreement was completed in Kazakhstan and a number of highly profitable projects were extended; a contract on oilfield services was signed in Oman; a joint venture was founded with BP for the Rumaila Project in Iraq with positive progress in asset transfer and ownership optimization.



Mero Oilfield, Libra Project, Brazil

Natural Gas Sales

In 2022, domestic natural gas consumption contracted for the first time in years due to the economic slowdown and high international natural gas prices. Faced with these challenges, the Company leveraged its strengths to achieve growth in both domestic sales and market share. The full-year domestic sales totaled 217.8 billion cubic meters, up by 6.0% year-on-year.

Natural Gas Marketing

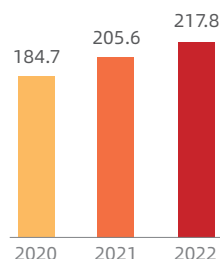
In 2022, 196 new projects were put into operation, delivering CNPC's pipeline gas to many cities in the Pearl River Delta region for the first time and focusing on natural gas supply to the gas-fired power plants in the Yangtze River Delta, Pearl River Delta and Bohai Rim. The peak shaving and operation capacity was further improved and natural gas marketing made steady progress. Marketing efforts targeting end users were stepped up, adding about 0.87 million new end users throughout the year.

As at the end of 2022, the Company's natural gas marketing network has covered 31 provinces, municipalities and autonomous regions. The full-year terminal sales totaled 49.63 billion cubic meters, up by 6.9% from a year earlier.

LNG

The Company further optimized the planning for LNG operations and made headway with the preliminary work of a number of

Domestic natural gas sales (bcm)



LNG terminal projects including the Fujian LNG Terminal, Western Guangdong LNG Terminal, and Jiangsu LNG Terminal Phase III jetty & tank expansion. The Fujian LNG Terminal got a green light from the National Development and Reform Commission. These projects will further improve the reception capacity of the Company's offshore gas corridor and bolster the Company's storage and peak-shaving capabilities. Meanwhile, the Company provided offshore LNG refueling for ships and delivered bonded LNG filling to international ships for the first time in November 2022 at Yantian Port in Shenzhen, marking a good start of new LNG terminal services.

As of the end of 2022, the Company had two LNG terminals in Jiangsu and Tangshan, with a total annual gasification and loading volume of 15.83 billion cubic meters; in 2022, the Company had 15 LNG plants in operation, with a total LNG processing volume of 2.78 billion cubic meters.



Tangshan LNG terminal, Hebei

New Energies

At CNPC, we have incorporated the green and low-carbon development into our development strategy, formulated a roadmap for achieving carbon peak and carbon neutrality, and set out a three-step approach to “Clean Alternative, Strategic Replacement and Green Development”, making new energies part of our core operations. The business plans for new energies have been developed to facilitate the shift to an integrated energy company across oil, gas, thermal energy, electricity and hydrogen.

Hydrogen Energy

Tapping into the hydrogen energy business, the Company's high-purity hydrogen capacity increased by 1,500 t/a in 2022, with the total high-purity hydrogen capacity reaching 3,000 t/a. In 2022, 23 hydrogen refueling stations and integrated energy service stations were completed. Preliminary studies on 4 hydrogen purification projects were rolled out, including the Sichuan Petrochemical Project, which became operational in 2022. The first hydrogen-fueled torch was used to light the Winter Olympics as the Company

maintained steady and constant supply of hydrogen energy to serve the Beijing Winter Olympics and Paralympics.

Geothermal Energy

In 2022, the first medium-deep geothermal heating project started construction in Beijing. The coverage of geothermal heating increased by 10.06 million square meters, with the total area of geothermal heating reaching 25 million square meters, replacing 570,000 tons of standard coal annually.

Wind and Solar Power Generation

In 2022, the Company received a 10.2 million-kilowatt approval for clean power generation as the total installed capacity exceeded 1.4 million kW. A 300,000-kW grid-connected photovoltaic power plant in Yumen Oilfield was near completion and the Xinghuo Floating Photovoltaic Demonstration Project in Daqing Oilfield was connected to the grid. The Company worked with State Power Investment Corporation in signing a 900,000-kW offshore wind power project in Guangxi.



The first grid-connected floating photovoltaic project of CNPC

In July 2022, the CNPC-designed Xinghuo Floating Photovoltaic Demonstration Project in Daqing Oilfield was connected to the grid. With an installed capacity of 18.7 megawatts, the Company's first floating photovoltaic project generates 27.5 million kWh of electricity annually and reduce carbon dioxide emissions by 22,000 tons compared with thermal power. As at the end of 2022, the project has generated 13.04 million kWh of electricity.



