2020 Industry Review

In 2020, the global economy tumbled into severe recession due to the ongoing COVID-19 pandemic, frequent extreme natural disasters and unilateral trade protectionism. The energy industry was hit hard. The petroleum and petrochemical sector, being badly affected, experienced the darkest of moments. Looking ahead, with challenges there come opportunities. The oil and gas industry will remain resilient while navigating through the tough times.

Global Oil and Gas Industry

World energy consumption experienced the first decline in nearly a decade with new energies growing against economic downtrend. The year 2020 witnessed a contraction in the world economy and a decline in global energy consumption for the first time in nearly a decade. In particular, fossil energy consumption decreased by 6.1% year-on-year and non-fossil energy consumption increased by 3.3%. The Asia-Pacific region still accounted for a big part of global energy consumption. The transition to clean energy saw a shift from capacity expansion to quality improvement. Coal consumption and oil consumption continued to decline more or less. Non-aqueous renewable energies performed well and hydrogen energy received great attention. So far, dozens of countries have announced their carbon neutrality goals and action plans. Major IOCs have formulated their roadmaps for low-carbon transition. It is expected that in the next three to five years, carbon neutrality will be at the heart of changes for the energy industry to enter into a new development era.

The world saw a record decline in oil supply as well as demand, inventories at record-high levels and oil prices plunging below zero for the first time. In 2020, oil prices rebounded after a sharp slump but remained volatile. Brent crude futures averaged at USD 43 per barrel in 2020, with a 33% drop from the previous year. WTI crude oil futures prices plummeted below zero on April 20 due to limited available storage capacity at delivery location and first line contracts expiring, trading as low as USD -40 per barrel, marking the most unbelievable event in the history of oil futures. It was a big blow to the world oil market. The OPEC+ alliance implemented the most aggressive production cuts in history. Meanwhile, the demand and supply of oil dropped at record-setting paces throughout the year compared with 2019. Given the decline in demand significantly greater than the decline in supply, the global oil supply surplus jumped to 2.9 million barrels per day in 2020, pushing world inventories to a record high.

The global natural gas market dropped in both supply volume and price with investments and trading in this sector taken a big hit. Global natural gas consumption declined for the first time in the new millennium with a notable slide in North America and Europe and a slowdown in the Asia-Pacific region. Natural gas production also shrank as major natural gas-producing countries reduced their outputs. Natural gas prices hit a record low in major markets. The global trade volume of natural gas dropped with evident slowdown in LNG trade. LNG contracts were featured by shorter terms, less volumes and lower slopes indexed to oil prices.

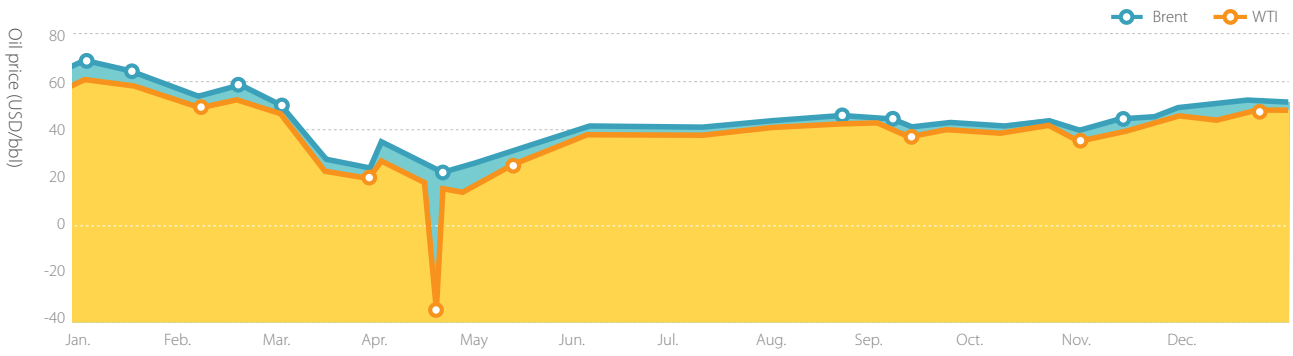
There was a significant decrease in oil and gas reserves discovered globally with E&P investments heading downwards. Global E&P investments shrunk significantly by 30%. There were fewer major oil and gas discoveries with newly discovered reserves standing at 10-year lows. The world's total oil reserves declined slightly and total natural gas reserves rose mildly. As a result of production restraint and declining demand, both oil and gas outputs shrank, with oil production falling at a faster pace than natural gas.

The global capacity growth in refining and ethylene slowed down notably with key indicators far inferior to those of the previous year. There was a notable slowdown in the world's refining capacity growth. With new capacity additions mainly located in China, the Asia-Pacific region continued to lead in terms of refining capacity. As nations around the world were forced into lockdowns during the pandemic, the demand for refined products contracted dramatically and the year saw an 8.9% decline in crude runs. The average utilization rate of global refinery capacity dropped to around 72%, the lowest in history. Ethylene capacity additions slowed as capacity utilization declined from 90% in the previous year to around 85%.

