



LOTOS Group
Integrated Annual Report 2018

02. **CHALLENGES OF THE OIL MARKET**

LOTOS Group's macroeconomic environment in 2018

The LOTOS Group is an active participant of the fuel market, affecting it through its operations and responding to changes that occur in the oil and gas industry. Therefore, when planning strategic development directions, LOTOS takes into account forecasts and megatrends which affect its business.

The key drivers of oil and gas prices are changes in the world's population as well as global and regional changes in supply and demand.

OIL PRICES ARE ALSO AFFECTED BY:

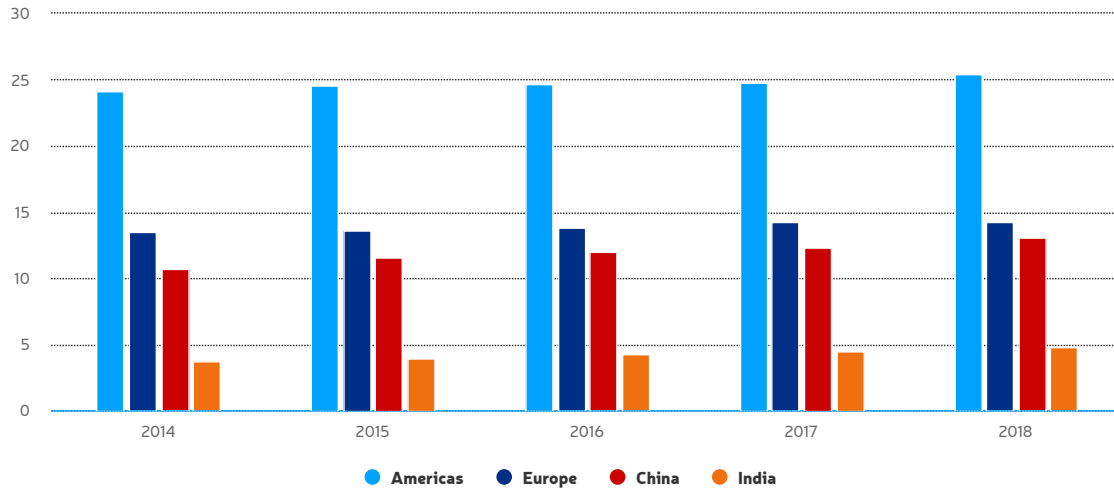
-
- macroeconomic situation,
 - global and regional economic conditions,
 - trading activities of market participants,
 - weather conditions and natural disasters,
 - availability and cost of construction or use of transport and processing infrastructure,
 - price and availability of, and government subsidies for, alternative energy sources and new technologies,
 - the US dollar exchange rate.

Consumption increases in parallel with population growth

Over the last five decades, the world's population has grown on average by 1.6% per year, to 7.63bn in 2018. This increase was accompanied by growth in crude oil demand (by 2.3% on average a year).

OIL CONSUMPTION IN NORTH AND SOUTH AMERICA, EUROPE, CHINA, AND INDIA (M BBL/D)

Source: LOTOS Group's in-house analysis based on International Energy Agency data, www.iea.org



Economic growth and fluctuations in supply and demand

2018 saw considerable global and regional changes in oil supply and demand. It was also a period of fast economic growth in the world. According to OECD's computations, the world's economy grew by 3.7%. Particularly strong economic growth could be seen in the fast-growing countries such as China and India.

GDP DYNAMICS IN 2017–2018

	2017	2018	% r/r
Global economy	3.8%	3.7%	-0.1%
Developing countries	4.7%	4.6%	-0.1%
Eurozone	2.4%	1.8%	-0.6%
US	2.2%	2.9%	0.7%
China	6.9%	6.6%	-0.3%
India	6.7%	7.3%	+0.6%

Source: LOTOS Group's in-house analysis based on World Economic Outlook Update

Changes in the fuel market in 2018

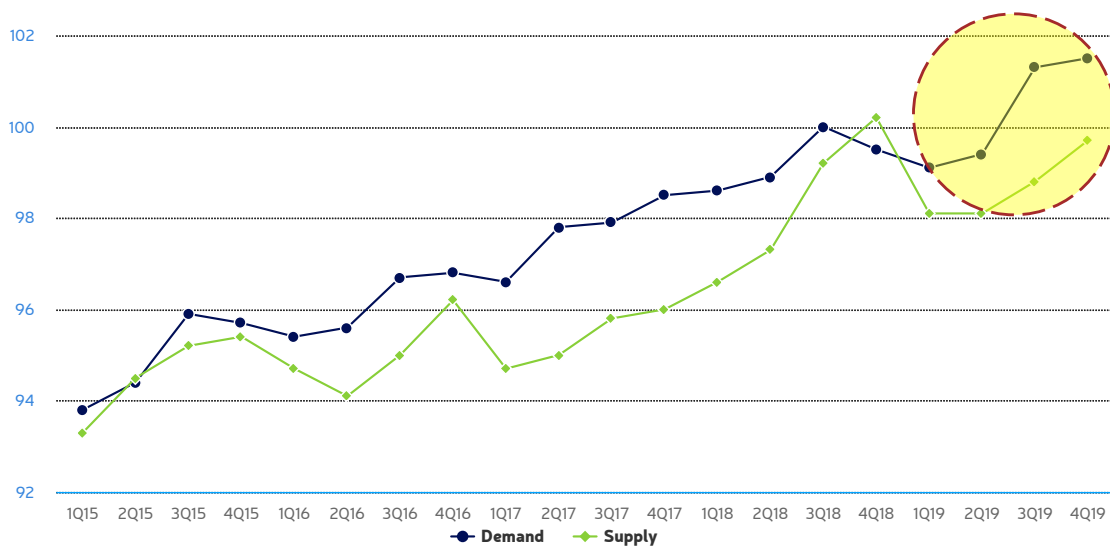
United States as the leader of the oil market

