



Annual Business Review

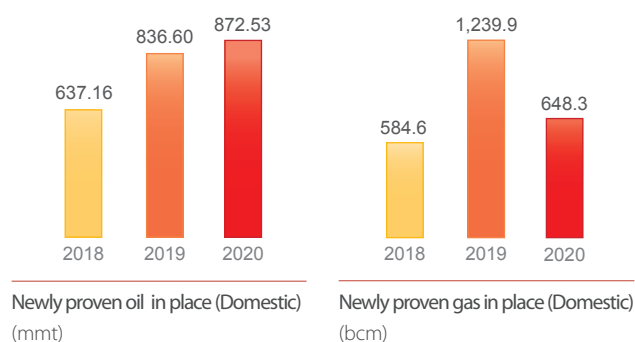
Focusing on market orientation and economic returns, the company continues to optimize production organization and resource allocation, promote integrated and coordinated operation on oil and gas production, refining, marketing and trade activities, improve international operation performance and bolster market competitiveness in supporting business.

Exploration and Production

We made significant progress in domestic E&P as a result of our corporate reform and technological innovation, well-planned and enhanced E&P activities, unconventional resources development, and active engagement in foreign cooperation in China.

Exploration

In 2020, sticking to the resource strategy, we optimized resource allocation and investment portfolio, stepped up risk exploration and preliminary prospecting, strengthened overall exploration, precise exploration and high-efficiency evaluation in key basins/areas, and reinforced shale oil/gas exploration. We achieved five key strategic breakthroughs and 15 major discoveries, including eighteen 100-million-ton or 100-bcm proved plays, registering a record high growth in oil and gas reserves. Domestically, newly proven oil in place totaled 872.53 million tons and newly proven gas in place stood at 648.3 billion cubic meters.



Reserves and operating data (Domestic)

	2018	2019	2020
Newly proven oil in place (mmt)	637.16	836.60	872.53
Newly proven gas in place (bcm)	584.6	1,239.9	648.3
2D seismic (kilometers)	18,182	11,478	7,852
3D seismic (square kilometers)	12,570	15,204	15,815
Exploration wells	1,803	1,405	1,658
Preliminary prospecting wells	997	733	882
Appraisal wells	806	672	776

Major discoveries and achievements in 2020

A number of important achievements in oil and gas exploration were made to provide a solid resource base for production growth.

Oil

High-yield oil flows were obtained at exploratory wells in the Fukang Sag of the Junggar Basin, the northern Tarim Basin, the Ganchaigou area of the Qaidam Basin, and the Linhe Depression of the Hetao Basin.

Natural gas

High-yield gas flows were obtained at exploratory wells in the central and western parts of the Sichuan Basin and the Bozi area of the Tarim Basin, identifying a number of enriched and prolific zones.

Shale oil

High-yield oil flows were obtained at exploratory wells in the Mahu area of the Junggar Basin, the Gulong Sag of the Songliao Basin, and the Qikou Sag of the Bohai Bay Basin as remarkable progress was made in geological theories and exploration techniques for shale oil.

Oil and Gas Production

The year 2020 saw significant advances in stabilizing oil production and boosting gas output under the Seven-year E&P Action Plan, marking an important year in the company's domestic upstream activities. Domestically, we produced 206.32 million tons of oil equivalent throughout the year, exceeding 200 million tons for the first time in our history; crude production rose for the second year in a row to 102.25 million tons; natural gas output hit a new high at 130.6 billion cubic meters (more than 100 million tons of oil equivalent). The gas to oil ratio was further optimized as the proportion of natural gas in our domestic oil and gas production stood above 50% for the first time.

Development of Key Oil and Gas Fields

Major breakthroughs were made in the development of our domestic oil and gas fields in 2020. The giant Changqing Oilfield boasted an annual production capacity of 60 million tons of oil equivalent. Daqing Oilfield maintained its crude production at over 30 million tons for six years in a row and remained the largest crude oil producer in China. Tarim Oilfield strived to go beyond the limits of ultra-deep E&P activities and produced more than 30 million tons of oil equivalent. Southwest Oilfield made headway in shale gas developments and boosted its annual capacity to 30 billion cubic meters. Xinjiang Oilfield took ramp-up measures targeting at the conglomerate reservoirs in the Mahu region, resulting in steady production increase. Liaohe Oilfield rolled out EOR techniques such as steam flooding, fire flooding and polymer-surfactant flooding to stabilize production above 10 million tons.



Domestic oil and gas production

206.32

million tons of oil equivalent



Domestic crude production

102.25

million tons



Domestic natural gas production

130.6

billion cubic meters

Full-year output of Changqing Oilfield exceeding 60 million tons of oil equivalent

Changqing Oilfield was put into development in 1970. The Ordos Basin, where the oilfield is located, is blessed with rich hydrocarbon resources but features complex geological conditions, poor resource endowments, predominance of unconventional resources, and reservoirs with low permeability, low pressure and low abundance.

The annual output of Changqing stayed at 1 million ton level until the end of the 20th century. In the new millennium, this mature oilfield has revived with the fastest increase both in reserves and production in China, thanks to theoretical and technological innovations. In the past 20 years, the oilfield's annual output increased from over 6 million tons in 2000 to more than 60 million tons in 2020 marking a miracle of efficient development of unconventional oil and gas fields in China.

Innovation-driven high quality development. At Changqing Oilfield, technological innovation is considered as the primary driving force for business growth. By deepening understandings on reservoir geology, overcoming technical bottlenecks, sharpening engineering tools and developing process facilities, we have formed five innovative reservoir-forming theories and four series of innovative technical solutions for the world-class challenge in tapping low-permeability reservoirs. Ten high-efficiency development models have proved successful in Ansai, Xifeng, Sulige and other blocks. All this has enabled the oilfield to remain profitable and achieve sustained, rapid growth in oil and gas production.

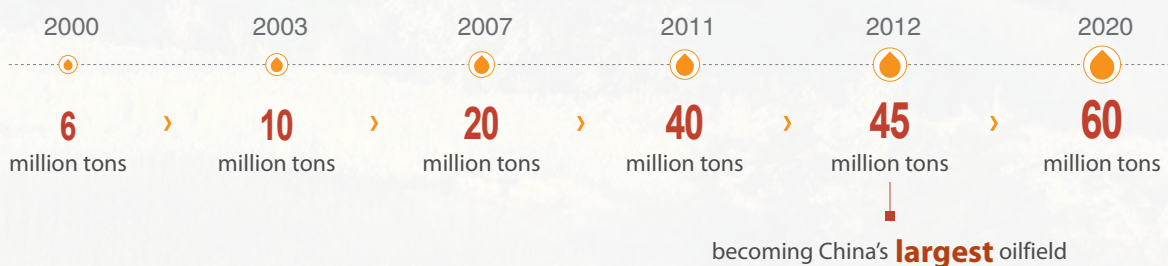
Impressive progress in building smart oil and gas fields. Launching the initiative of building smart oil and gas fields in 2014, Changqing is the first oilfield in China to use drones for inspecting oil and gas assets. Through the integration of information technology into industrial systems, digital management has been deployed in all E&P, gathering and transportation, and supporting processes, resulting in much improved efficiency and

productivity. So far, the digitalization rate in Changqing reached 96.7% for oil fields and 100% for gas fields, indicating a revolutionary shift of production organization. Since 2007, Changqing's annual output has increased from over 20 million to more than 60 million tons of oil equivalent and the number of oil/water/gas wells has rose from 23,600 to 89,000. Meanwhile, the total number of employees has remained around 70,000. Changqing Oilfield has nearly doubled its labor productivity during the 13th Five-Year Plan period.