Transaction volume and amount of oil and gas assets slumped and U.S. saw a wave of M&A activities in the shale sector. The transaction amount of upstream assets plummeted by 63% year-on-year to a 15-year low, and those of downstream assets, mainly in the marketing and chemicals domain, dropped by 47%. A new wave of mergers and acquisitions were seen in the U.S. shale sector including a number of big deals.

China's Oil & Gas Industry

The shift towards a green and low-carbon economy accelerated amid a slowing growth in energy consumption. In 2020, as China's COVID-19 outbreak was brought under control in a rapid manner, the Chinese economy showed a V-shaped recovery and grew at 2.3% year-on-year, making it the only major economy that achieved positive economic growth in 2020. Energy consumption continued to grow nationwide at a slower pace compared with 2019. The proportion of coal in the country's energy mix continued to head downwards amidst the shift to cleaner energy; the share of clean energy (natural gas and non-



Price trend of international crude oil futures in 2020

fossil fuels) in the total energy consumption was 0.9 percentage points higher than a year earlier. The shift to a green and low-carbon energy mix continued to make headway. Power generation from non-fossil fuels grew at 8.4% year-on-year. Newly added installed capacity of power generation from renewable energies accounted for approx. 70% of China's total additions throughout the year.

The domestic oil market was hit hard and market players managed to pull through. In 2020, the domestic oil market suffered the biggest blow since the Asian financial crisis in 1998. China's crude runs growth dropped by 4.6 percentage points; the actual consumption of refined products decreased by 0.8% year-on-year; and net exports fell below 42 million tons. Against such a backdrop, domestic market players managed to navigate through this difficult situation with a few bright spots: increasing domestic crude production; optimizing sourcing and crude imports arrangements; increasing the output of products well accepted by the market and improving marketing management; pushing ahead with the reform of refined product prices; and promoting Big Data, cloud computing, AI, 5G, smart service station, digital trade platform and Internet of Things. New business forms and models in marketing was in a boom.

Growth in natural gas consumption slowed and the domestic market remained loose at large. Natural gas consumption increased by 7.1% year-on-year in 2020, indicating a slowdown compared with 2019. Natural gas supply increased by 6.8% from a year earlier and supply-demand situation was eased as a whole. The proportion of natural gas in primary energy consumption climbed slightly to 8.7%. Natural gas import growth slowed significantly in which LNG accounted for a larger proportion. In particular, pipeline gas imports showed a contraction for the first time. We continued to press ahead with the construction of domestic natural gas production, storage and distribution system. PipeChina was officially in operation, which enabled great progress on pipeline connectivity.

Domestic oil and gas outputs continued to grow and the pressure to increase both reserves and production built up. Domestic oil and gas producers expanded their E&P efforts to ensure national energy security, with a focus on strategic and high-potential areas. High-quality production capacity was exploited to achieve growth in both reserves and production amid a challenging environment. Given the impact of the pandemic and the oil price crash, the three oil majors, i.e. CNPC, Sinopec and CNOOC, revised their upstream capex by a large margin, which stood at approx. 20%.

Refining/ethylene capacity continued to grow as the pandemic weighed heavily on the operations. There was a continuing ramp-up in the domestic refining/ethylene capacity. In particular, ethylene capacity based on separation of light hydrocarbons grew at a fast pace, marking a booming year for gas-based ethylene projects. COVID-19 affected refineries saw a rapid recovery after a sharp decline in the first quarter of 2020 and experienced a bumpy year for operation: Crude runs continued to increase; the overall utilization and diesel to gasoline ratio remained stable throughout the year. Meanwhile, refining profits, refined product output and net refined product exports fell. Private and foreign-funded refineries kept emerging, and the market with a wider variety of participants saw further competition underway.

Structural reform in the oil and gas sector made headway as energy transition sped up under the "carbon peak & carbon neutrality" goal. In 2020, China pushed ahead with the opening of its oil and gas sector across the entire value chain as the legislative process moved forward steadily in the energy industry. A number of laws and regulations were issued or enacted, including the *Energy Law of the People's Republic of China* (Draft for Comment), and the *Resource Tax Law of the People's Republic of China* to provide a legal guarantee for promoting the transition to clean and low-carbon energy, facilitating shale gas development, enabling market access to the refining sector and deepening the natural gas reform etc. At the UN General Assembly, President Xi Jinping announced China's goal of "have carbon peak before 2030 and achieve carbon neutrality before 2060", which made it more imperative for energy transition. The State Council issued the white paper *Energy in China's New Era* to provide guidance on China's energy development in the future.

Source: *2020 Report on Oil and Gas Industry Development* by CNPC ETRI