Last year, the United States exerted immense pressure on the global economy. It was also the world's largest oil producer, exporting on average 1.96 million barrels of crude oil a day, with WTI oil cheaper on average by USD 6.8/bbl than Brent crude, produced in the North Sea.

The macro environment was significantly impacted by OPEC's and Russia's decision of December 7th to cut oil output by 1.2 mbd.

GLOBAL OIL DEMAND AND SUPPLY (MBSL)

Source: Grupa LOTOS's in-house analysis based on International Energy Agency data, www.iea.org

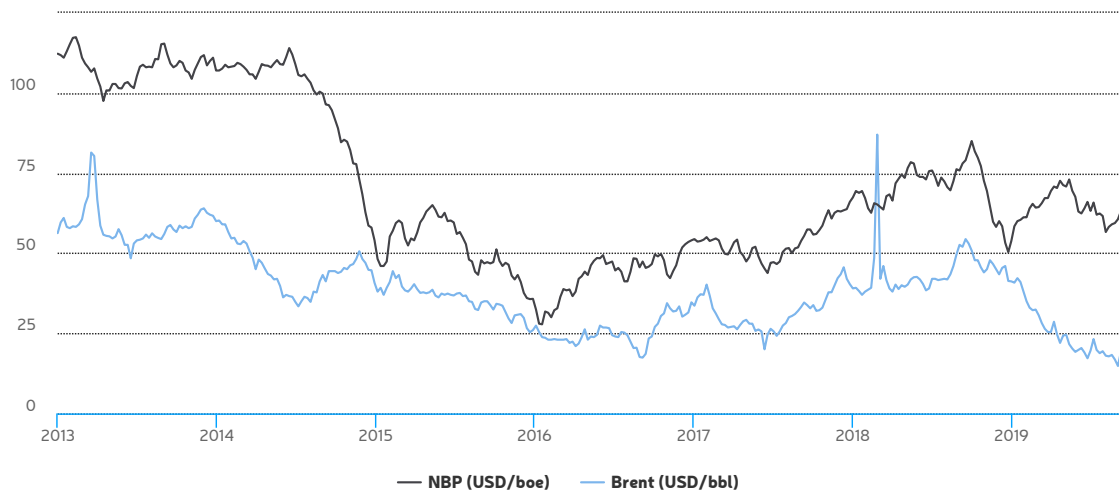


Improved economic conditions and cost optimisation

2018 saw an improvement in the commodity market after a four year-long oil crisis. The average price of crude oil reached USD 71/bbl, while the average price of natural gas was USD 45/boe, up nearly 38% year on year.

CRUDE OIL AND GAS PRICES IN 2013–2018

Source: In-house analysis based on Thomson Reuters data



The crisis situation of the past five years has become an incentive for significant optimisation in the E&P industry. The costs of drilling and offshore services, direct production costs, and new field development costs went down. Standardised technical solutions, technological advancement, and improvement of contracting and procurement of products and offshore services helped to reduce average operating expenses by more than 40% relative to 2013.

Future challenges and global forecasts

Production

The profitability of the LOTOS Group's production operations is affected by numerous legal regulations, including the Polish Geological and Mining Law, EU regulations, and international conventions, such as those on environmental protection. In the near future, the following will be of key importance:

- planned amendments to tax regulations applicable to hydrocarbon production;
- continued tightening of environmental protection regulations;
- increase in mandatory collateral relating to the risk of environmental damage;
- amendments to regulations imposing the obligation to maintain stocks of crude oil and selected petroleum products.

Economists forecast crude oil prices to remain in the range of USD 40–70/bbl.

Under such conditions, both innovative technologies and innovative cooperation models should be implemented in order for the LOTOS Group to remain profitable and attractive to investors.

Refining

The profitability of refining is directly affected by fluctuations in crude oil and natural gas prices, as well as the amount and structure of demand for and supply of petroleum products. According to JBC Energy, an energy market agency, global demand for refining products should continue to grow.