Securing supply to the domestic market. Over the past five decades, Changqing Oilfield's proven oil and gas in place have amounted to 5.9 billion tons and 4 trillion cubic meters respectively, accounting for 20% of China's total. Annual increment to proven oil in place has stood above 300 million tons for 10 consecutive years and annual addition to proven gas in place has stood above 200 billion cubic meters for 14 consecutive years. A total of 35 oil fields and 13 gas fields have been successfully developed at Changqing, producing a total of more than 760 million tons of oil equivalent. As China's largest gas province, Changqing has provided more than 450 billion cubic meters of natural gas to over 50 medium to large cities across the country and helped reduce carbon emissions by more than 1.5 billion tons, playing an important role in improving China's energy consumption mix, keeping the sky blue and fighting the battle against pollution.

Acting on Green Development. In line with the concept of green development, Changqing has actively engaged in protecting the ecological environment along the Yellow River. Over the past three years, Changqing has saved land uses by over 17,300 *mu* and created five eco-demonstration areas in the Longdong oil play. In addition, it has planted more than 7,500 *mu* of carbon sink forests and added 3 million square meters of green land every year in its operating area, with a green coverage ratio up to 95%.

Annual output breakthroughs (oil equivalent)



Stabilizing Production of Mature Fields

Focusing on mitigating decline rate and enhancing recovery efficiency, we have been striving for stable output in mature fields by implementing targeted measures and deploying new development modes. In 2020, the natural decline rate, composite decline rate and the growth of water cut were reduced in our oil fields and the natural decline rate and composite decline rate for gas fields remained roughly flat at a historically good level. Remarkable results were achieved in major pilot production tests, seeing much improved recovery efficiency in high-water-cut, high-recovery-percentage reservoirs, low-permeability and low-abundance reservoirs, and unconventional oil reservoirs.

Building up production capacity

Effectiveness is regarded as the focus for building up production capacity. Single well output was increased through technological progress, and capacity building efficiency was facilitated by management innovation. The year 2020 saw an addition of 12.86 million tons to our crude production capacity and an addition of 28.9 billion cubic meters to our natural gas production capacity. In nine demonstration projects, new capacity building models were developed for shale oil, tight oil, ultra-low permeability and carbonate reservoirs. In the Longdong National Shale Oil Demonstration Area at Changqing, a 1Mt/a capacity-building project was substantially completed, heralding the start of large-scale development at the 1-billion-ton Qingcheng oilfield. Several key capacity building projects at Tarim picked up pace.

E&P Technological Innovations

We maintained a focus on innovative E&P technologies to boost productivity at our oil and gas fields. Technological advances in drilling and completion of deep wells and horizontal wells resulted in significant improvement in speed and efficiency. Low-cost fracturing continued to evolve to boost production greatly. Stable production was supported by EOR techniques such as finely-controlled water flooding, chemical compound flooding and composite thermal recovery etc. Our transition to digital oilfield is paying off as 12 oil and gas fields, including Changqing, Southwest, Tarim and Dagang, see digital technologies fully integrated into production and operation.

Underground Gas Storages

We continued to tap the potential of operating storages and boosted their gas delivering capacity. Meanwhile, new storages were built for the company to be better positioned in the domestic gas market and increase the peak shaving capacity. In 2020, CNPC Underground Gas Storage Evaluation Center was set up to facilitate the development of packaged evaluation technical systems suitable for China's complex geological conditions, so as to ensure gas storages are built under technical guidelines and operated safely and reliably. By the end of the year, we have 12 underground gas storages in operation, with a total peak shaving capacity of 12.4 billion cubic meters.

Unconventional Hydrocarbon and New Energies

E&P efforts in unconventional hydrocarbon such as tight oil, shale oil, tight gas, shale gas and CBM continued to make headway. Meanwhile, we are seeking to explore and utilize new energies such as geothermal, hydrogen energy, and gas hydrate.

E&P of Unconventional Hydrocarbon

In 2020, we stepped up unconventional E&P by enhancing the prediction and evaluation of sweet spots, pilot development and demonstration of profit-based capacity building, enabling large-scale development of unconventional resources.

Tight oil (shale oil): The 1Mt/a shale oil demonstration project was substantially completed at Longdong, Changqing Oilfield; a tight oil capacity-building demonstration area and a nitrogen flooding pilot test area were under construction at Daqing Oilfield. Large-scale light shale oil was discovered in the Gulong Sag of the Songliao Basin. Xinjiang Jimsar, Dagang Cangdong, Tuha and Jilin and other oil fields saw major increases in shale oil reserves and production capacity. In 2020, we produced 1.86 million tons of shale oil.

Tight gas: Changqing, as the largest tight gas producer in China, continued to expand the test scope and develop a model for tight gas development. A high-quality and high-profitability tight gas demonstration area was taking shape. In 2020, Changqing Oilfield's tight gas output reached 33.21 billion cubic meters, accounting for about 18% of the country's natural gas production. In addition, exploration and production of tight gas picked up pace at Southwest, Jilin and other oilfields.

Shale gas: Shale gas development accelerated in the Sichuan basin. More than 20 technical guidelines were formulated for development operations in southern Sichuan to create an organization and management model. Large-scale and profitable shale gas development was achieved at a burial depth of up to 3,500 meters; major breakthroughs were made in deep shale gas exploration. In 2020, the company's first domestic 10 bcm shale gas field was completed in southern Sichuan. The field produced 11.62 billion cubic meters of shale gas throughout the year, up by 3.59 billion cubic meters from a year earlier, making it an important contributor to the company's natural gas production growth.

CBM: Focusing on exploration of the medium-to-high-rank CBM in Shanxi Province, secondary evaluation was conducted in the Qinshui basin and Edong gas field, with new exploration breakthroughs. Capacity-building projects in Fanzhuang, Zhengzhuang and other blocks and upgrading projects for some low-output and low-profitability blocks made headway, adding 380 million cubic meters to production capacity throughout the year.

New Energies

We have been pushing ahead with our new energy development plans and deploying a range of new energy projects closely related to our core operations. In 2020, a leading group of new energy and material development was set up to oversee the strategy and planning for new energy development. New energy operations such as geothermal energy, solar energy, biofuels, and charging (battery swap) stations picked up pace. Particularly, major progress was made in our hydrogen energy business.

Hydrogen energy: CNPC, as hydrogen supplier to the city of Beijing and the Winter Olympics, built hydrogen refueling stations at the Capital International Airport, Beijing-Zhangjiakou Expressway and Winter Olympics 2022 hydrogen car parking lots and planned a number of hydrogen expressway “corridors”. We worked with business partners such as Shenergy (Group) Co., Ltd., Shanghai Lingang Investment & Construction Co., Ltd. and Foton Motor Co., Ltd. to push ahead with the building of multi-purpose refueling stations with hydrogen and demonstrative hydrogen stations.

Joint E&P in China

We have been deepening the cooperation in China with international partners including Shell, Total and Chevron around low-permeability reservoirs, heavy oil, shallow-water reservoirs, sour gas, high-temperature and high-pressure gas reservoirs, CBM and tight gas.

In 2020, CNPC’s foreign cooperation E&P projects in China yielded a record high of 11.74 million tons of oil equivalent, maintaining growth and including 2.95 million tons of crude oil and 11 billion cubic meters of natural gas. As of the end of 2020, the company has 29 joint E&P projects in operation.

