COUNTRY REPORT ESTONIA

Joanna Lepmets

Energy Without Russia

The Consequences of the Ukraine war and the EU Sanctions on the Energy Sector in Europe

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About the author

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Joanna Lepmets

Energy Without Russia: The Case of Estonia

The Consequences of the Ukraine War and the EU Sanctions on the Energy Sector in Europe

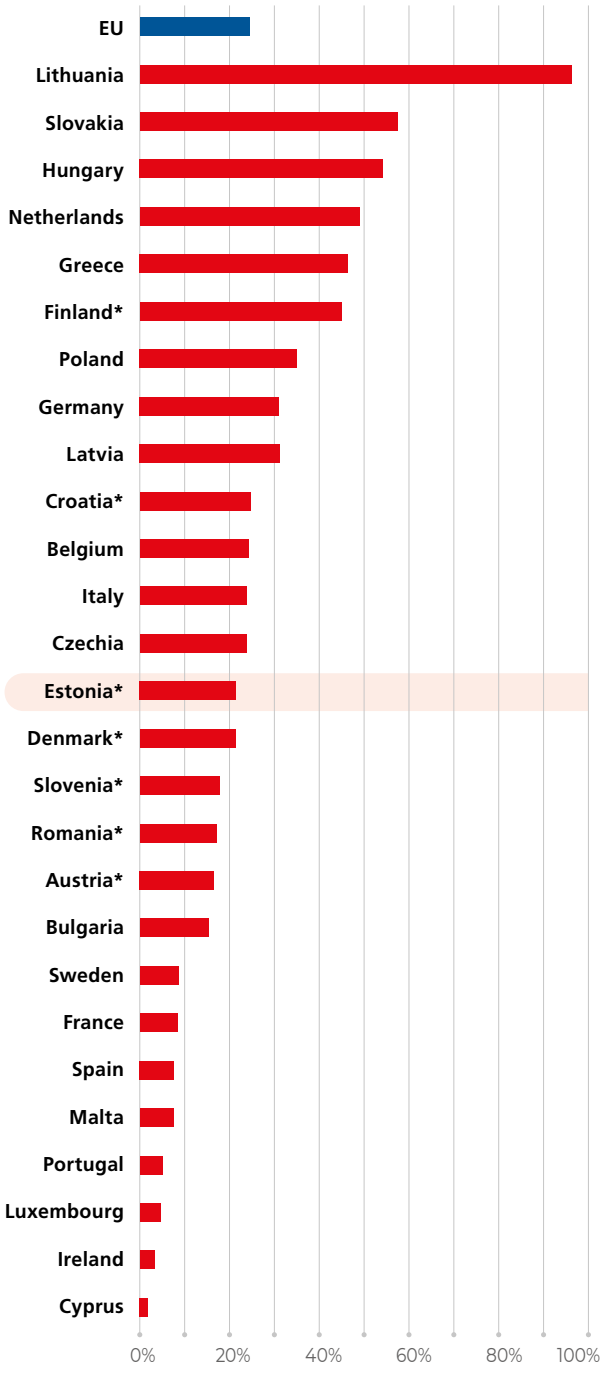
INTRODUCTION

Prior to the Russian aggression against Ukraine on 24 February 2022, Estonian dependency on Russian energy imports was low with some important exceptions. Due to its Soviet legacy and national pragmatism about the threat of its eastern neighbour, since its independence the main driver of Estonia's energy policy has been energy security. Given this decades-long policy, Estonia is largely reliant on domestic resources for energy production. Russian energy imports made up 10.5 per cent of all energy resources in 2020. However, there are some sectors that are fully reliant on Russian imports, such as heating and industry on natural gas, and transport on oil products. In addition, the Estonian and Baltic electricity systems have been using Russian electricity imports for maintaining the grid frequency with a plan to end this by 2026.

For decades Estonia has been working towards reducing its dependence on Russian energy imports overall. However, finding alternatives for natural gas imports is a complicated issue, since the Estonian gas network, along with its neighbouring countries, is connected to the gas networks of Russia. Access to alternative LNG imports has been limited. Diversifying the source of oil products is not as complicated due to a lesser reliance on existing pipeline networks, but it is very costly. Replacing imports from Russia and Belarus for Estonia would entail 3.8 times the cost.

Within the last 15 months, Estonia suspended direct natural gas imports from Russia and decreased its gas consumption by 26 per cent. Estonia contributed to the building of a new floating storage and regasification unit in Finland, through which it gains access to LNG imports from other countries. Some gas demand was switched to oil shale. However, for the drop in demand for Russian natural gas to be maintained going forward, the economy needs to switch to cleaner alternatives. By February 2023 import and transit of oil products from Russia were stopped. Estonia began to maintain a zero or positive electricity balance with Russian TSO to avoid paying for balancing. Steps were made to start exploring green hydrogen, nuclear and boosting renewable energy production.