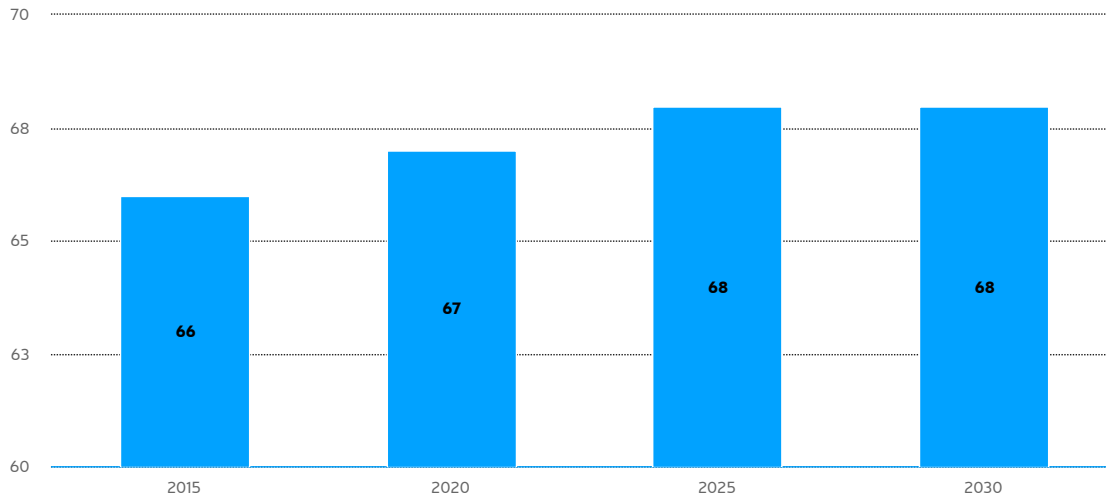
Continued growth of CEE economies can generate further increase in fuel consumption and its ultimate convergence with consumption levels in Western Europe.

From fuel producers' perspective, it is the CEE market that offers more potential as it will be growing in the coming years.

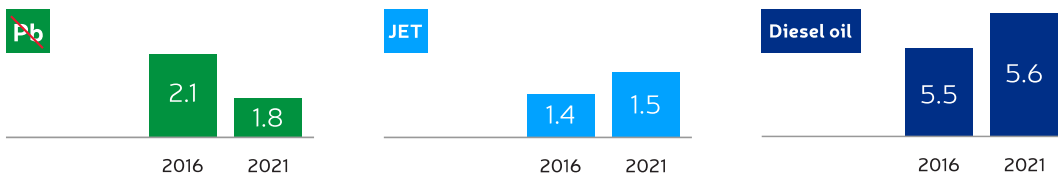
In the opinion of the LOTOS Group, demand for petroleum products, in particular diesel oil and aviation fuel, should grow noticeably also in Poland.

**FORECAST DEMAND FOR MAIN TRANSPORT FUELS
(GASOLINE, DIESEL OIL, LIGHT FUEL OIL, AVIATION FUEL, IN MILLION TONNES) CENTRAL
AND EASTERN EUROPE**

Source: Grupa LOTOS Strategy for 2017–2022



**EUROPE: FORECAST DEMAND FOR KEY PRODUCTS AND INTERNATIONAL BALANCE
(MBOE/D) NET IMPORTS**



PB (UNLEADED)

- 13% drop in demand
- Gasoline exports up to 1.4 mboe/d

JET

- 10% increase in demand
- imports of aviation fuel and kerosene up to 0.5 mboe/d

DIESEL OIL

- 3% increase in demand
- imports of diesel oil and light fuel oil up to 1.0 mboe/d

Source: LOTOS Group Strategy 2017–2022

The efforts to tackle the grey market in Poland, undertaken as part of the fuel package by both the government and oil companies, have reduced its size, additionally contributing to an increase in registered demand for diesel oil.

IMO 2020 regulations and desulfurized bunker fuel

The International Maritime Organization (IMO) has been tightening the sulphur content standards for bunker fuel for many years. On January 1st 2020, further regulations will enter into force, under which the currently permitted 3.5% content will be reduced to 0.5% and, in emission control areas (including Europe), to 0.1%.

The EFRA Project is, in part, Grupa LOTOS S.A.'s response to the IMO regulations. It includes the construction of a coking unit to produce and sell fuels meeting the new standards.

Predictions and forecasts for the refining sector

Macroeconomic factors will continue to have a significant impact on the situation in the sector. One of the key threats to oil refining in Europe will be growing competition from refineries in the Middle East and Russia. The Mediterranean can be expected to become the main market for these refineries. This will change the fuel supply-demand balance across Europe.

New opportunities will come with the implementation the IMO regulations in 2020, which may translate into higher demand for middle distillates. This could boost margins on middle distillates and reduce margins on heavy fractions. A growth in consumption of gasoline by retail customers is likely to be driven by attractive retail prices, resulting from low and stable prices of the product and the raw material.

We also expect that European oil companies will shut down small and obsolete refineries in an effort to optimise their assets.