These partnerships continued to make steady headway. The surface facilities of Kashgar North Project at Tarim Oilfield became operational as planned in July 2020; the Nine-1 to Nine-5 blocks in the Junggar Basin in Xinjiang proceeded smoothly; a supplementary extension agreement for the Daan Project in Jilin was signed. The Zhaodong Project at Dagang Oilfield produced oil from new wells profitably, as seven of the nine oil wells becoming operational in 2020 yielded more than 100 tons of crude in the initial stage. The Sulige South Project set foot in a new stage, registering an annual output of 3 billion cubic meters. The Changbei Phase-II and Chuandongbei projects effectively improved production efficiency, as development plans were optimized, fine management was strengthened, and new techniques were introduced.



A CNPC hydrogen refueling station

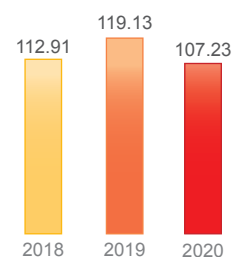
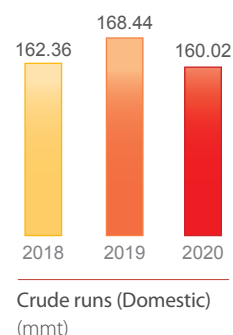
Refining and Chemicals

In 2020, China's refining capacity surged with domestic oil and gas reform. However, the COVID-19 pandemic led to a fall in market demand for refined products, and the refining and chemicals sector was faced with unprecedented difficulties. In response to the market, we reduced crude runs, increased output of chemicals and optimized product portfolio to facilitate high-quality development. We also made further progress in transformation and upgrading of the sector.

Persisting in a market-oriented and profit-driven approach, we continued to optimize resource allocation, refining and chemicals production and sales, and increase utilization of our integrated refining & chemical complexes and high-performing refining facilities. In 2020, the company's crude runs stood at 160.02 million tons, refined products output was 107.23 million tons and ethylene production reached 6.35 million tons.

Construction and Operation of Large Refining & Petrochemical Bases

In 2020, we continued to optimize refining operation to ensure long-term stable production. By doing so, 99.69% of the facilities maintained smooth operation. As of the end of 2020, the company has seven large integrated refining-petrochemical complexes and six 10Mt/a fuel refineries in China.



Refined products output (Domestic)
(mmt)

Refining and chemicals operating data (Domestic)

	2018	2019	2020
Crude runs (mmt)	162.36	168.44	160.02
Utilization rate of refining units (%)	81.3	84.1	82.3
Refined products output (mmt)	112.91	119.13	107.23
Gasoline	45.90	50.44	46.28
Kerosene	12.54	14.02	10.23
Diesel	54.46	54.68	50.72
Lub oil output (mmt)	1.60	1.63	1.58
Ethylene output (mmt)	5.57	5.86	6.35
Synthetic resin output (mmt)	9.17	9.58	10.29
Synthetic fiber output (mmt)	0.05	0.04	0.03
Synthetic rubber output (mmt)	0.87	0.91	1.00
Urea output (mmt)	0.83	1.21	2.16
Synthetic ammonia output (mmt)	1.05	1.32	1.86

A number of key projects made significant progress in accelerating the transformation and upgrading of refining and chemical operations. A restructuring and upgrading project became operational at Daqing Petrochemical, capable of producing 10 million tons of refined products and 1 million tons of ethylene per year. The core unit of Daqing Refining & Petrochemical's paraffin expansion project successfully commenced operation, to greatly enhance its deep processing capabilities. Lanzhou Petrochemical's capacity for jet fuels and chemical raw materials was bolstered, as its 240 Kt/a ethylene capacity restoring project, 900 Kt/a diesel hydrogenation upgrading project and the Changting catalyst project in Fujian became operational. At Guangdong Petrochemical, the all-plant digitalization project was launched. The ethane-to-ethylene projects at Changqing and Tarim moved forward steadily.

Optimization of Product Portfolio

We stayed with our decision to reduce refined products production while increase output of chemicals, maintained flexibility in adjusting the diesel-gasoline ratio and produced more jet fuels, aromatics, high-grade gasoline fuels, lubricants, and low-sulfur marine fuels based on market demand and economic benefits. In 2020, 16 of the 28 key technical and economic indicators for our refineries were better than a year earlier, with the refining comprehensive commodity rate increasing by 0.04 percentage points year-on-year.

We engaged in R&D and production of low-sulfur marine fuels in response to the sulfur limit taken by the International Maritime Organization (IMO). Jinxi Petrochemical, Jinzhou Petrochemical, Changqing Petrochemical and other refineries started to deliver low-sulfur marine fuels. As of the end of 2020, we have expanded our capacity for low-sulfur marine fuels and blending components to 4 million tons per year, opening up a new value-added market.

In view of the shortage of medical supplies at the onset of the COVID-19 outbreak, production plans were refocused on ethanol, sodium hypochlorite, ethylene oxide and other disinfection products. Production lines for face masks and meltblown fabric were installed at many refineries to complete the industrial chain for mask production. We produced more than 800 tons of meltblown fabric and 146 million face masks throughout the year.

Production growth in synthetic resin, synthetic rubber and PX was remarkable with continuous R&D advancement. New chemical products under 87 brands were developed throughout the year. New product lines took shape, including Dushanzi Petrochemical's polyethylene for blow molding applications and Lanzhou Petrochemical's high-melt-strength and impact-resistant polypropylene. Continuous production of ultra-high molecular weight polyethylene (UHMW) and a breakthrough in metallocene catalysts for polyolefin production were achieved at Liaoyang Petrochemical.

A refining restructuring project went on stream at Daqing Petrochemical

Launched in July 2018, the project was designed to boost outputs of refined products, improve product quality, optimize product portfolio and facilitate the shift to value-added processing of crude oil by leveraging existing facilities and upgrading primary and secondary processing units.

The successful commissioning of the project made Daqing Petrochemical one of China's 10Mt/a refineries, increasing its processing capacity from 6.5 million tons to 10 million tons per year. The project produced National VI-B gasoline fuels, helped reduce the diesel-gasoline ratio to 0.74 and added 1.2 million tons to the raw material output.

Kunlun Lube partnered with Beijing-Zhangjiakou Railway in serving the Winter Olympics

On January 10, 2020, the Kunlun Lube Express departed from Beijing for its first ride along the Beijing-Zhangjiakou Railway, the world's first smart high-speed railway. This marked Kunlun Lube's partnership with the Railway in serving the transportation needs of the Winter Olympics 2022.

Gearbox lubrication is a key aspect of high-speed train technology. Through the unremitting efforts of our R&D team over decades, the first proprietary gearbox lubricant for the Fuxing (China Rejuvenation) bullet trains was developed. Our Kunlun Lube has been an official service provider of China's high-speed railway for three years, serving 80% of the Fuxing bullet trains running between Beijing and Shanghai.

Marketing and Sales

In 2020, based on a market-oriented approach, we improved linkage between production and distribution and built up marketing capabilities to maintain market share. We introduced a number of measures such as integrating, sharing and cross-industry partnership to create a multi-purpose service platform with “refined products, gas, hydrogen, electricity and non-fuel products”, and provide our customers with one-stop services covering “people + vehicle + lifestyle”.