Figure 1
Imports from Russia in gross available energy, EU, 2020



Source: Eurostat, Including estimates for non-reported data for countries with*

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STATUS QUO ANTE (AS OF FEBRUARY 2022)

ENERGY MIX

As a small country, Estonia's total primary energy supply is about 5 Mtoe. The energy mix is relatively unique compared to other EU Member States due to its strong reliance on domestically produced oil shale, which is used for heat, power generation and for liquid fuels. The domestic oil shale is low in energy efficiency and reliance on its use makes Estonia one of the worst performers of the world in terms of greenhouse gas emissions per capita. While the use of oil shale has been declining over decades, due to energy security reasons and lack of other domestic alternatives, the country has continued to rely on oil shale as a major source of energy.

In total, local oil shale makes up about 52 per cent of Estonia's energy mix. The country also has large domestic biomass resources. Bioenergy, which mainly comes from domestic forestry activities and waste, accounted for about 31 per cent of total primary energy supply. The share of renewable energy sources from sources other than biomass (wind, solar, and hydro power) is rather small and growing at a slow pace. Before the war, harnessing the existing potential of wind and solar energy was largely stagnant for a decade due to administrative and political developments. The last wind farm was built in Estonia about a decade ago[1]. Estonia does not have the geological profile for high hydropower potential. Also, Estonia does not have any nuclear capacity to date (Figure 2 and Table 1).

In terms of consumption profile, the major energy sources used before 2022 were oil and electricity, with a combined contribution of 56 per cent of the total final consumption.

1 Orav and Laast, 2021

Figure 2
Estonian energy mix in 2020 (EU Statistic)

		% of total
1	Other (oil shale)	52.40%
2	Natural gas	7.7%
3	Renewables and biofuels	27.4%
4	Non-renewable waste	0.7%
5	Oil	5.2%
6	Solid fossil fuels	0.1%
7	Electricity	6.6%
8	Nuclear heat	0.0%

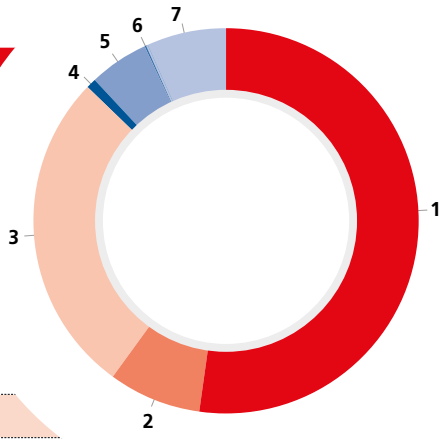


Table 1
Total energy supply per capita in 2021

	Total in TJ	Per capita in TJ	Per capita in GJ
Production	184,532	0.1387	138.1
Consumption	116,836	0.0878	87.8

Source: Statistikaamet, 2023

While oil was the predominant source of energy in the transport sector, electricity was the primary fuel for the industry and commercial sectors. In the residential sector, the consumption of bioenergy was the most significant (Figure 3).

The residential sector is traditionally the largest energy-consuming sector, accounting for 32 per cent of total final consumption. The residential sector is closely followed by the transport, commercial, and industry sectors. While consumption in the industry sector has been on a decreasing trend over decades, consumption in the residential and transport sectors has remained relatively stable over the last decade (Figure 4).

ELECTRICITY MIX

The total electricity consumption of Estonia reached 9.6 TWh in 2021. As mentioned above, electricity makes up around 20 per cent of Estonia's energy consumption.[2]
By sources of generation, local resources and oil shale also dominate the production of electricity, although until 2021 the share of oil shale was on a downward trajectory. The share of renewable energy in gross final energy consumption has been on an upwards trend, equalling 38 per cent in 2021. The share of renewable energy sources in electricity generated in 2021 amounted to 29 per cent.[3] However, biofuels and biomass account for far more than wind and solar PV (Figure 5 and Figure 6).

Regarding the electricity power grid infrastructure, Estonia along with other Baltic states is connected to IPS/UPS synchronous power grid managed from Moscow. This means the local electricity infrastructure is dependent on dispatches from Moscow in the event of instability in the grid. Through the existing interconnectors, two-thirds of Estonian electricity flows pass through the Russian grid.[4] With the help of EU funding, for decades the Baltic states have been working together with the EU institutions to join the CEN grid, which is managed by the Member States. A Political Roadmap was signed by the heads of states of the Baltic states, Poland, and the European Commission in 2018 and the completion of the synchronisation is envisioned by the beginning of 2026.[5]

2 Statistikaamet, 2023

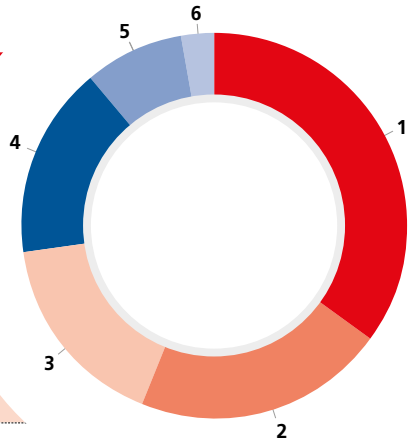
3 Statistikaamet, 2023

4 Härginen, et al. 2021

5 European Commission, 2020

Figure 3
Total final consumption (TFC) by source in 2020 in TJ

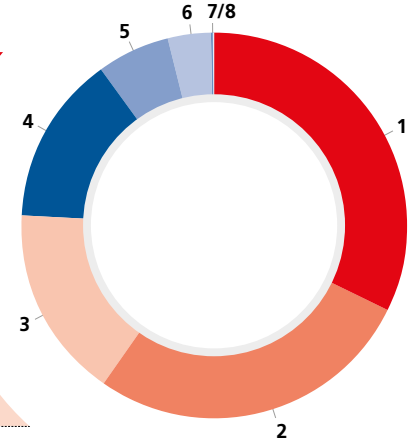
		TJ	%
1	**Oil products**	42,749	35.10
2	**Electricity**	25,848	21.22
3	**Biofuels and waste**	20,368	16.72
4	**Heat**	19,310	15.85
5	**Natural gas**	10,270	8.43
6	**Coal**	3,256	2.67



