Security of electricity supply in Estonia

Has the necessary electricity been guaranteed to consumers in Estonia for the next ten years?

Report of the National Audit Office to the
Riigikogu, Tallinn, 15 November 2023

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Summary of audit results

This time, the annual report 2023 of the National Audit Office is focused on the choices of the electricity system. To prepare the annual overview, the National Audit Office audited the security of electricity supply in Estonia. The audit report was one of the bases for preparing the annual overview, and it addresses three topics: whether it is sufficient what has been done to ensure the security of electricity supply, whether connecting the Estonian electricity system to the Continental European frequency band is on schedule, and whether the State is prepared to respond to an electricity emergency situation.

During the audited period, the Ministry of Economic Affairs and Communications was responsible for the area of energy, including the security of electricity supply. From 1 July 2023, the functions related to energy fall under the responsibility of the Ministry of Climate. Accordingly, in this audit, the National Audit Office refers to the Ministry of Economic Affairs and Communications (MEAC) with regard to observations but makes its recommendations to the Minister of Climate.

What did the National Audit Office find?

By now, there is a risk that Estonia may have a problem with security of electricity supply in 2027. Although the first signs that production of electricity from oil shale in Estonia may no longer be competitive in the future were revealed by the analyses of electricity supply carried out by Elering AS as early as in 2013, the owner instructed Eesti Energia AS only in 2019 to ensure 1000 MW of controllable electricity production capacity to ensure electricity production in Estonia to be sufficient to meet the electricity consumption demands. At the same time, the analysis of security of supply prepared in 2022 by ENTSO-E, the European Network of Transmission System Operators for Electricity, and the analysis of security of supply prepared and published by Elering AS the same year explicitly pointed out, for the first time, that the security of electricity supply may not be ensured in Estonia in 2027 because production of electricity from oil shale may no longer be competitive in the open electricity market[1].

[1] Report on security of electricity supply in Estonia. Elering AS, 2022 (pp. 11, 20, 75, 77); European Resource Adequacy Assessment. European Network of Transmission System Operators (ENTSO). 2022

Strategic reserve – electricity production capacity acquired for a limited time under predetermined terms and conditions, which is activated only if production capacity in the market is insufficient and security of supply is therefore at risk, and which is separated from the rest of the electricity market and does not affect the price of the electricity market.

In order to prevent the problem of security of electricity supply in Estonia that may arise in 2027, the Ministry of Climate and Elering AS have commenced with activities to establish a strategic reserve. Thus, preparatory activities have been carried out in 2023 in order to apply for the necessary state aid permission from the European Commission.

The availability of electricity is significantly affected by the increased price of electricity, which the Ministry of Economic Affairs and Communications had not taken into account from the consumer's point of view. The ministry assumed that the price of electricity is formed in the market as a balance of supply and demand and that in the conditions of a free market, the price of electricity cannot be too biased towards either producers or consumers. At the same time, the ministry has not assessed the impact of electricity prices on consumers, and it does not have a plan on how and which consumers should be protected from electricity prices that remain high for a long time.

Although subsidies have been paid to consumers in order to mitigate the high price of electricity – a total of approximately 190 million euros in subsidies have been paid in 2021–2023[2] – and consumers were transferred to the universal service established in the autumn of 2022 based on the law, the subsidies have mostly not been targeted and the production price of the universal service has turned out to be several times more expensive than the average exchange price of electricity in the first half of 2023. Despite the fact that a total of 192,196 customers still used the universal service and the general service related to its production price as at the end of July 2023[3], the ministry has not actively informed consumers or motivated them to choose an electricity package at a cheaper price than the universal service.

The full-scale Russian war against Ukraine, which began on 24 February 2022, significantly increased the risks of security of electricity supply in Estonia. According to the nationwide risk analysis, the risk of a large-scale power outage in Estonia is also very likely.[4] In order to reduce the risks of electricity security, the electricity system of the Baltic States must be synchronised with the Continental European frequency band, and several security risks threatening the Estonian electricity system, including cyber and sabotage risks, need to be mitigated in parallel. Although in Estonia, the activities required for synchronisation have so far been implemented according to the schedule, the possibilities of accelerating the project are limited due to the long delivery time of the materials required for the work and the lack of people doing the work. On 3 August 2023, the Baltic States agreed that the connection to the Continental European frequency band will take place earlier than originally agreed, in February 2025. At the same time, several direct security risks, including cyber and sabotage risks, need to be mitigated, and action plans need to be constantly practiced, including in case Russia organises an extraordinary desynchronisation, the water level at the Narva reservoir drops, external connections are interrupted, etc.