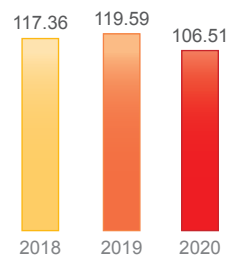
Refined Products

In 2020, amid the COVID-19 outbreak, drive-through refueling and contact-less payment services were promoted and online & offline marketing was stepped up, to ensure the reliable supply of fuels and other products during the pandemic, and to support production resumption. In line with market realities, we promptly adjusted marketing strategies and carried out tailor-made marketing for different regions, varieties, products, time and customers. At some of our marketing branches, the Amoeba business model was piloted to improve marketing ability and profitability. We sold 106.51 million tons of refined products throughout the year in China.

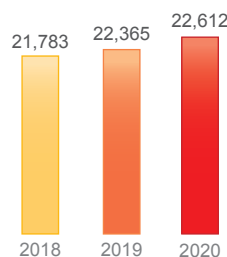
Marketing Network

In 2020, we further expanded our marketing network by optimizing assets management and developing differentiated strategies. We built 425 new service stations and put into operation 404 service stations. As of the end of 2020, we have a total of 22,612 service stations in operation across the country.

The Service Station 3.0 program was sped up. Contactless and fast services were available at our more than 20,000 service stations in the form of smart refueling and self-service convenience stores. The number of online users exceeded 100 million in 2020. We launched smart solutions including e-payment, membership and marketing, cross-sector collaboration, oil products logistics and



Refined products sales (Domestic)
(mmt)



Service stations (Domestic)



A CNPC smart service station

intelligent video recognition etc. to provide strong support for innovative marketing ideas and services models.

According to the brand ranking and analysis report of the 2020 China Brand Power Index (C-BPI) released by Chnbrand, CNPC ranked the first among China's fuel retailers for the fourth consecutive year.

Non-fuel Business

We continued to deepen partnership with finance, transportation, automobile, insurance, travel, catering, entertainment and other sectors to expand both online and offline marketing of refined products, pre-paid fuel cards, non-fuel products and lubricants, by leveraging internet technology, big data and cloud computing. In 2020, our car services, e.g. carwash, picked up pace; fast food services progressed steadily; own-label products marketing made headway. Our sales revenue from non-fuel products totaled RMB 24.5 billion throughout the year.

During the pandemic, we offered drive-through, deliver-to-the-door and community-based services to boost sales of grains, cooking oil, food and other daily necessities. In addition, we helped over 100 enterprises and farmers find market for more than 100 tons of fresh fruits and vegetables. The company also launched a 100-day campaign to promote sales of high-quality products from poverty-stricken areas through our online marketing network.

The brand value of our non-fuel brand uSmile reached RMB 12.632 billion, ranking second on the list of China's retail brands, according to the 2020 China Brand Evaluation Press Conference co-hosted by China Council for the Promotion of International Trade, China Brand Building Promotion Association, and China Appraisal Association.

Wuhan Hongtu Avenue Service Station did a great job in fighting the pandemic

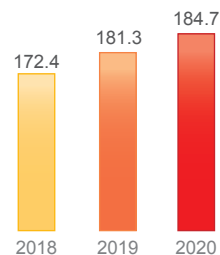


In 2020, CNPC Hongtu Avenue Service Station in Wuhan was named "advanced collective in China's fight against COVID-19" as the only service station in China to receive this honor.

Adjacent to Wuhan Jinyintan Hospital and Makeshift Hospital, the station was under extreme risk of infection. The entire team remained on duty 24 hours a day during the outbreak of COVID-19 to ensure fuel supply to hospital ambulances and the COVID-19 prevention and control command center nearby, and delivered much-needed vegetables and other daily necessities to isolation sites in the neighborhood. During the 67 days of lockdown, the service station served 334 vehicle/times from Jinyintan Hospital and Makeshift Hospitals, made 36 fuel delivery trips and provided 93.9 tons of fuels, playing an important role in Wuhan's COVID-19 prevention and control efforts.

Natural Gas Sales

In 2020, domestic natural gas demand continued to grow, but at a slower pace. Based on a market-oriented approach, we coordinated the production, storage and distribution processes, boosted domestic reserve increment and production ramp-up, diversified overseas imports, optimized production operations, expanded the end-user markets and improved customer services. We actively promoted the “gasification” and “replacing coal with natural gas” campaigns in the Beijing-Tianjin-Hebei region, Fen-Wei Plain, Yangtze River Delta and Pearl River Delta and took necessary measures to meet the need for winter heating. We sold 184.7 billion cubic meters of natural gas in the domestic market in 2020, up 1.9% year-on-year.



Natural gas sales (Domestic)
(bcm)

Natural Gas Marketing

We continued to push ahead with a three-year action plan on end-user market exploration and made headway in expanding market share by pushing for more gas consumption from key areas and large users, moving faster to bring our own end-user facilities and new direct-supply customers on stream, and carrying out pilot marketing around oil and gas fields. A number of major projects were implemented in Wuhan, Yinchuan and other provincial capitals and key cities. As our distribution network extended to remote areas, the “Tibet Gasification” and “Yunnan Gasification” projects advanced greatly. The first LNG filling station in Tibet became operational. We stepped up collaboration with business partners in power generation, power grid and energy internet, promoted innovative business models for distributed energy, CHP and energy performance contracting, and participated in natural gas power generation and natural gas supply line projects. In 2020, we signed 248 framework agreements for exploring end-user markets.

As of the end of 2020, our natural gas marketing network covers 31 provinces, municipalities and autonomous regions and Hong Kong SAR. The end-user sales volume totaled 42.18 billion cubic meters throughout the year, with a significant increase of 31% over the previous year.

Liquefied Natural Gas (LNG)

We further bolstered the peak-shaving capacity. Based on a holistic approach to LNG operation planning, LNG facilities were built or expanded to create an offshore hub of gas resources. The Jingtang LNG peak-shaving project reached mechanical completion and phase-III of Jiangsu LNG terminal project advanced steadily. After completion, these projects will further bolster peak-shaving capacity and the ability to cope with extreme weather conditions, and optimize energy mix in the Beijing-Tianjin-Hebei and Yangtze River Delta regions. We worked closely with local governments to facilitate the funding and construction of LNG terminals in Shandong, Guangdong, Fujian and Hainan. In Guangdong, we planned to build the first international offshore LNG filling center in Shenzhen.

As of the end of 2020, CNPC has three LNG terminals in Jiangsu, Dalian and Tangshan, with a total annual gasification and loading volume of 17.76 billion cubic meters. In 2020, we had 15 LNG plants in operation, with a total LNG processing volume of 2.41 billion cubic meters.

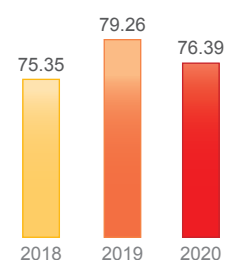
Ensuring gas supply to Lhasa

In 2010, the Tibet Gasification project was kicked off to deliver natural gas from the Sebei gas field in Qinghai to support the economic development of Tibet. In 2011, the world's highest natural gas station became operational in Lhasa, providing Lhasa with access to natural gas for the first time in history.

Over the past 10 years since its start, the natural gas station has delivered safely and steadily 220 million cubic meters of natural gas to the city of Lhasa. As of the end of 2020, the supply of natural gas in Lhasa has covered the 110,000 households in the city proper.