Source: IEA, 2023a

Figure 4
Total final consumption (TFC) by sector in 2020 in TJ

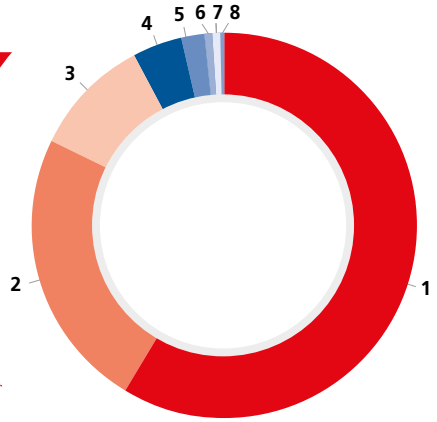
		TJ	%
1	**Residential**	39,556	32.48
2	**Transport**	33,345	27.38
3	**Commercial and public services**	19,749	16.21
4	**Industry**	17,114	14.05
5	**Non-energy use**	7,405	6.08
6	**Agriculture / forestry**	4,606	3.78
7	**Fishing**	14	0.01
8	**Non-specified**	11	0.01



Source: IEA, 2023a

Figure 5
Electricity generation by source in GWh in 2021

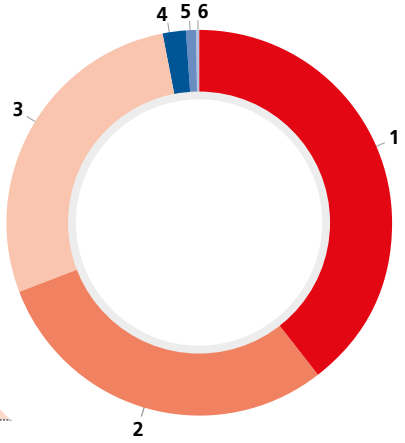
		GWh	%
1	Coal	4,289	58.67
2	Biofuels	1,730	23.67
3	Wind	731	10.00
4	Solar PV	305	4.17
5	Waste	151	2.07
6	Oil	37	0.51
7	Natural gas	42	0.57
8	Hydro	25	0.34
9	Nuclear	0	0.00



Source: IEA, 2023a

Figure 6
Structure of electricity consumption in 2020 in TJ

		TJ	%
1	Commercial and public services	10,246	39.72
2	Industry	7,664	29.71
3	Residential	7,139	27.68
4	Agriculture / forestry	487	1.89
5	Transport	244	0.95
6	Fishing	14	0.05



Source: IEA, 2023a

In terms of electricity imports, Russia's role has been marginalised over time. Estonia's electricity market is well integrated with Finland and Latvia through the European market coupling, allowing for efficient import and export of electricity. While most of the electricity imports originate from Finland, most of the exports are directed towards Latvia. Estonia's interconnections with these countries also enable it to serve as a transit country for electricity transmission from north to south.[6] Although Estonia has interconnections with Russia, it has not traded electricity with Russia since 2005. This is because other trading options have become more attractive, for example through Lithuania, which has been designated as the main transit country for electricity trade between the Baltic countries and third countries.[7]

It should be noted that before the Baltic states disconnect from the Russian electricity system and are synchronised with the continental European grid, Estonia along with the Baltic states has relied on electricity connections with Russia to maintain a stable 50 Hz frequency in the networks. During the winter of 2021–2022, Baltic States and Scandinavian countries together imported approximately 7 TWh of electricity from Russia.[8] The frequency management reserve services operated by (Russian National Energy Company) INTER RAO cost Estonia, Latvia and Lithuania a cumulative €1–2 million per month before the war.[9]

DEGREE OF DEPENDENCE ON RUSSIA AS SUPPLIER OF ENERGY AND FUELS

As established, energy independence has been a political priority for Estonia. The reliance on domestic oil shale makes Estonia a net exporter of energy.[10] The energy exports include primarily solid biofuels, electricity, and shale oil produced from oil shale. According to Eurostat 2020 data, Estonia has the lowest energy import dependency out of all the EU countries – 1.4 per cent – measured as the share of total energy needs met by imports from other countries.[11]

6 Konkurentsiamet, 2021
7 IEA, 2019
8 Elering, 2022a
9 Cole, M., 2022
10 IEA, 2023
11 Eurostat, 2023

However, the percentage does not adequately reflect that Estonia is fully dependent on imports for natural gas and liquid transport fuels.[12] Prior to the Russian aggression, Estonia was reliant on Russia for both sources. Limited capacities both to receive gas and to transmit it through the Baltic region have made it difficult for Estonia to replace Russian supply (Figure 7 and Figure 8).