[2] The amount of subsidies is given inclusive of value added tax.

[3] According to the data of Eesti Energia AS.

[4] https://riigikantselei.ee/riskid#elektrikatkestus

Main recommendations

Recommendations of the National Audit Office to the Minister of Climate:

- analyse which consumers should be protected from long-term high electricity prices;
- update the electricity emergency response plan;
- improve supervision to ensure that providers of a vital service assess risks as soon as important circumstances affecting the provision of a vital service change.

Response of the Minister of Climate: The Ministry of Climate is analysing matters concerning the so-called energy poverty as part of the Energy Economy Development Plan 2035, which is currently being prepared. The development plan is to be completed at the beginning of 2025. According to the current legislation, low-income households can apply for a subsidy from the local government to cover their energy costs.

Comment of the National Audit Office: The purpose of the recommendation is to avoid state support measures to mitigate high electricity prices in the future as a result of which the state spends taxpayers' money on consumers who are not in need of support. By proactively planning measures to mitigate high electricity prices, it is also possible to analyse the price sensitivity of consumers and the effect of potential subsidies on electricity consumers and peak load.

Response of the Minister of Climate: We are of the opinion that the current emergency response plan works well. We plan to regularly review the plan. The electricity emergency response plan is planned to be updated in the first half of 2024.

Comment of the National Audit Office: The audit revealed that the emergency response plan is neither up to date nor functional. Among other things, the plan does not address the activities of the Ministry of Climate in the event of an extraordinary disconnection of the Baltic States from the Russian electricity grid and attacks on the electricity infrastructure nor the specific tasks of the Ministry of Climate, the Government of the Republic and providers of a vital service in responding to an electricity emergency.

Response of the Minister of Climate: We agree that supervision over providers of a vital service could be approved. To ensure such a task, it is necessary to find additional resources for the Ministry of Climate.

Contents

Overview

Power grid – the grid meant for the transmission of electricity from power generating sources to consumers.

Consumer – a person who buys electricity exclusively for their own use. A person using electricity produced by a power plant for own use is not deemed to be a consumer.

Transmission system – the system through which electricity is transported closer to consumers over long distances. This also includes interconnections among countries.

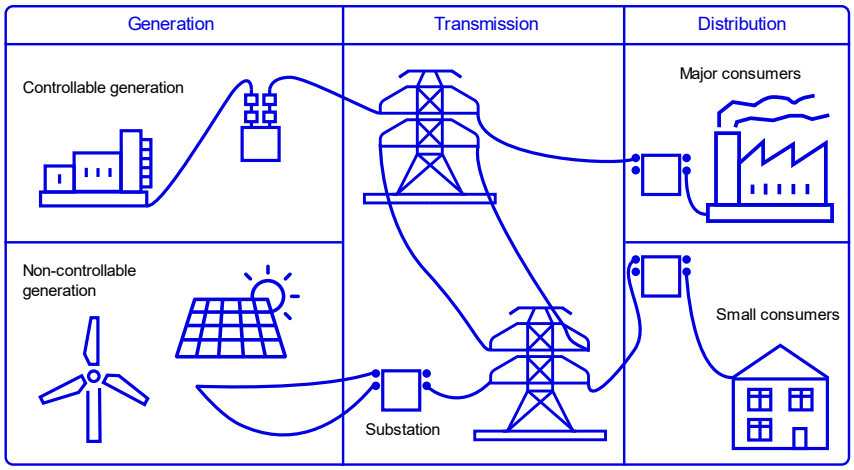
Distribution network – the network through which the electricity delivered by the transmission system is directly distributed and delivered from the connection points of the transmission system to the consumers.

Power plant – a unit for the generation of electricity that consists of one or several sets of generation equipment together with the ancillary equipment and facilities.