Overseas Oil and Gas Operations

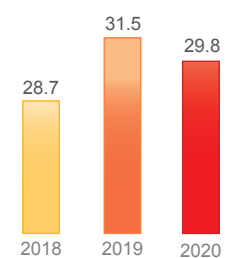
In 2020, we continued to promote international cooperation particularly along the Belt and Road route based on the optimized investment structure and regional footprint in Central Asia-Russia, Middle East, Africa, Latin America, and Asia-Pacific. Our managerial capability of global operation continued to improve. Due to the COVID-19 pandemic and the slump in oil prices, our overseas operations were facing unprecedented challenges. Even so, we managed to keep our overseas projects running smoothly by coordinating business operations and pandemic control efforts. Our overseas equity oil and gas outputs stabilized at 100 million tons of oil equivalent, with a drop in both all-in cost per barrel and lifting cost per barrel compared with 2019. As of the end of 2020, our investment in oil and gas business covers 35 countries and regions around the world.



Overseas crude production (Equity)
(mmt)

Oil and Gas Exploration

In 2020, we continued to expand overseas exploration activities and made a number of new discoveries. The Buzios project in Brazil identified more than 500 million tons of proven oil reserves; the Doseo basin in Chad, the Billma block in Niger and the Akzhol structural belt in the central block of Kazakhstan's pre-Caspian basin showed a very promising prospect as reserve replacements; new discoveries were made in Block 17 of Andes Project in Ecuador, Agadem Block in Niger and PK Block in Kazakhstan through progressive exploration; an exploratory breakthrough was made in the lithological complex trap of the Oman project.



Overseas natural gas production (Equity)
(bcm)

Oil and Gas Production

In 2020, focusing on economic returns in overseas operations, we adopted a well-planned and refined approach to project management and managed to stabilize production in mature fields, speed up development activities in new fields and maintain stable outputs as a whole, through field lifecycle management and differentiated development plan of oil and gas fields. Our overseas operations yielded 176.64 million tons of oil equivalent, in which CNPC's share was 100.09 million tons. In particular, the total output included 148.07million tons of crude oil and 35.9 billion cubic meters of natural gas, with CNPC's share being 76.39 million tons and 29.8 billion cubic meters, respectively.

Layout of overseas oil and gas operations

Central Asia–Russia	Middle East	Africa	Latin America	Asia-Pacific
Core oil and gas cooperation zone under the Belt and Road Initiative	High-end cooperation zone that gives full play to our integrated business advantage	The most influential cooperation zone for the development of conventional oil and gas resources	Unique cooperation zone for the development of unconventional and deepwater oil and gas resources	Important cooperation zone for natural gas and integrated projects

Central Asia-Russia

We operate more than 20 cooperation projects in Russia, Kazakhstan, Turkmenistan, Uzbekistan and other countries in the Central Asia-Russia region. Oil and gas cooperation with this region continues to deepen as the Belt and Road Initiative advances steadily. In 2020, the fourth train of Yamal LNG proceeded smoothly towards its planned launch in the first half of 2021; the module fabrication works for the Arctic LNG-2 Phase-II kicked off. A breakthrough in capacity expansion was achieved in the Amu Darya Territory B East Phase I in Turkmenistan, going more than half way through the surface works for the 1 bcm/a project.

The Middle East

Under a diversified development concept, we continued to optimize our asset structure and business portfolio in the UAE, Iraq and Oman. Based on an innovative cooperation mechanism, we registered a rapid growth in oil and gas operation. In 2020, the Abu Dhabi Onshore-Offshore Project Phase-I became fully operational and the offshore Bu Haseer oilfield was in full swing. The third phase of the 150 MW/a power station at Halfaya project in Iraq was connected to the local grid.

Africa

Africa is one of our key overseas conventional oil and gas cooperation regions. We have oil and gas assets in Sudan, South Sudan, Niger, Chad and other African countries. In 2020, the upstream project in Chad added 700 Kt/a to the existing production capacity and a 490 Kt/a project moved forward steadily at PSA Block with five oil fields already in operation. The Agadem Oilfield Phase II, a project expected to enter production in 2023, progressed as planned in Niger. With modules installed on the Coral

floating liquefied natural gas (FLNG) vessel in Area-4, Mozambique, the project continued with integration and commissioning activities.

Latin America

We continued to improve the development efficiency of the ultra-heavy oil project in Venezuela, and to improve our management capabilities for the deep-water project in Brazil. In 2020, the floating production storage and offloading (FPSO) unit at Mero 1 Block of the Libra project proceeded smoothly, which was expected to reach a daily capacity of 180,000 barrels by the end of 2021; the exploration projects of the Buzios and Alam blocks saw a full start-up. Measures were taken to stabilize production in a cost-effective manner at Andes Block in Ecuador, and Block 10 and Block 6/7 in Peru.

Asia-Pacific

Our oil and gas development and integrated projects in Indonesia, Mongolia, Australia and other countries in the Asia-Pacific region remained stable. The final investment decision on the Surat Phase-I of Arrow Energy was approved. The LNG Canada project was one third completed out of the overall development schedule.



Halfaya project, Iraq

Pipeline Construction and Operation

With a focus on operation management, coordination and hazard control, our overseas long-distance pipelines, including the Central Asia-China Gas Pipeline, Myanmar-China Oil and Gas Pipelines and Kazakhstan-China Crude Pipeline, remained safe and reliable operation, delivering 26.88 million tons of crude oil and 44.8 billion cubic meters of natural gas throughout the year. As of the end of 2020, CNPC had built a total of 14,996 kilometers overseas oil and gas pipelines, including 7,091 kilometers for crude oil and 7,905 kilometers for natural gas.

Steady progress was seen in key overseas pipeline projects under construction. In Central Asia, the Kazakhstan Northwest Crude Pipeline Phase-I revamp project became operational and the Phase-II project was half way through completion; the metering station revamp project for the Kenkijak-Kumkel section of the Kazakhstan-China Crude Pipeline was completed; the 15 bcm/a capacity expansion project for the second Kazakhstan-China Gas Pipeline (South Kazakhstan section) was launched; the Central Asia-China Gas Pipeline-Line D project made positive progress. In Africa, the Niger-Benin Crude Pipeline and the Chad Crude Pipeline expansion project saw substantial progress.

Refining and Chemicals

In 2020, our joint-stock refineries in Kazakhstan, Niger, Singapore, UK and France maintained safe and stable operation, processing 31.81 million tons of crude oil throughout the year. In response to a lower level of capacity utilization, the Shymkent refinery in Kazakhstan optimized production arrangement and adjusted its product mix to increase profitability. The N'Djamena Refinery in Chad started to export refined products to Central Africa and Cameroon. The Zinder Refinery in Niger increased delivery to Burkina Faso, Mali and other markets.

Project Cooperation and Development

With active and prudent partnerships throughout the industrial chain, we share development opportunities with international partners. In Brazil, an agreement on the Aram exploration projects was signed and delivered, and the production sharing contract for the Buzios project was concluded. In Kazakhstan, extension agreements were signed for the Aktobe exploration project and the PK development project.

Weathering the pandemic storm, CNPC has been unwavering in its opening-up and collaboration. During the 3rd China International Import Expo, the CNPC International Cooperation Forum was held. This event saw more than 30 procurement contracts signed between CNPC and more than 30 foreign suppliers, including Schlumberger, Siemens and Baker Hughes.



Dai Houliang attended a high-level video conference for partners of Russia's Arctic LNG-2 Project

Throughout the year, Dai Houliang, chairman of CNPC, attended a number of important industry events including the video conference of the Russian Arctic LNG-2 project shareholders, the special virtual meeting of the Abu Dhabi CEO Roundtable 2020, a video conference of the BRICS Business Council and the opening ceremony of the 17th China-ASEAN EXPO (CAEXPO) and China-ASEAN Business & Investment Summit (CABIS).