DEGREE OF DEPENDENCE: NATURAL GAS

Natural gas is not a major source of energy in Estonia. In 2021, the total supply of natural gas equalled about 0.4 bcm and 5 TWh, making up less than 10 per cent of the final consumption.[13] However, it is an important input for industry and district heating. The Estonian gas network is connected to the gas networks of Russia (through the Narva and Värska connection points), Latvia and Finland.

Due to the complete lack of domestic gas production, Estonia has been 100 per cent reliant on Russia for natural gas imports. Until recently, it was dependent on imports of Russian natural gas either through direct interconnections or indirectly through the Inčukalns storage facility in Latvia, where Russian gas is stored during summers for use in winters.[14] The country has been on the lookout for alternatives motivated by energy security concerns. For example, since 2019 the Narva connection to Russia is no longer commercially used, although it can still be utilised to provide technical gas supply to the system operators, allowing gas stations along the pipeline to be fed.[15]

The situation changed from complete reliance in 2014 when the first opportunity for diversification was opened via Latvia to a connection to the Klaipeda liquefied natural gas (LNG) terminal in Lithuania. In addition, in 2020 the Balticconnector gas connection between Estonia and Finland was launched and at the end of 2021, the Estonian and Baltic-Finnish region gained a connection to the Central European gas network through the Lithuanian-Polish connection GIPL, which began to commercially operate in 2022.[16]

Despite gains of diversification of gas sources, in 2020 the share of direct Russian gas in the Estonian wholesale market was 86.5 per cent and increased by 2021 to 93.5 per cent. Note, however, that this number only reflects the direct gas volumes bought from Russia and may underestimate the actual percentage of Russian gas in Estonia's market due to the difficulty in measuring indirect imports from third coun-

12 IEA, 2023a
13 IEA, 2023a
14 Majandus- ja kommunikatsiooniministeerium, 2023
15 Konkurentsiamet, 2020
16 Konkurentsiamet, 2021

Figure 7
Import dependency in 2020 (EU Statistic)

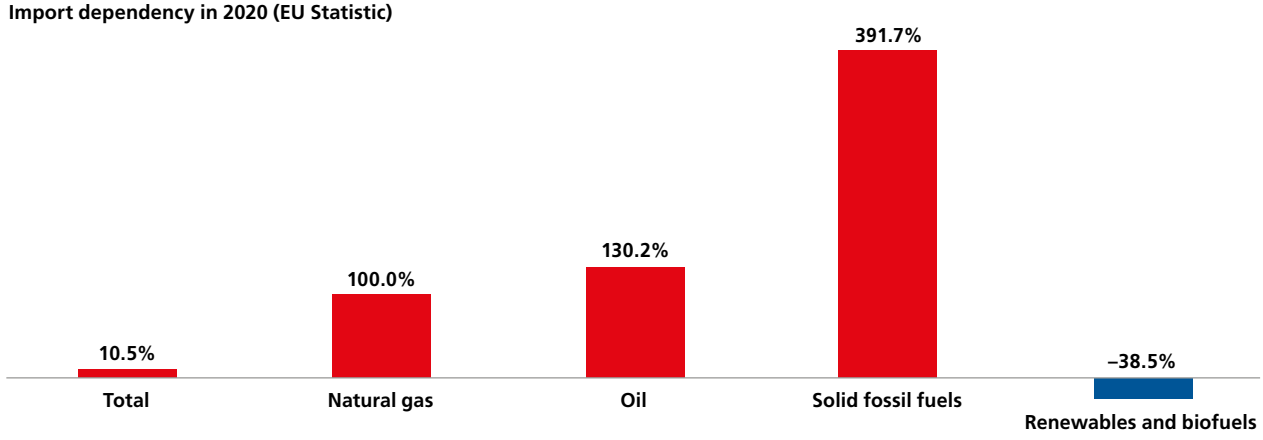
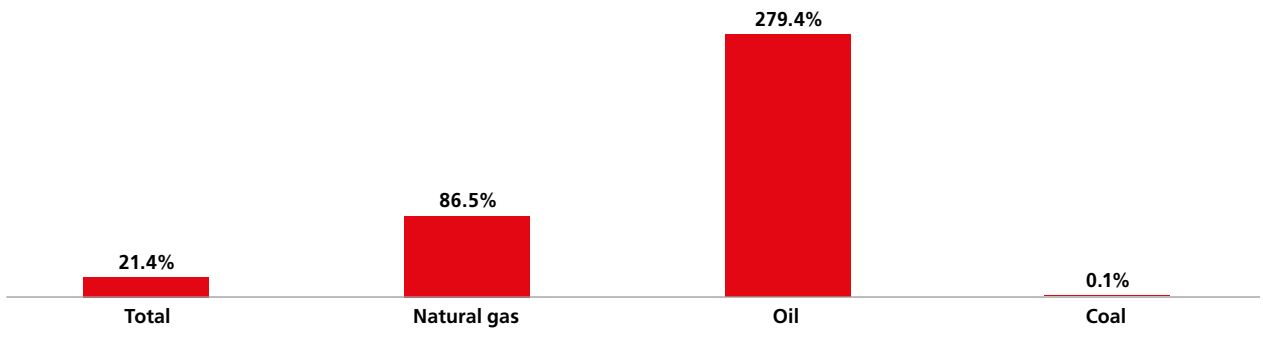