1. The Estonian electricity system consists of internal power grids and interconnections with neighbouring countries, and its role is to connect electricity producers to consumers. The power grid, in turn, consists of the transmission system and the distribution network. The transmission system covers 5,135 km of overhead and cable lines and 156 substations.[5]

2. Two types of capacity are used to generate electricity – controllable capacities of power plants and weather-dependent uncontrollable capacities (e.g. wind and solar power plants). Whilst controllable capacity can be used to generate electricity at any time when necessary, the availability of weather-dependent generation capacity at any time is not guaranteed. In order to keep the electricity system operational in Estonia, it is necessary to maintain around 1000 MW[6] of definite controllable capacity. The electrical system is illustrated in Figure 1.

Figure 1. Electricity system



Source: Elering, https://elering.ee/elektrisusteem

3. The transmission system of the electricity system, holdings in international connections and the Kiisa reserve power plant are owned by AS Elering, the electricity distribution network with the largest service area (95% of Estonia) is operated by Elektrilevi OÜ[7] and Enefit Power AS is a large electricity producer that owns the largest electricity generation capacities – the Estonian power plant, the Auvere power plant and the Baltic power plant.

4. In 2022, electricity consumption in Estonia[8] was 8.2 TWh and the consumption volume forecast for 2023 is 9 TWh.[9] Estonia's peak consumption, i.e. the maximum amount of electricity needed at the same

[5] According to Elering AS as at 1 January 2023: map of transmission system.

[6] Elering AS estimates that there should be about 1000 MW of controllable capacity in Estonia to ensure the safe operation of the electricity system.

[7] Imatra Elekter AS (a subsidiary of Elektrilevi OÜ) and VKG Elektrivõrgud OÜ also belong among the distribution network companies.

[8] See the Elering AS website. Added to this are losses, which amount to 4% of total consumption.

[9] Security of Supply Report of the Estonian Electricity System. Elering AS, 2022 (p 97, Table 4.2).

Net capacity – the maximum power that generating equipment delivers to the grid.

time, for 2023 is planned as approximately 1,590 MW.[10] As of 2022, the total net capacity in Estonia was 2,543 MW[11] and the share of Enefit Power AS in this is 1,340 MW.[12] In addition, Estonia has two electricity connections with Finland – EstLink 1 and EstLink 2 – and three electricity connections with Latvia. The total maximum capacity of all international connections is nearly 3,706 MW.[13]

5. The state's energy objectives are set out in the strategic document Energy Sector Development Plan 2030 (ENMAK 2030)[14], approved by the Government of the Republic in 2017. In order to update the development plan, in particular make it comply with the climate and energy policy objectives set by the European Union and Estonia at national level, the Ministry of Climate is preparing a new development plan – ENMAK 2035, which should be completed in 2025. In addition, the Energy Sector Organisation Act sets a target according to which at least 100% of the total final electricity consumption will be renewable by 2030.[15] This means that by 2030, at least as much electricity as the total electricity consumed in Estonia in a year will be produced from renewable sources in Estonia.

Power supply parties and roles

Security of supply – the ability of the system to provide consumers with adequate power supply, i.e. it is a measure that indicates whether power consumption and generation are balanced to the required extent.

Frequency area– the region in which the electricity systems of states are interconnected by AC links and operate at the same frequency.

6. The Ministry of Climate is responsible for the national energy policy of Estonia, the development and implementation of sectoral development plans and the organisation of the continuity of power supply, based on the long-term energy and climate policy objectives of the European Union.

7. The operator of the Estonian electricity system is the state-owned company Elering AS and the obligations of its owner are performed by the Ministry of Climate. One of the most important tasks of the system operator is to ensure security of power supply, i.e. the safe and reliable operation of the electricity system, including the balancing of generation and consumption at all times. Elering AS is also responsible for the synchronisation of the electricity system with the Continental European frequency area.

A vital service has an overwhelming influence over the functioning of society and an interruption in its provision poses an immediate hazard to the life or health of people or the functioning of other vital services or services of general interest.

A vital service provider is:
1) a producer whose power plant has a net generating capacity greater than 200 MW (Enefit Power AS);
2) a line possessor whose power line crosses the state border and has a transmission capacity exceeding 100 MW;
3) the transmission system operator (AS Elering);
4) a network operator with more than 10,000 consumers connected to its distribution network (Elektrilevi OÜ).