We also engaged in active communications both online and offline with business partners such as Shell, Total, Equinor, etc. over new opportunities and new measures for oil and gas cooperation amidst the pandemic, in a bid to share wisdom in the process of creating a new energy order and a new energy landscape globally.

Coping with the challenges of COVID-19 and the low oil prices in our overseas operations

The onslaught of the COVID-19 pandemic and the plummeting oil prices have put massive pressure on both the supply and demand sides of the global oil and gas market and posed unprecedented risks and challenges to CNPC's overseas oil and gas investments. Under the action plan for quality and efficiency improvement, we made timely adjustment in production deployment and introduced a coordinated and effective mechanism for pandemic control to ensure stability and safety in our overseas operations and achieve a positive net profit and a positive net cash flow, while keeping our employees healthy and safe.

Strict pandemic prevention and control to ensure smooth business operation. We have developed and implemented a company-wide four-tier pandemic prevention and control mechanism, i.e. headquarters, business segments, subsidiaries with international business, and overseas projects, and set up seven overseas regional coordination groups that covers 78 countries/regions. A comprehensive pandemic prevention and control system incorporating management and technical support resources is put in place for pandemic control in our overseas operations. Employees working on overseas projects received training on risk awareness and prevention knowledge, together with a range of medical services and mental health services, to ensure zero infection in workplace and zero clusters among employees. As of the end of 2020, our overseas projects reported zero Covid-19 deaths. Meanwhile, we have been playing an active role in a world effort to fight the pandemic by supporting local communities and working with business partners in sharing expertise in prevention, control and treatment, in a bid to contribute to the global pandemic response efforts.

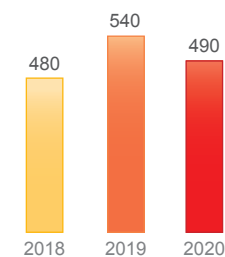
Deepening geological research to consolidate the resource base for high-quality development. We have further strengthened the planning and research of exploration projects and improved the effectiveness of appraisal wells for key projects to support well deployment and well siting, with an aim to discover more recoverable reserves amid a dramatic decline in the number of exploration wells. In 2020, the first two exploration and appraisal wells drilled at Buzios in Brazil led to major discoveries, further verifying the size of oil in place and underpinning the resource base for development planning.

Optimizing development deployment in a holistic approach to enhance performance and benefits. We strive to enhance the performance and economic returns of overseas oil and gas development with a focus on field lifecycle management, research on development strategies and a holistic and optimized approach to deployment. In 2020, a number of development plans were optimized and the innovative production technologies showed promising results in upstream projects in Halfaya, Al-Ahdeb and Chad. Based on a refined approach to oilfield management, targeted measures for controlling water cut and increasing recovery efficiency were implemented to boost output at mature fields in Central Asia, Africa and the Americas.

Strengthening management and improving quality and efficiency to gain cost competitiveness. Under the special action plan for quality and efficiency improvement, we have continued to boost production and reduce costs by optimizing management and technical process, stepping up cost control and improving drilling rate and efficiency. Contracts were reviewed for oil projects in Chad and Mozambique to reduce drilling costs. One of our projects in the Middle East saved tens of millions of dollars in operating expenses throughout the year, thanks to the optimized planning, process and well-organized operation and maintenance activities. The Chad project introduced whole well combined drilling, seeing increased bit speed and reduced cost in drilling and completion.

International Trade

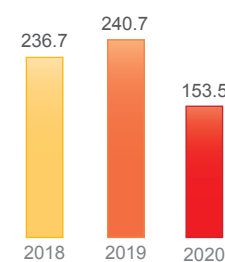
In 2020, our trading activities maintained a focus on improving our ability of global resource allocation. Trading and shipping of crude oil, refined products, natural gas and chemicals remained stable, thanks to optimized oil and gas imports, increased sales of our equity production overseas, and growing refined product exports with stronger presence in the high-end, high-value market. Our global oil and gas trading network continued to grow, covering more than 80 countries and regions around the world. Our three international operation hubs in Asia, Europe and the Americas continued to bolster operation management and build up the ability to operate and trade across regions and markets. We posted a trade volume of 490 million tons and sales revenue of USD 153.5 billion for 2020.



International trade volume (mmt)

Achievements in Core Operations

In 2020, we saw a steady improvement in services, marketing and trading capabilities reflected in increased sales of our overseas equity production, flexibility in refined product export plans, well-paced gas imports, expanded access to overseas chemicals markets and integration of shipping services.



International trade value (billion USD)

Crude Trading

We made all efforts to optimize the allocation of crude oil resource globally and made steady headway in marketing our overseas equity production. Our capability in benchmark oil trading was improved through diversifying procurement channels and product categories, fine-tuning crude imports and adopting flexible hedging strategies. We continued to trade in oil futures at Shanghai International Energy Trading Center with trading volume and delivery volume hitting new highs, trading patterns continuing to innovate, the number of registered warehouse receipts staying at the top and warehouse capacity increasing remarkably. Our storage tanks with a capacity of 200,000 cubic meters in Qinzhou of Guangxi were used as the bonded delivery warehouse of futures, further improving the marketing network in Southwest China and the ASEAN markets.

Refined Products Trading

The trends in the domestic and international markets were watched closely and necessary changes to export plans were made in a timely manner with a focus on high-end, high-value and cross-regional markets. Marketing efforts in emerging energy markets were stepped up to make new breakthroughs in gasoline and diesel exports in Jordan, Chile, Peru, India, Pakistan and Brunei etc. Aviation refueling operations continued to expand with an aviation refueling network covering 32 airports in 15 countries/regions around the world. Biodiesel trade made progress worldwide. The low-sulfur marine fuel business got off to a good start as a number of refineries, e.g. Changqing Petrochemical and Guangxi Petrochemical, shipped out their first low-sulfur marine fuel exports. We actively participated in fuel oil futures trading on the Shanghai Futures Exchange and developed the novel model of “domestic settlement + overseas delivery” for the low-sulfur fuel oil futures.

Natural Gas Trading

Our natural gas imports were finely-tuned with a balanced portfolio of pipeline gas sources and well-paced LNG shipping schedules to ensure natural gas supply. The East-Route of Russia-China Gas Pipeline made a smooth transition from trial run to commercial operation and helped improve natural gas security. A global LNG resource pool was under construction with an aim to promote integrated trade operations around the globe. We invested in creating our own LNG carrier fleet and kicked off the construction of our first LNG carrier.

Chemicals Trading

We achieved remarkable results in the spot and futures trading of key chemicals, as chemical fiber materials and urea gained momentum and olefin progressed steadily. We actively sought growth potential for chemicals business, achieving substantial progress in light hydrocarbon and listed and traded the first LPG futures contract on the Dalian Commodity Exchange.

Freight Shipping

Our shipping operations were further optimized and integrated to bolster a growing global presence, embrace information technology and offer freight forwarding services to hedge against the volatility of freight rates amidst market turbulence.

International Operation Hubs

Our three international operation hubs in Asia, Europe and America showed progress in bolstering operational efficiency. By operating across regions, markets, and products, they were upgraded to "global hubs" running on a 7x24 global relay.