Figure 8
Imports from Russia in gross available energy in 2020 (EU Statistic)



tries. The wholesale gas market in Estonia is closely integrated with Latvia and Finland, making it harder to track the origin of gas in the market. For instance, gas volumes from EU suppliers procured in third countries and re-sold in the European wholesale market cannot be accounted for.[17] Therefore, the percentage corresponding to indirect gas purchased from Russia could have been higher in 2020 since the gas that entered Estonia through the Latvian system in 2020 and 2021 could also be largely of Russian origin, but it was not included in the calculation[18] (Table 2).

The impacts of Russia being the main supplier of natural gas are particularly evident in the sectors most reliant on the consumption of natural gas, which in Estonia are industry and district heating. District heating in 2021 was covered 55 per cent by biomass, 20 per cent by natural gas, 15 per cent by waste heat and rest of it from oil shale, peat and other sources[19] (Figure 9).

With the exception of 2021, in Estonia the demand for gas has been declining in absolute volume.[20] Over the last decade, the gas demand for power and heat has fallen by 60 per cent.[21] This is mainly due to fuel-switching to alternative fuels, such as biogas. The gas demand in the industry sector has also fallen by 67 per cent over the last decade.[22] However, alternatives such as scaling biomethane production, electrification, and increasing energy efficiency are expensive and long-term solutions, leaving residential households and industry still reliant on natural gas imports and therefore resulting in exposure to the volatility of natural gas imports from Russia.

DEGREE OF DEPENDENCE: OIL AND OIL PRODUCTS

Oil makes up more than a third of the overall final energy usage in Estonia. The amount of oil usage has been consistent at approximately 1.4 million metric tons over the last three years, preceding a 2.5 per cent drop in 2020[23]. There is no oil production or processing in Estonia: thus the country relies fully on imports to meet its oil product demand.

Estonia does produce unconventional oil: shale oil through domestic oil shale liquefaction. There are no refineries in the

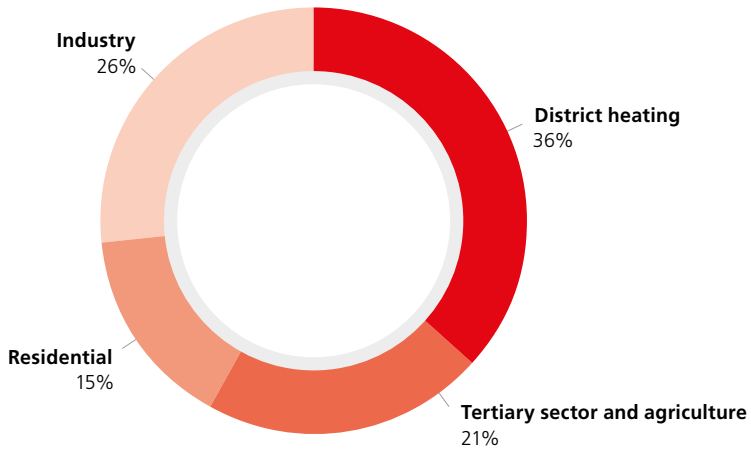
17 Ibid.
18 Ibid.
19 Postimees majandus, 2022
20 Konkurentsiamet, 2021
21 IEA, 2019
22 IEA, 2019
23 Fuels Europe, 2021

Table 2
Data on Estonian dependency on Russian imported natural gas

	2020	2021
Total gas demand (GWh/year)	4,480	5,196
Import volume (GWh/year)	12,978	11,391
Export volume (GWh/year)	8,481	6,281
Share of gas delivered from EU Member States (%)	34%	6.5%
Share of Russian gas import (%)	86.5%	93.5%

Source: Konkurentsiamet, 2020; Konkurentsiamet, 2021

Figure 9
Structure of natural gas consumption in 2020 by %



Source: EIA, 2023a

country, and thus the vast majority of shale oil is exported. It is important to note this, because as per the definition and structure of energy balances set by the International Energy Agency, Estonia's total energy supply of crude oil is considered negative, since it only accounts for imports of crude oil and doesn't take into account the production of shale oil that is exported.[24]

The consumption in Estonia is primarily driven by the transportation sector, which consumes nearly 25 per cent of the total energy consumed. Transport sector liquid fuels are fully imported from abroad. 94 per cent of energy consumption in the transport sector is used in road transport and cars.[25] The total volume is a mix of diesel imports (71 per cent) and gasoline (29 per cent).[26]

Similar to natural gas, Estonia has been relying on Russia for its vast supply of oil products. Prior to the Ukrainian crisis, the oil originating in Russia made up a majority of the motor fuels consumed in Estonia.[27] In total, in 2021 Estonia imported its liquid fuels from Russia, Finland, and Lithuania, and small amounts from Sweden and Belarus. However, Estonia has also been functioning as a transit country for Russian gas to enter the European market, which explains the import imbalance of 279.4 per cent. The transportation of oil products is not as dependent on existing pipeline infrastructure as natural gas imports, and therefore in this case it is much easier to diversify the import sources.

