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The European Commission counters development of the oil shale sector in Estonia

For years, oil shale, with its similarity to coal, has played a key role in Estonia's energy system. Currently, oil shale is burned for heat and power generation, or used (after processing) to produce liquid fuels (mainly marine fuel). To combat global climate change and environmental degradation processes, European Commission has prepared a new legislative package (Fit for 55), which provides, inter alia, reform of the European Union Emissions Trading System (EU ETS). This will lead to a reduction in the use of oil shale for both electricity generation and the production of marine fuel.

New ideas of the European Commission for climate protection. One of the most ambitious goals of the European Commission (EC) is to reduce greenhouse gas (GHG) emissions by 2030 by at least 55% compared to 1990 levels. The EU aims to be climate-neutral by 2050. To do this, on 14 July 2021, the EC proposed a new legislative package called Fit for 55. As part of this package (a total of 13 draft acts), legal solutions will be introduced, which in the coming years will affect many important economic areas (currently consultations on individual projects are ongoing). It is expected that the new regulations will strengthen the innovation and competitiveness of the EU countries' industry, and at the same time help counteract climate change.

New solutions are assessed differently by individual countries and businesses. The ongoing energy transformation process, which is to ultimately lead to changes in energy systems, will require significant transformation in the countries that use coal (Poland) and oil shale (Estonia) in their economies. Importantly, in relation to Estonia, the use of oil shale – in line with the EC's proposals – will be limited in two ways. Firstly, it will not be possible to use this commodity to generate electricity (in Estonia, oil shale currently constitutes 76% of electricity production). Oil shale now largely determines Estonia's energy independence. Secondly, it will not be possible to use it as a marine fuel (currently, after processing, oil shale is used as feedstock for refinery and petrochemical installations, as well as by mixing with light fuels used in marine transport).

Oil shale and electricity generation. The EC's proposals will affect the future of Estonia's electricity sector and will also affect the main producer, the state-owned Eesti Energia company. The government and the company itself have revised the existing strategy towards more environmentally friendly solutions, in line with EU objectives. As a result, steps have been taken to increase the level of electricity generation from renewable sources (RES) and to give up oil shale in the energy generation process by 2030. As part of the new strategy, Eesti Energia will focus on investments related to development of offshore wind farms in the Baltic Sea, on electricity storage systems, as well as on the production of fuels based on organic matter. Basically, the company plans to cover 90% of Estonia's total electricity demand with renewable energy within 10 years. In addition, Eesti Energia plans to achieve climate neutrality by 2045 and to achieve this, it will develop the RES sector (in Estonia, Lithuania and Finland by building wind farms, and in Poland solar farms). Importantly, one of the company's key projects will be an offshore wind farm in the Gulf of Riga (which has been in planning for several years), which is expected to be operational by 2030.

Oil shale and the shipping industry. Eesti Energia also has a significant impact on the production process of marine fuel in Estonia, and thus its export to international markets. As part of the Fit for 55 package, there are, among other moves, reform of the EU ETS, which currently covers selected sources of GHG emissions. The new legislative proposals extend the EU ETS to maritime transport. So far, trends in the use of marine fuels have been largely

influenced by the International Maritime Organization (IMO)¹. Similarly, taking into account the EU's new plans, it can be expected that the EC will now also make efforts to limit the use of traditional marine fuels based on crude oil – and in the case of Estonia also based on oil shale – in favour of alternative technologies that are less harmful to the environment (e.g. bunkering of CNG and LNG, hydrogen-based synthetic fuels, electrification, advanced biofuels, etc.)². Interestingly, the EC openly claims that the oil shale market in Estonia is shrinking because there is no future for marine fuels, which emit a large amount of CO₂. For this reason, the EC will strive to introduce uniform obligations for ships that use renewable and low-emission fuels as well as conventional ones. Currently, the price difference between the two types of fuels used in shipping is so significant that it blocks an increase in the use of alternative fuels. Such a change in market conditions will affect the fuel sector of Estonia and will drive a need to increase the innovativeness of Eesti Energia.

By reducing the importance of oil shale in electricity generation, Eesti Energia will focus on alternative uses of oil shale, including the development of the chemical sector. The company plans to use used tyres, plastics and oil shale to produce liquid fuels, and also as an input for chemical installations. Ultimately, in the future, oil shale is to be completely replaced with waste (e.g. used tyres), which will then be used in the chemical industry.

Conclusions. The solutions proposed by the EC will have an impact on Estonia's energy security due to the need to quickly eliminate oil shale, which currently determines the country's energy independence. This is a huge legislative, organisational, infrastructural and technological challenge for Estonia. The shift from oil shale to renewables may not be enough. These types of technologies do not generate large amounts of electricity during winter periods. Estonia will therefore also have to develop alternative energy systems. Energy generated from nuclear power plants could be a key element of such a new power system.

The new EU regulations will limit the operation of Eesti Energia and the profits it generates. On the one hand, the company will therefore have to concentrate on implementing other projects aimed at increasing electricity generation. On the other hand, limiting the use of oil shale in the production of marine fuels will force the company to introduce more innovative and environmentally friendly solutions. This type of approach may have a positive impact on the development of the company's expertise, and new technological solutions may support the company's technological development in the long term.

¹ The biggest change, which was introduced in 2020, was the modification of the high sulphur content in marine fuels (HSFO – Heavy Sulphur Fuel Oil) from 3.5% to 0.5%.

² New regulations are planned to be introduced through the Regulation of the European Parliament and of the Council on the use of renewable and low-carbon fuels in maritime transport and by amending Directive 2009/16/EC. Importantly, at present the cost of liquid fuels constitutes a significant part of the costs incurred by shipping operators (35-53%), and additional requirements (the use of alternative fuels in place of fossil fuels) may adversely affect the functioning of marine fuel producers.