The **Asian operation hub** continued to bolster Basra crude oil operations and leveraged long-term contracts, spot and floating warehouses to tap the potential in key regional markets. With a stronger foothold in high-end refined product markets, we leveraged our downstream network and logistics strengths to increase market share steadily in Myanmar, Indonesia, Thailand, and Japan and become the largest gasoline supplier in India market. We became one of Asia's major cross-market operators as gasoline and diesel operations advanced and LNG trading continued to grow.

The **European operation hub** continued to participate in North Sea crude deals and bolster its warehousing and logistics operations. Cross-regional trading in refined products became regular as inter-market activities saw a steady increase in trade volume. The hub made its way to a major biodiesel trader in the European market and China's largest biodiesel exporter as biodiesel business continued to expand. New breakthroughs were made in natural gas power generation and carbon emission reduction.

The **American operation hub** made headway with pipeline oil operations in North America and advanced crude oil business in Ecuador steadily in spite of extreme situations and headwinds such as WTI crude price going negative. Package solutions were developed for refined product customers to create a value-adding customer ecosystem. Pipeline operations in the United States and Canada were integrated and the LNG Canada project made commercial progress. Marketing efforts were stepped up to promote our olefin brand in the American market.



Guangxi Petrochemical Company's ship-to-ship transfer of imported crude oil at Qinzhou Port

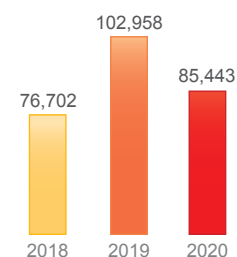
Supporting Business

Leveraging the company's integrated operation capabilities and expertise, our service business continued to optimize market layout, deepen collaboration with oil and gas operations, and strengthen technological innovation and lean management. In 2020, our service quality and market competitiveness in oilfield services, engineering and construction, equipment manufacturing and financial services continued to improve, providing a strong support to the company's operational efficiency across the industrial value chain.

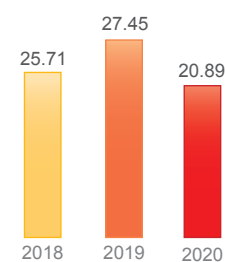
Oilfield Services

In 2020, in line with the "Innovation+ Year" initiative, our oilfield services arm launched demonstration drilling projects and deployed key actions for enhancing fracturing speed/efficiency to promote a wider adoption of new techniques. As a result, the service quality, efficiency and economic benefits were enhanced, greatly facilitating ramp-ups in oil and gas reserves and outputs.

The R&D and application of unique techniques and equipment were reinforced, resulting in new breakthroughs in terms of crucial know-how, cutting-edge tools and applications, and technical indicators. Technological progress in E&P of unconventional resources led to a range of proprietary techniques for shale oil and gas development. A number of technical solutions were worked out. Significant progress was achieved in developing the intelligent geosteering system, with many of its technical indicators topping similar systems. We promoted the digital and intelligent transformation in our oilfield services, pushed ahead with the building of engineering intelligence support centers (EISC), developed and



3D seismic data acquired
(square kilometers)



Drilling footage
(million meters)

Oilfield services operations

		2018	2019	2020
Geophysical prospecting	2D seismic data acquired (kilometers)	105,739	56,551	18,027
	3D seismic data acquired (square kilometers)	76,702	102,958	85,443
Drilling	Wells completed	11,264	11,571	9,302
	Drilling footage (million meters)	25.71	27.45	20.89
Well Logging	Well logging operations (well-times)	106,963	105,746	84,721
Mud logging	Mud logging operations	14,256	13,175	10,011
Downhole operations	Downhole operations (well-times)	87,007	87,563	80,553
	Formation test (layers)	11,969	7,602	9,998
Offshore engineering	Offshore drilling footage (meters)	72,500	264,700	301,100

deployed the engineering intelligence support system (EISS). Based on internet+ technologies, automatic acquisition and remote monitoring were integrated into technical support, decision-making, early warning and command functions, with the adoption rate in key wells or wells deeper than 5,000 meters increasing from 55% to 100%.

Marketing efforts delivered strong results as the value of newly signed contracts in overseas markets increased by 8.5% year-on-year. Iraq, Saudi Arabia, UAE and other traditional markets continued to perform well and saw a number of important agreements being concluded, including Block 9 Drilling and Maysan Workover & Capacity Expansion in Iraq, T-Oilfield Drilling Integration in Ecuador, Saudi Aramco Onshore Geophysical Prospecting and Acquisition, and OBN Acquisition in UAE. Year-on-year growth was achieved in technical services for directional wells, horizontal wells, geosteering, acidizing and stimulation. In addition, we extended our reach to the marine geophysical prospecting market in Gambia, UK and Norway for the first time.

As of the end of 2020, CNPC offered geophysical prospecting, drilling, well logging, mud logging, downhole operation and offshore engineering services in 49 countries.

Geophysical Prospecting

In 2020, CNPC acquired data of 18,027 kilometers of 2D lines and 85,443 square kilometers of 3D profiles.

Innovative technologies were widely used in geophysical prospecting, leading to a number of major oil and gas discoveries. In China, R&D efforts were focused on new areas, new types of resources and risk exploration activities, especially integrated solutions and key techniques such as imaging for surface complexities/structural complexities, high-fidelity and high-resolution interpretation and processing. Overseas, front-end technical support was strengthened and "broadband, wide azimuth and high density" seismic prospecting was widely used, leading to breakthroughs in exploration activities in the Bongor basin in Chad, the

Niger project and the central block of Kazakhstan's pre-Caspian basin. The company became a top player in the global Ocean Bottom Node (OBN) market in terms of market share and operated large-scale OBN projects such as Brunei Shell and bp Caspian efficiently.

Drilling

In 2020, we spudded 9,081 wells and completed 9,302 wells, with a total footage of 20.89 million meters.

A range of speed and efficiency boosting campaigns were rolled out, including factory drilling and fracturing, rotary steering drilling of shale gas reservoirs, deep/ultra-deep/exploratory wells drilling and drilling technology demonstration projects. Technical indicators constantly improved as a number of high-yield oil and gas wells were completed, setting new records for China's deepest horizontal well drilled onshore and longest horizontal section drilled onshore etc. Technical guidance were provided by experts to improve drilling activities at Mahu in Xinjiang and Sichuan-Chongqing shale gas blocks, leading to a 28% increase in drilling speed at Mahu.

Well Logging and Mud Logging

In 2020, we completed 84,721 well-times of well logging and perforation and 10,011 well-times of mud logging.

Focusing on imaging logging, express logging and logging while drilling, integration/R&D of frontier technology and adoption of proven technologies picked up pace. The CPLog remote logging system, a unified acquisition and interpretation solution, continued to evolve. R&D programs such as high-performance neutron generator, high-sensitivity transducer and main control chip etc. were under way. New technologies such as 3D induction logging and formation element imaging logging were widely used. The first-trip success rate was up to 99.6% for domestic logging probes and 97.7% for logging measurements as a whole; the high-quality



Seismic acquisition in Oman

rate for logging curves was up to 99.0%; and the composite interpretation consistency rate was up to 95.4%, indicating a significant improvement in quality and efficiency.

Unique supporting techniques in geochemical logging, element logging, and geosteering were developed for mud logging activities targeting oil and gas reservoirs with different characteristics. Monitoring systems for early detection of leaks and spills and online monitoring and evaluation systems for flowback cuttings were widely deployed.

Downhole Operations

In 2020, we completed 80,553 well-times of downhole operations including 9,998 layers of formation testing and 53,000 intervals of fracturing.