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24 IEA, 2023b

25 Majandus- ja kommunikatsiooniministeerium, 2023

26 Fuels Europe, 2021

27 Voltri, J., 2022

2

AD HOC RESPONSES AFTER FEBRUARY 2022

Decision to stop importing Russian natural gas by end 2022: On 7 April 2022, the Estonian government reached an agreement in principle that Estonia will stop importing Russian gas by the end of 2022. "We must stop buying gas from Putin's regime as soon as we can, since they are using the revenue from sales of it to fund their war against Ukraine," said Prime Minister Kaja Kallas in the government's statement.[28] The sanction to import and buy natural gas from Russia was established in law on 23 September and took effect on 31 December 2022.

Paving the way for LNG: The decision to halt Russian gas imports coincided with the agreement between Estonia and Finland to jointly lease a floating LNG terminal to guarantee the supply of gas to both countries. Although Estonia's consumption is much lower than Finland's, it was estimated that cutting gas supplies from Russia would leave the region without gas for nearly six months.[29] The new floating storage and regasification unit, 150,900m^3 Exemplar, was provided by US shipowner Excelerate Energy, after it signed a 10-year charter with a joint-venture subsidiary of the national transmission system operators Gasgrid Finland for Finland and Elering for Estonia. Gasgrid Finland agreed to pay 80 per cent of the rental cost, and Elering the other 20 per cent, roughly in line with the expected split of capacity usage.[30]

Boosting natural gas reserves: The second decision that allowed the government to declare halting Russian imports by end 2022 was a decision taken at the cabinet meeting to acquire up to 1 TWh of natural gas, which equals approximately 20 per cent of Estonia's annual gas consumption via AS Eesti Varude Keskus, the national party legally obliged to be in charge of ensuring gas reserves. The supply was agreed to be stored in the Latvian gas storage in Inčukalns.[31]

Stopping payments to Russia for maintaining electricity grid frequency: While Estonia has not bought electricity from Russia since 2005, Estonia was paying Inter RAO, the Russian National Energy Company, for balancing services to maintain the frequency in their networks. While the contract with Inter RAO for frequency management reserve services was valid until the end of 2022, from 1 June the Baltic Transmission System Operators (TSOs) agreed to stop buying balancing services from Russia by keeping the import-export balance at zero every hour. Erkki Sapp, the head of the energy market department at Elering, Estonia's national TSO, stated that the goal is to not have to make payments to a Russian company.[32] Inter RAO's frequency management reserve services previously cost Estonia, Latvia, and Lithuania €1–2 million per month.

Fuel switching was made possible for a region with district heating in dire need: To prepare in time ahead of the heating season in autumn 2022, on 8 July the government allowed and encouraged the City of Narva, Estonia's third largest city, to declare a district-level state of emergency. A tender to procure gas for the winter organised by the city had failed. The state of emergency allowed the city to request authorisation from the Environmental Board to switch to other energy sources, specifically power district heating by using shale oil instead of natural gas.[33] By the Environmental Board's estimates, 200 companies in Estonia were holding an environmental permit to use shale oil and approximately 50 were in the position to use it immediately if necessary. At least one another district heating company used the possibility to switch over.[34]

EU banned the import of Russian crude oil and oil products: Estonia complied with the EU sanction that took effect from June 2022. In mid-July, the Tax and Customs Board stated it has not yet seen an impact.[35] Ahead of the sanction taking effect, the import volumes of diesel from Russia went up – in the spring this was almost double the amount needed to cover 20 per cent of Estonia's monthly demand. The major fuel resellers in Estonia all stated that they do not import fuels from Russia. A large part of these Russian imports are expected to pass by the Estonian market and reach target markets within

28 Wrigth, H., 2022a
29 Wrigth, H., 2022a
30 A'Hearn, B., 2022
31 Wright, H., 2022a
32 Cole, M., 2022
33 Vahtla, A., 2022
34 Wright, H., 2022b
35 Raig, T., 2022a

the EU. This is possible, because once diesel and petrol have been imported to Estonia, statistics about where the product is consumed is not collected.[36]. Today, the liquid fuels for Estonia are mainly imported from Finland and Lithuania.[37]

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36 Ibid.

37 Majandus- ja kommunikatsiooniministeerium, 2023

3

MAIN CONSEQUENCES OF THE CONFLICT AND SANCTIONS SO FAR

Ceasing direct imports of natural gas from Russia and reducing consumption of Russian natural gas: Looking back at 2022, Estonia did not import any significant amount of natural gas directly from Russia through the Värska connection since April of that year. The yearly gas consumption decreased by 26 per cent compared to 2021 – in 2022, Estonia consumed 3.77 TWh of natural gas, which is the lowest volume in the last decade.[38] However, it is hard to measure the degree of success that the immediate responses to the war had on the achievement of reduction in demand. When Elering commented on the 40 per cent decrease in consumption in May 2022 it stated that it was unclear if this was a temporary shift due to mild weather and other factors or if it indicated a lasting change in consumption patterns, such as some consumers switching from gas to alternative fuels.[39]

Drop in demand for natural gas was boosted by mild weather conditions: The average temperatures from February to June 2022 in Tallinn were higher compared to 2021, which is consistent with the relatively mild winter experienced across much of Europe. As Tallinn is home to about a third of the Estonian population, it constitutes a significant portion of the demand. Nonetheless, the temperature rise alone is not sufficient to explain most of the drop in demand.

