2021 Industry Review

The theme of the oil and gas industry in 2021 was recovery and transition. The global energy industry walked out of recession with a significant rebound in oil and gas demand, a sharp rise in their prices driven by structural demand and supply imbalances, and an industry-wide recovery. As governments put forward their carbon neutrality goals and commitments, the transition of the oil and gas industry picked up the pace, seeing shifts from oil to gas in the upstream sector and from fuels to petrochemicals in downstream. The large-scale deployment of low-carbon energy businesses became a mega trend in the industry.

Global Oil and Gas Industry

With a noticeable structural disequilibrium in the demand-supply relations, energy transition had a long way to go. The global energy consumption picked up gradually, but the issue of structural demand and supply imbalances was prominent, as energy supplies ran tight in many places. In the process of reshaping the value chain and the supply chain in the energy industry, countries around the world were faced with many uncertainties such as extreme weather and geopolitical issues. Periodic structural supply-demand imbalances and irrationally wild price swings were then resulted, posing more risks and challenges to energy transition.

The oil market was on the mend as international oil prices surged. Globally, oil prices trended downward after rocketing in turbulence. Brent crude futures averaged at USD 70.95 per barrel in 2021, up by 64.18% from the previous year. Oil demand recovered significantly, turning a massive surplus in the previous year into shortage. The commercial oil inventories of the Organization for Economic Cooperation and Development (OECD) fell below the five-year average as the market saw tight balance with the supply of oil under control.

Gas prices soared to record highs with an increasingly tight demand and supply balance. In 2021, with the ongoing recovery in the global economy and the faster shift to a green, low-carbon energy mix, the global demand for natural gas remained strong as natural gas output resumed growing. International gas prices hit all-time highs due to serious structural and regional supply-demand disequilibrium in the market.

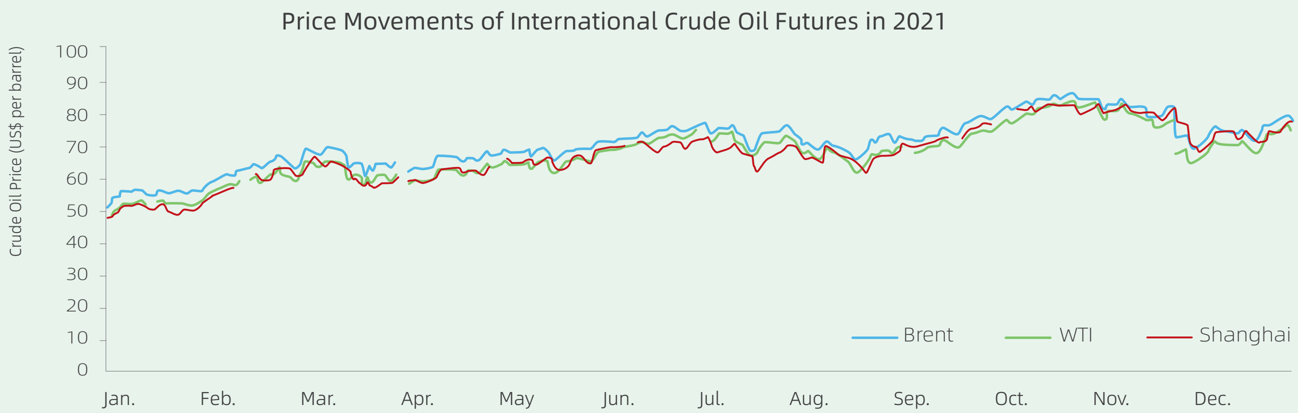
E&P investments picked up as oil and gas production both increased. The global E&P investments bottomed out and rebounded, although at a lower-than-expected pace due to the impact of ongoing COVID-19 and energy transition. The world's total growth of oil and gas reserves dropped slightly. Globally, the number of newly proven oil and gas discoveries was basically the same as last year, with major discoveries mainly in Latin America. Both oil and gas production increased throughout the year with the growth rate of natural gas significantly higher than that of oil.

The refining capacity saw a net decrease for the first time in more than three decades while the ethylene capacity grew substantially. The total global refining capacity decreased by 45.3 Mt/a, the first net reduction since 1988. The global oil refining industry was booming with overall operating performance remarkably better than the previous year. The total crude runs bottomed out, but remained below the 2019 levels. In 2021, the global ethylene capacity reached 210 Mt/a, a sharp increase by 6.2%. Driven by high oil prices, ethylene prices fluctuated upward. There was a broad rebound in ethylene plant utilization as its global average rose from 80% in the previous year to about 85%.