8. The Ministry of Climate is also the authority that organises the continuity of power supply as a vital service[16]. The National Audit Office audited the following vital service providers[17]: Elering AS, Elektrilevi OÜ and Enefit Power AS. In addition, there are a number of other parties that perform security of supply functions (see Figure 2).

[10] Ibid, p 97.

[11] Ibid, p 99. Added to this is the Kiisa reserve power plant with a capacity of 250 MW, which does not participate in the electricity market.

[12] According to the data sent by Elering AS.

[13] EstLink 1 – 350 MW, EstLink 2 – 650 MW, and the connections between Estonia and Latvia total 2,706 MW according to Elering AS, including 1,259 MW of capacity in the Estonian direction and 1,447 MW in the Latvian direction.

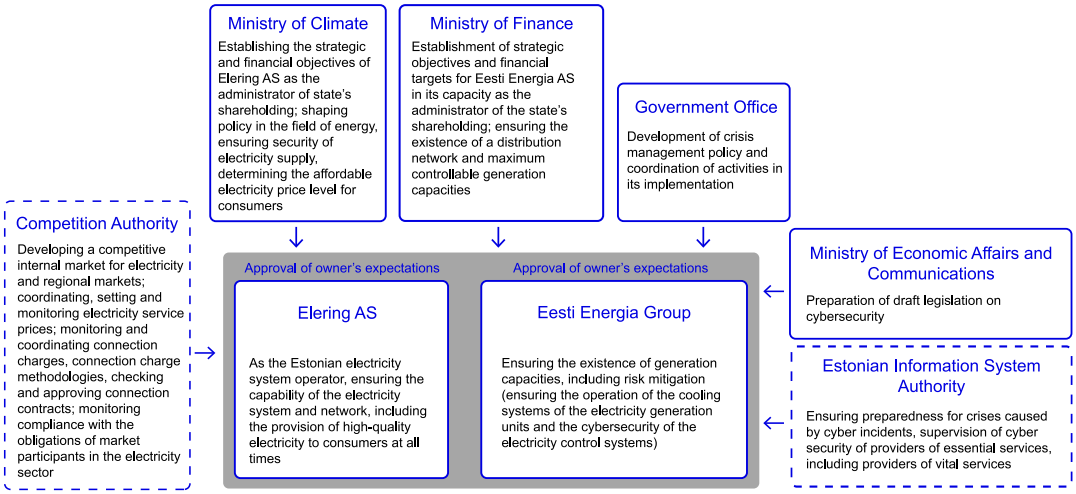
[14] Energy Sector Development Plan 2030. Tallinn, 2017.

[15] § 32[1] of the Energy Sector Organisation Act.

[16] Clause 36 (1) 1) of the Emergency Act

[17] Subsections 21[1] (1)-(4) of the Electricity Market Act.

Figure 2. Parties responsible for security of power supply and their tasks



* The Estonian Information System Authority is in the area of government of the Ministry of Economic Affairs and Communications and the Competition Authority is governed by the Ministry of Justice. The Competition Authority was not audited by the National Audit Office in this audit.

Source: National Audit Office

9. According to the International Energy Agency, energy security is the possibility to supply energy resources at affordable prices without interruption.[18] The Ministry of Climate Change has defined security of energy supply as the accessibility of energy to consumers in the required quantities, at the required time and at an acceptable price.[19] The objective of energy security and security of supply is therefore to ensure that consumers get the energy they need at a price they can afford.

The assessment of the capacity of the pan-European electricity system is based on the data provided by European system operators on generation capacity, consumption and transmission capacity in each country and on a pan-European market modelling database containing the collected data.

10. At the European level, the European Network of Transmission System Operators for Electricity, i.e. the ENTSO-E[20], analyses whether there is sufficient generation capacity, including transmission capacity and international connections, to meet future consumption. The European electricity system capacity analyses prepared by ENTSO-E look at the situation ten years in advance.

11. The task of Elering AS is to ensure the security of electricity supply in Estonia. The performance of this task focuses on technical security of supply, which is ensured by concentrating on four components: system, control, network and digital capabilities.