Oilfield Services

In 2022, the Company's oilfield services provided a strong support for adding reserves and bolstering production under the guidance on safety, compliance, efficiency and profitability and in line with the strategy of "innovation, market orientation, cost-effectiveness and integration".

Geophysical Prospecting

In 2022, CNPC acquired data of 38,000 kilometers of 2D lines and 80,000 square kilometers of 3D profiles.

Based on the wide adoption of the "broadband, wide azimuth and high density" seismic prospecting techniques, the Company continued to introduce novel techniques for data acquisition, develop equipment and supporting technologies related to nodal exploration, build digital seismic study teams and promote the wide adoption of intelligent nodal acquisition to enable high-efficiency exploration.

Drilling

The research efforts targeting "stuck-point" issues in key basins in China made headway in 2022, with a focus on integrated geological engineering to solve the "pain points" hindering efficient exploration and cost-effective production.

In 2022, the Company spudded 12,569 wells and completed 12,440 wells, with a total footage of 31.47 million meters.

Well Logging and Mud Logging

In 2022, the Company completed 99,460 well-times of well logging, up by 13.0% year-on-year. The proprietary high-temperature high-pressure small-diameter logging tool, CPLog, was successfully field-tested to replace imported instruments; eccentric NMR logging tools realized domestic replacement.

The Company has deepened comprehensive geological research and logging technology, enabling a comprehensive range of field geosteering services based on geological, reservoir, engineering and seismic data. The Company completed 11,241 instances of mud logging in 2022.

Oilfield Services Data

		2020	2021	2022
Geophysical prospecting	2D seismic data acquired (kilometers)	18,027	34,565	37,837
	3D seismic data acquired (square kilometers)	85,443	86,496	80,376
Drilling	Wells completed	11,117	12,019	12,440
	Drilling footage (million meters)	25.95	28.60	31.47
Well logging	Well logging operations (well-times)	81,702	88,017	99,460
Mud logging	Mud logging operations	10,359	10,334	11,241
Downhole operations	Downhole operations (well-times)	114,185	121,330	106,844
	Formation test (layers)	9,805	11,291	12,256
Offshore engineering	Offshore drilling footage (meters)	301,100	217,000	309,000



Geophysical prospecting in Qaidam Basin, BGP

Downhole Operations

In 2022, the Company completed 107,000 well-times of downhole operations, including 71,000 sections/intervals of fracturing.

Electric fracturing was widely used to enable a more cost-effective and eco-friendly fracturing process. The “dual-fracturing” mode set a record in both the daily number of plug-and-perf multi-stage fracturing sections per unit and the pumping fluid volume, filling the gap in the domestic “dual-fracturing” area.

A number of high-yield oil and gas wells were identified in Xinjiang, Sichuan and Tarim fields as risk exploration and formation testing for deep and ultra-deep wells continued to improve. Services capabilities required for snubbing operations were strengthened and more than 1,626 new wells were successfully commissioned.

Offshore Engineering

In 2022, the Company spudded 121 offshore wells and delivered 107 wells with a total drilling footage of 309,000 meters.

The repair project addressing the deformation of the Cezhen submarine pipeline for PipeChina was implemented in a safe and efficient manner, providing a novel permanent repair solution for deformation and defects of submarine pipelines.

The Company’s first integrated production-repair platform, Dagang oil field Chenghai 1-1, was successfully designed, constructed, installed and commissioned to fill the gap in a number of technical processes in China.

Refining, Chemicals, Marketing & New Materials

In 2022, the Company continued to promote the transformation and upgrading in refining and chemicals and optimize the business structure. CNPC processed 164.9 million tons of crude oil domestically, and produced 105.74 million tons of refined products and 7.42 million tons of ethylene throughout the year. The new materials output increased by 56.3% year on year, as the production and development efforts stepped up. Based on in-depth market research and focusing on retailing, wholesales & direct sales and non-fuel business, domestic sales of refined products reached 104.23 million tons.

Refining and Chemicals

Based on a market-oriented approach, the product portfolio was further optimized. The Company continued to improve the operational stability of its refining and chemical plants, facilitate transformation and upgrading with the construction of key projects and accelerate new material projects to enhance its business competitiveness.