Transactions of oil and gas assets restored as M&As in the U.S. shale oil sector continued. The global upstream transactions came out of the slump and began to recover as the annual transaction amount increased by 25% year-on-year. Amid the surge in international oil prices, the prices of reserves deals jumped sharply, up by 78% year-on-year. In 2021, most of the asset transactions were big deals featuring package deals or M&As. Increasingly fierce competition in pursuing economies of scale was driving the M&As in the shale oil industry in the U.S.

China's Oil and Gas Industry

Energy consumption was growing fast as the shift to a green and low-carbon economy continued. In 2021, China’s economy grew by 8.1%, marking a good start for the 14th Five-Year Plan period. Domestic energy consumption increased rapidly, up by 5.2%. The proportion of coal in the country’s primary energy consumption continued to head downwards as the share of clean energy (natural



gas and non-fossil fuels) in the primary energy consumption increased by 1.1 percentage points from a year earlier. The shift to a green, low-carbon energy mix continued to make headway. Power generation from non-fossil fuels grew by 9.6% year-on-year and the total installed capacity of power generation from renewable energies exceeded 1 billion kilowatts.

The domestic oil market returned to normal with a noticeable improvement in market order. The domestic oil market gradually returned to normal as the pandemic subsided. China's crude oil production was up by 2.1% year-on-year as oil dependency on external supply saw a drop for the first time. The consumption of refined products rebounded generally to the pre-pandemic levels. Net exports declined for the first time in nearly a decade. Oil supply surplus eased as inventories fell. Domestic refineries actively adjusted their product mix and the refined products yield dropped further. The unprecedented rectification efforts on the domestic oil market resulted in a big improvement in market order.

Natural gas consumption grew faster than expected and demand and supply conditions remained tight throughout the year. The demand and supply balance of natural gas was tight, as the economic growth shrugged off the pandemic and the carbon peak and carbon neutrality goals as well as related policies on energy transition encouraged a hike in natural gas consumption which was increased by 12.0% year-on-year in 2021. The growth of natural gas import was significantly higher. In particular, LNG imports jumped by 17.6%, making China the world's largest LNG importer.

Domestic oil and gas outputs and reserves grew sharply as important progress was made in hydrocarbon management reform. Newly proven recoverable oil and gas reserves hit a record high respectively. Outputs of oil and natural gas rose. Domestic upstream investment in oil and gas picked up. Theoretical and technological breakthroughs were achieved in unconventional E&P activities. Shale oil production enjoyed economies of scale. An ultra-deep water gas field became operational in the South China Sea. The reform of oil and gas resources management made significant headway in promoting competition in granting exploration rights, the exit from blocks, the paid use of resources, and the orderly opening-up of upstream sectors.

Refining capacity and ethylene output surged as cutting fuels while adding chemicals achieved tangible results. The domestic refining capacity continued to grow rapidly, with the new ethylene capacity hitting new high. Structural optimization and adjustment picked up pace in the refining industry to effectively cut fuels and increase chemicals. The yields of gasoline, diesel and kerosene all fell from a year earlier, the output of naphtha jumped by 17% year-on-year. The output of ethylene jumped by 30% year-on-year, boosting the self-sufficiency rate (on an oil equivalent basis) significantly to 65.9%. Technological innovation in ethylene production made remarkable headway. The industrial technological competitiveness and international influence improved significantly. Meanwhile, the market opened widely at a faster pace as diversified-ownership projects continued to emerge.

Overseas operations progressed steadily amid an accelerated green and low-carbon transition. China's overseas equity production of oil and gas grew slightly compared with the previous year. A number of important discoveries were made in key overseas exploration areas to provide a solid resource base for overseas development. Chinese companies showed greater rationality when investing overseas, with a focus on new projects in key strategic areas. Meanwhile, with a commitment to green and low-carbon development, increased efforts were made to acquire new high-quality natural gas projects and new energies business were expanded in solar power and onshore/offshore wind power, etc.

Source: *2021 Report on Oil and Gas Industry Development* by CNPC ETRI