Gas companies in Estonia pointed to the extremely high prices of natural gas: Analysis by the Oxford Institute for Energy Studies points out that gas companies from Estonia and Latvia blamed economic, as opposed to political, factors for their decision to halt imports. Alongside gas, prices for energy in June 2022 rose twice as fast in Estonia as they did in the rest of the Eurozone, leading to an increase in the inflation rate to 21.9 per cent for the year.[40] The Competition Agency points out that the Baltic-Finnish region's gas demand of 60 TWh/y was only ensured by the capacity of the Klaipeda LNG terminal of up to 30 TWh/y and the gas collected in the Latvian gas storage; this contributed to the contraction of supply and very high gas prices.[41]

Share of Russian oil products decreased, while some transit was possible until February 2023: The importance of Russian imports has decreased significantly and now accounts for a smaller proportion of overall imports. Instead, Finland and Lithuania have emerged as the main sources of imported diesel and petroleum. However, it is worth noting that Estonia remained a transit country for Russian diesel and the government does not have precise data on how much of the Russian imported fuel is consumed in Estonia. This is due to the fact that imports were allowed to continue under sanctions exemptions until 5 February 2023, and the impact of the new regulations has not yet been assessed. Despite this, there has been a positive development in that fuel makers have reported that Estonian customers are willing to pay a premium for diesel that is guaranteed not to come from Russia.[42]

Estonia has played a significant role in raising awareness about Russian energy imports and advocating for change: Since the start of Russian aggression in Ukraine, Estonia has played an important role in the international efforts to reduce reliance on Russian energy imports. Estonia has been among the few EU member states to call for a move away from Russian natural gas and oil products. In December, Prime Minister Kaja Kallas played a key role in ensuring that the price cap on Russian gas remained at 60 dollars per barrel rather than being increased.[43] Although Estonia's own reliance on natural gas did not change drastically from its already relatively low starting point, the country has had an impact on the EU's overall energy mix through raising awareness about the need to move away from Russian energy imports since the war.

38 Ots, M., 2023
39 Elering, 2022b
40 A'Hearn, B., 2022
41 Konkurentsiamet, 2021
42 Raig, T., 2022a
43 Paju, K., 2022

4

MEDIUM- AND LONG-TERM ANSWERS

MEDIUM-TERM ANSWERS

Diversification of gas imports via LNG imports: The quick building of the Finnish LNG port is significant for the diversification of Estonian gas import sources. Finnish Gasgrid has stated that it will not import gas from Russia and its goal is to wean the Finnish market off Russian natural gas.[44] By February 2023, Estonian gas company Eesti Gaas had concluded agreements to deliver a total of ten gas ships by the fall of this year – three deliveries to the port of Klaipeda in Lithuania in winter and seven to the port of Inkoo in Finland in spring and summer, from both US and Norway.[45] However, the existing gas network connected to Russia remains in place; thus, if the price of Russian gas collapses, there could be a resurgence of appetite for Russian imports.

Disconnecting from electricity grid by 2025 as planned: The Elering representative added that current plans to decouple from the Russian electricity grid at latest by 1 January 2026 are expected to go ahead as planned.[46] This is because all the investments of the synchronisation project have not yet been implemented. However, since the likelihood of unilateral separation of the Baltic electricity system from the Russian electricity system due to Russia's military aggression, the Estonian and Baltic system managers have been working on mitigating the risks of a unilateral emergency disconnection. For example, contracts have been signed for the provision of rapid frequency reserves with Nordic system managers in the event that the Baltics were separated from the Russian electricity system.[47]

Recognition of need for more solar and wind: The total production of renewable energy did not increase in 2022; in fact renewable energy accounted for 34 per cent of electricity production, compared to 38 per cent in 2021. The overall composition of renewables included 54 per cent biomass, biogas and waste, 26 per cent of wind energy, 20 per cent solar and 0 per cent hydro. However, the war brought recognition by the government that the state needs to organise more tenders for development of solar and wind energy potential in Estonia.[48] Therefore, the government documents included a plan to organize at least two more tenders in 2023. In addition, it promises to put in place a plan for the years 2024 and 2025 for the organisation of tenders for the production of at least 1 TWh. Municipalities will be obliged to show areas in the general plan that are suitable for the establishment of renewable energy production.[49]

Energy consumption reduction: In 2023, gas consumption has continued to decline – by 35 per cent in January compared to January of last year and 29 per cent in February. Besides the introduction of alternative fuels, the reduction has been achieved through energy saving and the introduction of heat pumps. There were also nationwide awareness raising campaigns about energy savings, and shifting the consumption of consumers to hours of cheap and plentiful electricity. According to the Ministry of Economy's forecast, the consumption in 2023 will still remain at the same order of magnitude as the level in 2022.