Optimization of Product Portfolio

The product portfolio of refining and chemical operations continued to optimize, with a focus on reducing refined products and increasing new chemicals, specialty chemicals, and high-end and high-value products, in order to maximize the profitability along the value chain. In 2022, the Company's refinery yield was 64.1%, with a year-on-year decrease of 1.2 percentage points. 16 of the 28 key technical and economic indicators for the Company's refineries improved from a year earlier.

In response to the sulfur limit regulations of the International Maritime Organization (IMO), the Company ramped up R&D and production of low-sulfur marine fuels and produced 6.40 million tons of low-sulfur marine fuels throughout the year. More specialty chemicals were produced, as the outputs of paraffin wax and petroleum coke increased by 5.5% and 6.4%, respectively.

R&D and production of new chemicals and specialty chemicals gained momentum and the efforts to cut back refined products and ramp up chemicals output made remarkable headway. The output of ethylene, synthetic resin, chemical fertilizers and other products grew steadily.

Refining and Chemicals Operating Data (Domestic)

	2020	2021	2022
Crude runs (mmt)	160.02	166.74	164.90
Utilization rate of refining units (%)	82.3	81.6	80.8
Refined product output (mmt)	107.23	108.92	105.74
Gasoline	46.28	49.39	43.51
Kerosene	10.23	11.29	8.58
Diesel	50.72	48.25	53.65
Lube oil output (mmt)	1.58	1.89	1.68
Ethylene output (mmt)	6.35	6.71	7.42
Synthetic resin output (mmt)	10.29	10.90	11.62
Synthetic fiber output (mmt)	0.03	0.02	0.03
Synthetic rubber output (mmt)	1.00	1.04	1.04
Urea output (mmt)	2.16	2.42	2.55
Synthetic ammonia output (mmt)	1.86	2.00	2.05

Construction of Large Refining & Chemical Bases

As of the end of 2022, the Company had eight large integrated refining-petrochemical complexes and fourteen 10 Mt/a refineries in China.

A number of key petrochemical projects made significant headway. The integrated refining and petrochemical project of Guangdong Petrochemical and the ABS project of Jilin Petrochemical (Jieyang) were completed; two large ethylene projects of Jilin Petrochemical and Guangxi Petrochemical started construction; the specialty nitrile-butadiene rubber project based on proprietary technology was put into operation at Lanzhou Petrochemical.

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 855,000 tons, with a year-

on-year increase of 56.3%. Medical-grade polyolefin, solution styrene-butadiene rubber (SSBR) and cathode coke etc. were ready for commercial production, marking significant progress in the new materials business.

Fast-paced construction of new materials bases. A 1.2 Mt/a ethylene plant and its supporting works started construction at Jilin Petrochemical as part of the transformation and upgrading process to increase the production of high-value chemical products and new materials such as ABS and ethylene-propylene rubber. The construction of an integrated refining-petrochemical complex kicked off at Guangxi Petrochemical to facilitate the upgrading of the Company's SSBR products.



SSBR, an innovative new product

On June 28, 2022, China Petroleum and Chemical Industry Federation announced 15 new materials and innovative products for 2021 at the 2022 Petrochemical Industry Development Conference, including SSBR from Dushanzi Petrochemical.



The 300,000 t/a-PPH plant of Liaoyang Petrochemical

Marketing and Sales

In 2022, the Company stepped up its marketing efforts in response to the repeated waves of the pandemic, extreme weather conditions and regional demand-supply imbalances to improve the quality and efficiency of marketing operations.

Refined Products

In 2022, leveraging the integrated, synergetic strengths, the Company improved the coordination between production and sales, promoted a membership system in retailing and facilitated tie-in marketing for fuel & non-fuel products to increase sales and improve efficiency. A variety of marketing models were adopted, including community-based marketing, fine marketing, electronic refueling cards and apps and direct sales/wholesale apps, to strengthen the multi-tiered and classified account management. The full-year domestic sales of refined products reached 104.23 million tons.

Marketing & Sales of Chemical Products

In 2022, the Company sold 32.6 million tons of chemical products, up by 2.6% year on year, and a 24.2% increase in high-end high-value product brands, by leveraging the integrated system for technical support and customer service, broadened channels, hedging services for chemical products, CNPC e-Chemicals Platform and digital marketing.