Reliability standard – the standard by which each Member State determines the level of capacity of its electricity system through two parameters:

- Loss of Load Expectation (LOLE), and
- Expected Energy Not Served (EENS).

Limited service house – duration of limitation or interruption of power supply. The LOLE is the expected number of hours per year when consumption cannot be covered by market-based means, i.e. consumption exceeds production and import capacity and electricity consumption may be restricted.

12. In addition, Elering AS has to estimate the electricity generation reserve needed to meet the demand for electricity, based on the fact that Estonia's reliability standard for the electricity system is set at nine limited service hours per year, and the volume of consumption limitation, i.e. maximum quantity of Expected Energy Not Served, is 4.5 gigawatt-hours per year (GWh/y).[21]

13. The reliability standard is used in the European security of supply, or resource adequacy, assessment to determine whether security of supply is ensured without imposing excessive costs on society and the economy,

[18] International Energy Agency (IEA).

[19] On the website of the Ministry of Climate.

[20] https://www.entsoe.eu/

[21] Subsection 14[1] (2) of Government of the Republic Regulation No 10 Grid Code on the Functioning of the Electricity System of 14 February 2019.

taking into account known generation and transmission capacities and probable scenarios.

14. If the assessment of the pan-European security of supply prepared by ENTSO-E shows that the LOLE in Estonia may exceed nine hours per year or the maximum limited capacity of 4.5 GWh, the state may initiate a process to establish a strategic reserve to ensure the reliability standard of the electricity system.

15. One of the objectives of the EU long-term strategy for the security of supply is to ensure, for the benefit of its citizens, the uninterrupted physical availability of energy, including electricity, on the market at a price that is affordable for all consumers (private and commercial).[22] The IEA also refers to the same objective, stating that electricity, which is considered a basic necessity of life, should be affordable for everyone at all times, and that security of supply is ensured when there is enough energy and it is affordable.[23]

16. According to the World Energy Council[24], the price of electricity also plays an important role in the assessment of energy policy measures, as it affects both electricity production and consumption.[25] The balanced functioning of the energy system is illustrated by the figure of the Energy Council (see Figure 3).

The impact of the electricity price on both private and commercial consumption should be taken into account when assessing the security of electricity supply

Did you know that

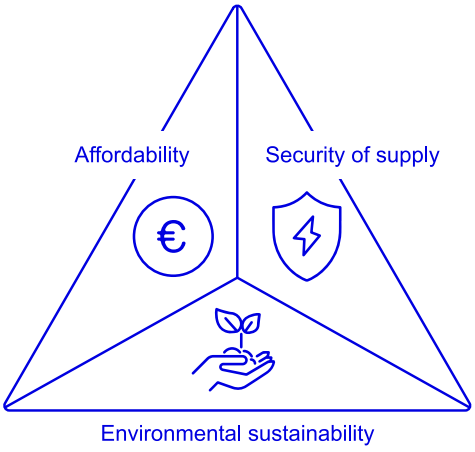
every year **since 2010,** the World Energy Council ranks 127 countries in the World Energy Trilemma Index on the basis of the sustainability of their energy policies. The affordability of energy prices for consumers is also taken into account as an indicator of the performance of energy systems when assessing energy policy.

Estonia ranked 9th in the World Energy Trilemma Index 2022 (access to electricity and electricity prices, i.e. the national electricity price as an indicator of affordable energy services for consumers, were taken into account among other things).

Estonia's position was affected first and foremost by the extremely steep and unexpected price increase on the Estonian energy market from the second half of 2021, which resulted in the average electricity price increasing 3-4 times compared to the electricity prices in 2020.

Sources: Website of the World Energy Council https://www.worldenergy.org/transition-toolkit/world-energy-trilemma-index and https://trilemma.worldenergy.org/#!/country-profile?country=Estonia&year=2022

Figure 3. Energy trilemma, i.e. finding a balance between energy affordability, environmental sustainability and security of supply



Source: World Energy Council

[22] The European Commission's Green Paper. Towards a European strategy for the security of energy supply. 29.11.2000.

[23] Samantha Ölz et al., 2007. Contribution of Renewables to Energy Security. IEA Information Paper. Page 13.