Downhole operations saw continuous improvement in quality, speed, production and efficiency as a result of a range of targeted measures, including optimized operating modes, factory fracturing competition, fracturing speed-up project, promotion of SRV fracturing 2.0 techniques and casing deformation control. A number of high-yield oil and gas wells were identified at the Tarim, Sichuan, Xinjiang and Liaohe fields as risk exploration and formation testing for deep and ultra-deep wells continued to improve. R&D and deployment of techniques and equipment for downhole operations picked up pace as new breakthroughs in coiled tubing, and intelligent segmentation of horizontal wells etc. were achieved.

Offshore Engineering

We deployed 16 offshore drilling rigs, 5 production test/production platforms, 41 vessels to spud 106 and complete 109 offshore wells throughout the year, with a total drilling footage of 301,100 meters.

Based on a market diversification strategy, we provided offshore engineering services in well drilling, completion, cementing, production testing, downhole operation, offshore engineering design and construction etc. in Bohai Bay, South China Sea, Persian Gulf and other sea areas. The Chenghai New Area Project, Zhaodong Project and Jidong Oilfield Project progressed steadily. Liaohe Oilfield's offshore exploration task and CPOE 281 Nigeria project were successfully completed. We received an order for a floating system project from SBM, a Dutch company. In addition, we moved into the offshore wind farm installation market and were awarded a number of wind power booster station contracts.

In 2020, the CNPC contracted second-round of gas hydrate production test in the South China Sea proved successful and made a big leap from "exploratory production" to "trial production" by leveraging the novel sand control solution and integrated underwater "test tree" system, making it a realistic possibility to develop and utilize gas hydrate as a high-efficiency clean energy source.

Engineering and Construction

In 2020, we saw continuous improvement in project management and construction capabilities and steady progress in a number of key projects, with a focus on strengthening project lifecycle management and pushing ahead with standardized design, factory precasting, modular construction, mechanized operation, and IT-based management. As of the end of 2020, we performed 75 major projects in oil and gas field surface engineering, refining and petrochemicals and storage and transportation at home and abroad.

Oil and gas field surface engineering: Changqing Oilfield's Shanggu Natural Gas Processing Plant, Xinjiang Oilfield's Mahe gas field pressurization and cryogenic refrigeration project and Tarim Oilfield's Akmomu gas field surface works became operational. Southwest Oil and Gas Field's Changning shale gas capacity ramp-up and Tarim Oilfield's ethane recovery project moved forward steadily. The Bab field upgrading project in UAE, the Amur Gas Processing Plant in Russia and other major overseas projects progressed smoothly. The Contract Territory B East Gas Field Project Phase II in Amu Darya, Turkmenistan, got off to a good start.

Storage and transportation: Projects aimed at strengthening gas pipeline interconnectivity, such as the mid-section of the East-Route of Russia-China Gas Pipeline, Shenzhen LNG distribution pipeline and West-East Gas Pipeline Fuzhou spur line, were put into operation. Construction of the south section of the East-Route of Russia-China Gas Pipeline, Tianjin Nangang LNG terminal and its distribution pipeline, Zhuozhou-Yongqing natural gas pipeline started. Projects at Tangshan, Jiangsu and Shenzhen LNG terminals were well under way. Haradh Natural Gas Pipeline in Saudi Arabia was completed. Construction of underground gas storages was given a boost as Jilin Oilfield's Shuangtuozu project successfully completed the first injection period and Tuha Oilfield's Wenjisang project kicked off.

Refining and chemicals facilities: Daqing Petrochemical's refining plant restructuring/upgrading project, Daqing Refining & Petrochemical's olefin capacity ramp-up project, Lanzhou Petrochemical's ethylene capacity restoring project and diesel hydrogenation project, and Changting catalyst project in Fujian, became operational. The integration project at Guangdong Petrochemical and the ethane-to-ethylene projects at Changqing and Tarim picked up pace. A polypropylene project in India and a refinery revamp project in Algiers were successfully commissioned. Tianli High & New Tech's 200 Kt/a EVA project was launched.

We continued to explore new markets and new business opportunities, optimized the global layout to develop a portfolio of stable, profitable and large-scale markets. The marketing efforts showed good results around the world. We were awarded a number of major projects, including the sour gas treatment facility and mechanical power units of the Majnoon oil field in Iraq, debottlenecking project at Habshan's No.5 natural gas processing plant in UAE and Basra Gas Company's pipeline project in Iraq etc.

Petroleum Equipment Manufacturing

The year 2020 saw a boost in the productivity and profitability of our equipment manufacturing business as a result of transformation and upgrading, lean management, and service-oriented manufacturing. Our marketing and service network continued to grow with overseas branches in Central Asia, Latin America, the Middle East, Africa, Asia-Pacific and other regions. In 2020, we sold petroleum equipment to more than 80 countries and regions around the world.

The shift to “full-process improvement” and “lean plant & lean business”, emerging in our lean management practices, spread from a single team/workshop to all manufacturing facilities as continuous improvement was made in process-based production, standard-based operation, visibility-based management and intelligent production.

We continued to promote the transition to “manufacturing + service” and “product + service” and extend the value chain by exploring innovation in service-oriented manufacturing, increasing the value of service, investing in manpower and physical resources for service operations and offering a wider variety of services and a better user experience in line with market demand.

Automation-based and IT-driven smart manufacturing advanced, highlighting the use of big data to create highly-efficient smart production lines. Baoji Steel Pipe Co., Ltd., a subsidiary of CNPC, was named 2020 Smart Manufacturing Pilot Demonstration Enterprise in Shaanxi Province by the Industry and Information Technology Department of Shaanxi Province.

We stepped up R&D efforts on key technology and equipment. New breakthroughs were made in developing automated drilling rig, large-diameter steel pipe, ultra-high-capacity coiled tubing, and gas engine etc. as world-leading products in terms of overall performance were launched. Applied research on energy transition made headway with an equipment manufacturing system being planned to cover five major energy sources, i.e. oil, natural gas, geothermal energy, electricity and hydrogen.

Marketing efforts were boosted, leading to the conclusion of new contracts in Guatemala, Cambodia, Cameroon, Maldives and other markets. Pipe manufacturing for the Niger-Benin Crude Pipeline, AKK Gas Pipeline in Nigeria, and anti-corrosion pipeline project in Libya moved forward steadily.

Financial Services

CNPC provides a wide range of financial services, including in-house banking, banking, financial leasing, trust, insurance, insurance brokerage, and securities, etc.

In 2020, focusing on industrial finance, our capability to offer high-quality financial services continued to build up in support of the core oil and gas operations as efforts were pressed ahead with financial-industrial combination and synergy-achieving among various financial operations to improve the efficiency of capital operation. We continued to bolster our risk management system and ensure the adequacy of internal control, risk coordination and sharing mechanism, and early warning and emergency response mechanism, as indicated by key financial risk indicators remaining superior to CBRC’s thresholds and non-performing asset ratio at a very low level in the industry. IT-driven transition from traditional finance to “smart finance” picked up pace as intelligent outlets, mobile applications and report visualization systems enabled a remarkable improvement in our ability to offer digital and intelligent services.

CNPC Capital, a subsidiary of CNPC, made the 2020 Top 100 Listed Companies list in China released by Warton Economic Institute and received again the Top 100 Chinese Enterprises Award and China Ethical Enterprise Award, indicating ever-growing industry competitiveness and brand influence.