Marketing Network

Based on a differentiated approach, the Company continued to fine-tune investment and prioritize R&D activities, optimize the network development structure and strengthen cooperation through various channels. Targeting new business scenarios such as hydrogen refueling stations and battery charging/swapping stations, the Company promoted transformation and upgrading of its marketing operations as part of the effort to become an internationally recognized leading service provider in refined products, gas, hydrogen, electricity and non-fuel products. A total of 177 service stations were built throughout the year. Of them, 204 new service stations, 23 hydrogen refueling stations (integrated energy service stations) were completed and 280 battery swap station became operational. As of the end of 2022, the Company had a total of 22,655 service stations in operation across the country.

Non-fuel Business

The Company promoted integrated marketing of refined products, pre-paid fuel cards, non-fuel products and lubricants and improved the fuel-to-non-fuel conversion rate by seizing key market opportunities and shopping seasons; based on resource consolidation throughout the value chain, the Company worked with more than 100 famous brands, including procurement and own brand partners, to improve customer engagement in a “product+service+ refueling card + fuel” model; procurement capabilities were strengthened to support a broader portfolio of own brand products; delivery capabilities were improved to support regional coordination in the supply chain in Beijing, Tianjin and Hebei. The Company worked with Meituan and JD to provide home delivery in more than 1,000 outlets and began to build e-commerce warehousing to solve the “last-mile delivery” problem. The sales revenue from non-fuel products totaled RMB 27.76 billion from convenience stores in 2022.



CNPC joining hands with leading companies in creating a new battery swap ecosystem

On September 21, 2022, SEPT New Energy Technology (“Energiex”), a company jointly founded by CNPC, Sinopec, SAIC, CATL and Shanghai International Automobile City Corporation, was inaugurated. Centered on battery leasing, Energiex specializes in R&D in battery swapping, battery operation management and big data services etc. It will provide an entire ecosystem under the concept of vehicle-battery separation and create a standardized platform to provide safe, reliable, easy-to-use and high-quality mobility experience for NEV owners.

CNPC and these leading companies will bring together their strengths in clean energy supply, R&D in NEV and battery technology, intelligent connected vehicle and intelligent transportation to build a new battery leasing platform under the concept of vehicle-battery separation, provide battery-as-a-service, promote the shift from fossil fuel-based vehicles to battery-based vehicles, and provide a standardized and generic solution for the industry.

International Trade

In response to changing situations and focused on mitigating business risks, the Company effectively performed the duty of “ensuring supply, reducing cost and improving efficiency” through a series of measures, i.e. optimizing imported crude resources, increasing pipeline gas imports, optimizing spot LNG purchases, boosting overseas equity oil and gas sales, coordinating the export of refined products and chemical products and providing hedging services in an orderly manner. The Company’s three international operation hubs in Asia, Europe and the Americas continued to bolster operation management and build up the ability to operate across regions, markets and product lines. The Company posted a trade volume of 430 million tons and sales revenue of USD 323.9 billion for 2022.

Crude Trading

The Company managed to reduce cost and improve efficiency in crude trading by optimizing the allocation of resources, developing an unimpeded distribution system, expanding access to crude oil resources, implementing a diversified and quality-centered procurement strategy and optimizing consolidated shipment and transportation plans. The Company enhanced crude trading across regions and markets and established the trans-Atlantic sweet crude trading group; improved overseas time-charter fleets and warehousing facilities to provide a stronger support for crude trading.

Refined Products Trading

Refined products trading based on consolidated shipment across categories and refineries continued to gain momentum as new

breakthroughs were achieved in Vietnam, Mexico, Mediterranean, Caribbean and other places. Biodiesel business continued to expand and ranked first in Europe in terms of trade volume and witnessed the first bio-jet fuel exports of China in 2022. The Company actively participated in futures trading in domestic futures exchanges and ranked among the top in terms of the delivery of high-sulfur and low-sulfur fuel oil contracts.

Natural Gas Trading

Based on analysis of international natural gas markets, the Company responded actively to changes in demand and supply conditions and market imbalances to ensure the stability in its natural gas industry chain, peak shaving in summer and natural gas supply in winter.

Chemicals Trading

As market exploration 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 paraffin and toluene.

Maritime Shipping

Maritime shipping operations were further streamlined as the Company’s managed fleet continued to expand. The CNPC-invested LNG ships Shaolin and Wudang were delivered and put into operation. Meanwhile, we continued to build up shipping capacity in the forms of voyage charter, time charter and contract of affreightment (COA) etc. to support our international trade.



Crude oil jetty on Made Island, Myanmar-China crude oil pipeline

Support & Services

The Company leveraged its expertise and implemented the “dual-driver” (management + technological innovation) approach to bolstering service quality and market competitiveness in Engineering & Construction, Equipment Manufacturing and Research & Consulting to support high-quality development.