[24] The World Energy Council (WEC) is an international organisation established in 1923. The World Energy Council consists of national member committees representing energy producers and suppliers, energy sellers and users, energy ministries, government agencies, policymakers, practical decision makers, researchers, academic institutions and environmental organisations.

[25] The 2014 Energy Security Report of the Estonian National Committee of the World Energy Council states that security of supply means consumers have access to the necessary amount of energy, at the required time and at an affordable price, and that long-term access to high-quality and affordable energy resources, including electricity, must be guaranteed at national level.

Electricity market – platform for trading electricity, capacity as well as flexibility and support services.

General service – the sale of electricity to small customers who have not signed a contract with a specific electricity seller for purchasing electricity and to whom electricity is generally sold by the network operator itself.

17. ENTSO-E also takes into account the impact of electricity prices on generation in its security of supply analyses in order to identify which generation capacities are competitive on the market in the long term. The situation of Estonia in the light of the energy policy of the World Energy Council and its ranking in the Energy Trilemma Index are also recognised in the strategy document Energy Sector Development Plan 2030 (ENMAK 2030).[26] According to this development plan, the decrease in the electricity price and it becoming more affordable to consumers will be influenced in particular by the increase in people's incomes and the electricity market that expands as new electricity connections are added.[27]

18. With the opening of the electricity market, the price of electricity in Estonia from 1 January 2013 started to develop on the basis of the sales offers of electricity generators on the Nord Pool electricity market and the purchase demands of electricity sellers acting on behalf of consumers. In addition to buying electricity at the exchange price, Estonian consumers can also buy electricity at a fixed or general service price agreed with electricity sellers.

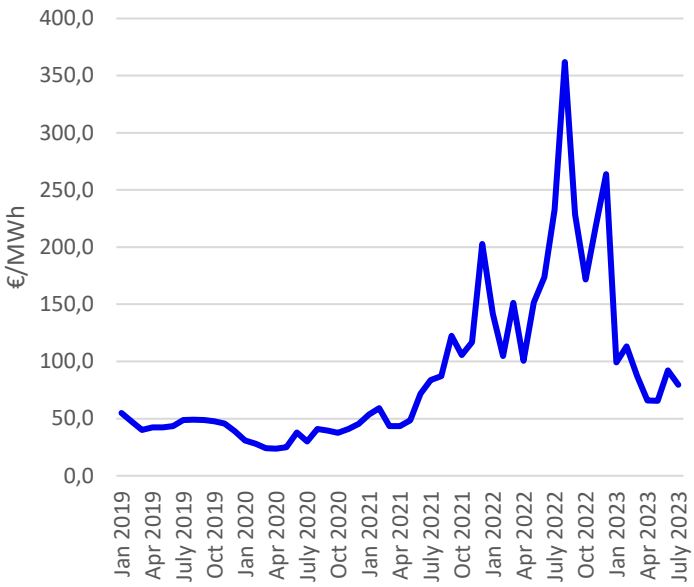
19. The electricity exchange price, which in different bidding areas is also affected by the adequacy of transnational electricity interconnections, is calculated in advance for all hours of the following day at noon on the day before. Thus, the average electricity price, which is affected by market conditions, can fluctuate widely and vary considerably over months. For example, while the average exchange price of electricity in the Estonian bidding area of Nord Pool was 361.9 euros/MWh in August 2022, it was 94.4 euros/MWh in August 2023, or *ca* 74% less than a year earlier. The average exchange price of electricity in 2023 has been higher than this only in January and February (see also Figure 4).

Did you know that

According to Elering AS, the lowest electricity generation capacity in recent times and the resulting increase in electricity prices were caused by the following circumstances: The volatility of the energy price and the reduced energy imports from Russia due to Russia's aggression in Ukraine, disruptions in the supply of fuels for energy production, low hydro reserves in Europe due to the dry summer of 2022, and several nuclear power plant accidents.

