Strategy towards climate change

Year by year, climate aspects are becoming increasingly pressing, especially for the fuel and energy industry. Therefore, although the LOTOS Group does not have a single climate policy in place, it is considering the implementation of a Group-wide sustainable development strategy that would also address climate aspects.

103-1, 103-2, 103-3, Proprietary indicator 2

As mentioned above, so far in its operations the Group has focused on continuous improvements in energy efficiency. Thanks to these measures, and (primarily) following the introduction of natural gas at the refinery, the emission benchmark, i.e. CO_2 /CWT, of Grupa LOTOS is on a par with 10% of Europe's best refineries.

TCFD:
Governance Disclosure A, Governance Disclosure B

The Grupa LOTOS Management Board is overseeing analytical work related to climate change issues. Both the Management and Supervisory Boards are involved in the operation of the risk management system, which is designed to identify and mitigate all threats relevant to the LOTOS Group's operations, including climate-related risks and opportunities.

Climate-related risks and opportunities

201-2

TCFD:
Strategy Disclosure A, Strategy Disclosure B, Metrics and Targets Disclosure A

The LOTOS Group analyses the potential impact of climate change megatrends by identifying opportunities and threats to its operations and growth prospects.

Key risks for the Group arising from climate change are the regulatory risks related to meeting the required levels for the National Indicative Target (NIT) and the National Reduction Target (NRT) in 2020 (8.5% for NIT and 6% for NRT).

Ensuring that fuels for internal combustion engines contain a proper amount of biocomponents (achievement of the NIT) is extremely difficult and entails very high costs for the entire industry considering technological capabilities (fuel quality requirements) and market constraints (limited market of suppliers).

Failure to meet the required NIT level could result in huge fines. This is why the Company and other key industry players have entered into legislative dialogue with competent ministries concerning the feasibility of meeting the legal requirements.

Similarly, meeting the National Reduction Target (reduction of life cycle greenhouse gas emissions) under the current regulatory regime is hindered by the necessity to incur high costs and, as in the case of the NIT, by a limited market of emission reduction mechanisms. The LOTOS Group analyses and uses all means of effectively reducing emissions and conducts a dialogue with the regulatory body on how to achieve the required NRT level.

Apart from the identified and addressed threats, the LOTOS Group also sees opportunities in climate change and macroeconomic trends, and is pursuing a growing number of projects consistent with the megatrends.

RES at service stations

Grupa LOTOS is also engaged in studies into the implementation of various technologies related to renewable energy sources (RES). The Company is predominantly oriented toward projects that would support the National Indicative Target. It also deploys RES-based solutions at its service stations. In 2019, the service station at Łopuszańska street in Warsaw was reopened

ploys RES-based solutions at its service stations. In 2019, the service station at Łopuszańska Street in Warsaw was reopened after upgrade. It is used for piloting various technological novelties, from store concepts, to electric vehicle charging stations and RES. Photovoltaic panels have been installed on the station building and roofing, which may produce an instantaneous power of approximately 17 kW in summer, helping achieve energy savings. Another element with environmental benefits is a hybrid lighting system powered by solar and wind energy. Finally, a rainwater recovery system is in place at the station, to reduce the consumption of utility water.

Biohydrogen

Grupa LOTOS is engaged in ongoing conceptual work on hydrogen production not only based on natural gas steam reforming, but also from renewable sources. One option is to use biogas, which after purification produces biomethane with a composition close to natural gas. Biohydrogen obtained from biomethane (*green hydrogen*) could be used in the future as an independent hydrogen fuel or – embedded in liquid fuel molecules – as a component of traditional fuels. The project offers great potential with respect to achieving the EU's targets for the use of advanced biofuel components/biofuels in Poland, because the feedstock would mainly be gas produced at biogas plants from agricultural or municipal waste. If the project is successful, Grupa LOTOS's annual demand for biomethane could reach up to 200 mcm, which would also provide a considerable boost to biogas plants in Poland, as they would gain a large, reliable customer buying biomethane all year round.

Projects to produce biohydrogen through electrolysis (*blue hydrogen*) using RES (*power to gas*) are also being discussed.

Electromobility

Active entry into the electromobility market is another project that fits in with the climate change strategy. Under the ongoing Blue Trail project, the first 12 electric vehicle charging points have been launched at LOTOS service stations on the motorways between the Tricity and Warsaw. In accordance with the Group's strategy, further EV charging points are to be launched at 130 LOTOS service stations by 2022.

Marine fuel

2020 has seen further environmental restrictions coming into force. The International Maritime Organisation (IMO) is introducing a new global limit on sulfur content in marine fuels, changing the current 3.5% to 0.5% m/m. Therefore, LOTOS has embarked on a series of projects to increase the share of low-emission fuels through the use of LNG as marine fuel.

Another response to the new regulations is the EFRA Project, which has helped address the problem of heavy residue from crude oil processing. Heavy residue was previously used for the production of asphalt, an important component in road construction, as well as high-sulfur heavy fuel oil, used primarily as marine fuel. It is a product with a negative margin, i.e., its price is lower than that of crude oil, while also being environmentally unfriendly. The EFRA Project will make it possible to sell approximately 1.1m tonnes of excellent quality fuels, mainly diesel oil, produced from the heavy residue.

New generation fuels

As part of its strategy, the LOTOS Group seeks to become a leader in new generation fuels. In order to implement these plans, in March 2019 the Group's representatives signed documents to launch joint research and development activity with the Gdańsk University of Technology (in 2018 similar documents were signed with the Warsaw University of Technology). The cooperation is to involve the development of prototypes of selected low-carbon transport and energy storage equipment.

Hydrogen technologies

Grupa LOTOS also actively engages in promoting the use of hydrogen. On its initiative, the Hydrogen Technologies and Clean Energy Technologies Cluster was established, with a mission to initiate efforts aimed at increasing the role of hydrogen technologies. LOTOS representatives regularly attend working meetings with local transport operators and assist them in preparing for the 'hydrogenation' of municipal transport vehicles. These efforts have been documented by letters of intent signed with the authorities of Gdynia, Wejherowo and Tczew (the latter signed in May 2020).

Grupa LOTOS intends to use its potential and experience in hydrogen generation and to promote hydrogen as a zero-emission fuel of the future. Our Pure H2 project involves the construction and launch of infrastructure for production and sales of ultra-high purity hydrogen (99.999%). The project also focuses on the use of hydrogen in other industries, such as energy, food, IT, etc.

In November 2019, Grupa LOTOS and Toyota Motor Poland signed a letter of intent to intensify work on the development of technologies supporting the use of hydrogen in road transport. The cooperation is aimed at building hydrogen refuelling stations in Poland. Thanks to this, the hydrogen transport technology can have a real and practical application in Poland, with tangible benefits for motorists.

The use of hydrogen as an alternative source of energy will contribute to tackling air pollution caused by emissions of exhaust gases from conventional vehicles, especially in urban areas.