Engineering & Construction

As of the end of 2022, the Company performed 81 major projects in oil and gas field surface engineering, refining & petrochemicals and storage & transportation at home and abroad. China Petroleum Engineering Corporation ranked No. 3 on the ENR’s Top 10 Global Oil and Gas Contractors list, No. 30 on the ENR’s Top 250 Global Contractors (measured by revenue generated globally) in 2022.

Oil and Gas Field Surface Engineering

The surface project for capacity ramp-up (part of the processing plant) at Shenmu Gas Field in Jidong Oilfield and the surface project for the development of carbonate reservoirs at the Yuke Block in Hudson Oilfield became operational; the Halfaya Gas Processing Plant in Iraq and the surface project phase 2 for the Niger Oilfield progressed steadily.

Storage & Transportation

The Eastern Russia-China Natural Gas Pipeline (Anping-Tai’an Section and Taian-Taixing Section), Tangshan LNG Distribution Pipeline, the trunk pipeline for gathering and transporting shale gas from the Weiyuan-Luzhou Block were put into operation; the Third West-East Gas Pipeline, Fourth West-East Gas Pipeline, Eastern Russia-China Natural Gas Pipeline (Nantong-Luzhi Section) progressed well; a number of new projects started construction, including LNG terminal projects in Rudong (Jiangsu), Huizhou (Guangdong) and Tangshan (Hebei) and the subsea natural gas pipeline at Jiaozhou Bay (Qingdao).



Project panorama, Guangdong Petrochemical

Refining & Chemicals Engineering

The integrated refining and petrochemical project of Guangdong Petrochemical was completed; the transformation and upgrading projects of Jinzhou Petrochemical and Jinxi Petrochemical became operational; steady progress was made in the two large ethylene projects of Jilin Petrochemical and Guangxi Petrochemical; contracts were signed for the integrated refining and petrochemical project of Yulong Petrochemical and the Verbund cracker project of BASF (Guangdong).

New Energies & New Materials

The 120 MW photovoltaic power generation project in Tuha Oilfield was connected to the grid; new material projects, including Liaoyang Petrochemical CHDM, Lanzhou Petrochemical Specialty NBR and Dushanzi Petrochemical SSBR produced quality products.

Overseas Market Development

The Company achieved good results in optimizing its overseas market layout and exploring the international markets. The Company signed the contracts for the West Qurna-1 Field (Iraq) and the new crude processing plant for degassing station at the Rumaila Project in Iraq, the surface project for Uganda's Kingfisher Oil Field and the national gas pipeline project for Nigeria's Ajaokuta-Kaduna-Kano (AKK) pipeline; the Company entered Uganda's engineering general contracting (EPC) & project management contracting (PMC) market for the first time; the Company signed the contracts for front-end engineering design (FEED) of ABU Dhabi West-East Pipeline and detailed design of Iraq Nasiriyah Natural Gas Processing Plant, marking further achievements in high-end overseas design & consulting business; the EPC contract for PTT's natural gas pipeline from Pangpakorn to South Bangkok Power Plant Phase-I was signed, strengthening the Company's presence in Southeast Asia as a traditional market; licensing + EP (engineering and procurement) contracts for 1,000 t/a polyester plant in Ufrex, Egypt and 800 t/a polyester plant at Sanathan Textiles, India were concluded, with overseas polyester projects enjoying a significant increase in market share year-on-year.

Petroleum Equipment Manufacturing

The Company adheres to the direction of "high-end, intelligent and green" development, deepens the reform of the system and mechanism, established the Equipment Manufacturing Department, strengthens the professional management and integrated planning of equipment manufacturing, promotes the key core technology research and intelligent development of digital transformation, and promotes the construction of a "domestically leading and internationally top-rated" service provider in equipment manufacturing. The Company's supply chain and marketing network continued to grow with overseas branches in Central Asia, Latin America, the Middle East, Africa, Asia Pacific and other international oil and gas productions regions. By the end of 2022, the Company sold petroleum equipment to more than 80 countries and regions around the world.