LONG-TERM ANSWERS

On 17 April 2023 a new coalition government took office. The government remains in the hands of prime minister Kaja Kallas and coalition has been formed, consisting of Reform-Eesti 200 and Social Democrats. The new coalition agreement states that the government will view green transition as an opportunity for the economy and environment.[50] The new government has also stated it will develop a long-term vision for energy, which previously has been lacking in the government.

Oil shale: During 2022, oil shale stepped in to substitute for some of the Russian gas imports. The coalition declares that it no longer plans to open new oil shale mines and prefers to use the existing mines. According to the assessment of the National Competition Authority, the Estonian oil shale production blocks will play a very important role in our region in the coming years. The analysis reads: "In the long term, this will be very CO_2 intensive, but given the shift to timber in newer blocks, their sustainability is en-

44 Kaaver, K., 2023
45 Erilaid, E., 2023
46 Cole, M., 2022
47 Elering, 2022b
48 Puhm, C.-R., 2023
49 Raig, T., 2022b
50 Koalitsioonilepe, 2023

sured for some time."[51] The analyses looking further into the future show that from 2027 Estonian oil shale power plants may no longer be competitive on the electricity market. Therefore, Elering proposes to create a strategic reserve of oil shale production units, as a result of which sufficient production capacities are maintained in Estonia to ensure security of supply.[52]

Gas grid improvements: Gas grid improvements remain on the agenda. A more modern gas pipeline network is seen as an opportunity to use more gas with international origins, such as those with better access to Lithuania's Klaipeda LNG terminal, and to avoid price hikes. By 2024, transmission capacity increases are planned at the Karksi and Kiemenai points. In Estonia, gas is primarily used for heating instead of generating electricity, which means that renewable energy sources will have a difficult time replacing gas in these sectors until heat pumps are extensively implemented for heating.[53]

Renewable energy: The coalition has stated its intention to treat renewable energy as an overriding public interest. There are plans to speed up the planning, construction, and access to the network of renewable capacities, to set criteria for selecting projects of overwhelming public interest, and for accelerated and simplified construction. The Estonian state has set a goal to produce renewable electricity for its entire electricity consumption in 2030, with the aim of making Estonia a renewable energy exporting country.[54] An initial agreement has been signed with Finland for building a third interconnector between the two countries, EstLink 3, which would increase security of supply in the Baltic region and help the EU achieve its renewables targets.[55] The governing coalition is planning a strategy for increasing the market for biogas and promoting rooftop solar power on residential and industrial buildings.[56]

Nuclear: Building a small modular nuclear reactor is being considered as a possibility for the future of Estonia's energy mix for reducing its reliance on imported energy. The Ministry of Environment established a new working group on nuclear energy in April 2021, which is expected to announce the outcomes of its feasibility study on Estonian nuclear potential in the summer 2023. After conducting a spatial analysis, in spring 2023 the group identified at least four suitable locations in Estonia for building a nuclear power plant and a final storage site for spent nuclear fuel.[57]

Hydrogen: Hydrogen is seen as one of the ways forward to the future. Estonia joined the European Hydrogen Bank initiative, which aims to stimulate and support investment in hydrogen production.[58] Estonia also announced a "hydrogen valley" project, which brings together around 30 projects mostly in the feasibility stage spanning all aspects of the supply chain, with plans for at least six production facilities, infrastructure including import and export terminals, and end-use applications in transport and heating. Currently most of the projects are in the idea and feasibility phase. The working program for 2023–2028 was finalised in January 2023.[59]

Energy efficiency: Renovation of residential and commercial buildings is considered a priority for achieving energy independence and reducing costs for its citizens. The government is committed to supporting this initiative through funding from the European Union, recognising that energy-efficient buildings are key to reducing energy consumption and greenhouse gas emissions.[60]

51 Konkurentsiamet, 2021
52 Elering, 2022b
53 A'Hearn, B., 2022
54 Elering, 2022b
55 A'Hearn, B., 2022
56 Koalitsioonilepe, 2023
57 Mäekivi, M., 2023
58 European Commission, 2023
59 Vesinikuorg, 2023
60 Koalitsioonilepe, 2023

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FORESEEABLE CONSEQUENCES WITH REGARD TO EU CLIMATE GOALS/TARGETS?

In 2021, Estonia experienced a 28 per cent increase in CO_2 emissions, the highest in Europe, and greater than Bulgaria (27 per cent) and Malta (23 per cent).[61] Although Estonia's status as a small country means that its backsliding is not likely to have a significant impact on the EU's climate targets, it is difficult for Estonia to stay on track with its own climate targets. Though the country did experience a significant reduction in annual gas consumption, the shift to oil shale in 2022 due to Russian aggression in Ukraine could have had a negative impact on the country's overall CO_2 balance.

Despite these challenges, Estonia is committed to achieving its 2050 target and is focused on solutions that will foster market development in the future and help to minimise similar situations. These solutions include increasing energy efficiency, promoting consumption management and a flexible electricity system, investing in new production units, and raising consumer awareness of energy saving.[62] The government has made energy security its top priority, recognising that the country's long-term economic stability is inextricably linked to its ability to maintain energy independence.

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61 BNS, 2022

62 Konkurentsiamet, 2021

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