The Company stepped up R&D efforts in core technology and key equipment, with a focus on green, low-carbon and eco-friendly new technologies and new energies. New breakthroughs have been made in the research and application of key equipment such as the first silent 8000-meter automated drilling rig in China, the world's first 18Cr stainless steel continuous pipe, CCUS supercritical carbon dioxide injection compressor unit, the first 1.2 megawatt flywheel electrochemical hybrid energy storage system in China, and green electric energy storage efficient intelligent boiler. Some products have achieved international advanced levels in comprehensive performance. The 7000-meter automated drilling rig and the Model 7000 electric drive fracturing sled with one click human-machine interaction of Baoji Oilfield Machinery have been selected as the first major technical equipment catalog by the Ministry of Industry and Information Technology and the National Energy Administration.

The Company attaches importance to the International marketing of equipment products, actively responded to severe challenges in the global market, and provided material equipment and service support for many projects such as the Niger-Benin crude oil export pipeline, the expansion of Ronier power station in Chad, and the pressurization and transformation of Tanzania natural gas treatment plant. The cross-border long-term service of submersible electric pumps has increased by 21%, maintaining the international market share of the Company's equipment products, making new progress in global equipment product marketing.

Capital & Finance

The Company has a complete set of financial licenses, with business operations covering in in-house banking, financial leasing, trust, insurance, insurance brokerage etc. Centered on industry finance services and anchored to an industry-leading position, the Company's capital & finance business follows a problem-solving, disciplined and innovative approach to bringing the alignment of financial services with production needs and the collaboration between financial institutions to the next level. As green finance gained a strong momentum, the Company advanced on all fronts, especially in new energies, new materials and new technologies.

Capital Management

Functions such as cash concentration, settlement, fund monitoring and financial services are performed through China Petroleum Finance Company, a subsidiary of the Company, to support the centralized capital management and the effective utilization of funds. Serving the real economy and centered on industry finance services, China Petroleum Finance Company facilitated the transformation to the green and low-carbon development by promoting green credit and offering tailored financing products such as Gas Storage Loan, Exchange Connect and Commercial Paper Finance to support the high-quality development of the Company's core operations.

Banking

Bank of Kunlun, a subsidiary of CNPC, served the core energy operations by sticking to the business path of exploring the "smaller-sized, difficult, specialized and deep-level" areas of financing and creating exclusive solutions for the industry chain, in a bid to bolster business results and improve quality and efficiency. The bank achieved a new breakthrough in its Chemicals Sales Loan business, targeting clients along the industry chain; efforts were made to provide industry finance products through online platforms; the CNPC E-Connect business grew steadily.

Trust

Kunlun Trust, a subsidiary of CNPC, actively sought to invest in green and low-carbon areas and new energies to promote business growth in new energies, new materials, new business models and green finance, and leveraged our financial strength to protect lucid waters and lush mountains. In 2022, we worked with Tzu Chi Siming Medical Foundation, the largest medical assistance foundation in China, to assist in the development of healthcare.

Financial Leasing

Kunlun Financial Leasing, a subsidiary of CNPC, leveraged its expertise in leasing and financing to promote the development of a petroleum equipment leasing platform; a credit rating model was developed to improve quantitative evaluation of credit risks. A total of RMB 16.5 billion was provided throughout the year.

Insurance

Our captive insurance cases were included in the list of China's Most Influential Coverage Cases for three consecutive years. Generali China Life Insurance won many awards and accolades, including 2022 Insurers with Excellent Investment Performance, 2022 Zhenshan Business Award, and China Banking and Insurance Service Innovation Award. Generali China Life Insurance made a strategic move in new energies, developed an integrated risk coverage solution and provided novel green insurance products and services to support the transformation to green and low-carbon development.

Insurance Brokerage

Kunlun Insurance Brokerage Company, a subsidiary of CNPC, leveraged industry-finance integration to provide comprehensive insurance services for CNPC's energy supply. In December 2022, the CNPC Commercial Property Insurance Information System developed by Kunlun Insurance Brokerage Company was put into service.

Industrial Capital Investment

Kunlun Capital Co., LTD., a subsidiary of CNPC, was incorporated with the market-oriented governance structure and operation system. Kunlun Capital watched closely opportunities in new energies, new materials and new technologies, especially lithium battery materials, biodegradable materials and heterojunction solar cells. In 2022, Kunlun Capital kicked off its first technology transfer project across a number of funds, marking a good start in business.



Emerging Industry: Kunlun Capital's first investment

On April 19, 2022, CNPC Kunlun Capital Co., LTD. signed a strategic investment agreement with Shanghai Shanshan Lithium Electric Material Technology Co., Ltd. via a "cloud signing" ceremony. As Kunlun Capital's first investment since its foundation, the project marks a successful start of its investment business.