Source: Security of Supply Report of the Estonian Electricity System. Elering AS, 2022

Figure 4. Change in the average electricity exchange price in the Estonian bidding area of Nord Pool from 01.01.2019 to 31.07.2023 (€/MWh)



Source: National Audit Office according to Eesti Energia AS

Did you know that

the maximum exchange price of electricity was achieved in the Estonian bidding area of Nord Pool on 17 August 2022, when the price of electricity per one MWh was 4,000 euros. Based on measurements carried out by Elering AS, electricity consumption decreased by just over 10% compared to the same hour the previous day and the following day.

[26] Energy Sector Development Plan 2030. Tallinn, 2017.

[27] According to the data reported in ENMAK 2030, the results of Estonia were average compared to other countries based on the indicators for 2016.

Did you know that

The average price of the **CO_2 quota** has, according to the European Energy Exchange, increased since 2020 from 26.4 euros/tCO_2 in May 2023 to as much as 83.6 euros/tCO_2, i.e. almost threefold in the last three years.

Source: Data of the European Energy Exchange (EEX) (January 2020 – May 2023)

20. The electricity price is mainly influenced by the prices of the primary fuels used to generate electricity, the amount of electricity consumed, the amount of generation and transmission capacity currently available on the market, and the generation sources. For example, maintenance of generation plants, the accessibility of cross-border interconnections, and the quantity of weather-dependent renewable energy produced can all contribute to the volatility of the electricity price.

21. In Estonia, the electricity price is influenced most by generation capacity in the immediate region, transmission capacities with other countries and the weather, including the resulting local solar and wind energy generation and hydropower generation in the Nordic countries and Latvia. The price of electricity in Estonia is also largely determined by the price of primary fuels and the quota price of the CO_2 emitted when fuels are used, which significantly increases the cost price of electricity produced from oil shale[28] and may lead to a situation where it cannot be sold on the market due to its high price.

Home consumer – a consumer who uses electricity for household purposes not related to their economic or professional activity.

22. In order to mitigate the sharp increase in electricity prices over the last few years, consumers have been supported through various measures between 2021 and 2023.[29] High electricity costs have been partly compensated by the state both for household consumers who are natural persons and for business consumers who are legal persons. In addition, the state has an obligation to protect persons who are unable to buy energy within the meaning of the Energy Sector Organisation Act[30] and who receive the subsistence benefit under the Social Welfare Act[31].[32] For the subsidies covered in this audit, the focus was only on subsidies granted to household consumers in the 2022/2023 heating period.

The risks threatening the electricity security have increased

23. The Baltic electricity system is part of a combined system that operates synchronously with Russia and Belarus, which poses a geopolitical and energy security risk as Russia controls the combined electricity system's frequency[33] under the BRELL agreement, one of the key parameters through which it influences the functioning of the entire electricity system.

24. The three Baltic countries started the process of separating from the Russian electricity system and interconnecting to the continental European frequency area in 2019, and Estonia, Latvia and Lithuania plan to join the continental European frequency area by February 2025 at the latest, according to the synchronisation acceleration agreement signed on 3 August 2023.

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[28] According to Eesti Energia AS, as of 14 March 2023, the price of the CO_2 quota as a price component of oil shale electricity production remained at 96 euros per ton. Since the production of 1 MWh of oil shale electricity emits about 1 tonne of CO_2, Eesti Energia AS estimated that the price of oil shale electricity could not be brought down significantly and that it was cheaper to buy electricity from the market for daily consumption. (See Energy Market Overview: CO_2 Price Keeps the Price of the Universal Service High.)

[29] Compensation of energy costs | Ministry of Finance (fin.ee), Energy benefits for household consumers | Environmental Investment Centre (kik.ee)

[30] Clause 2 7^2) of the Energy Sector Organisation Act.

[31] §§ 131, 133 of the Social Welfare Act.

[32] See also "Annual report by the National Audit Office to the Parliament (2022–2023). Choices of the Estonian electricity system". 2023.

[33] Elering AS website.

25. The legal basis for preparing for and responding to crises that threaten the security of electricity supply in peacetime conditions are set out in the Emergency Act[34] and its sub-acts. At European Union level, responding to crises in electricity supply is regulated by Regulation (EU) 2019/941 of the European Parliament and of the Council.[35] Cybersecurity is regulated by the Cybersecurity Act.[36]

Estonia may be facing problems with the adequacy of electricity generation capacity in 2027

26. In order to ensure security of electricity supply, it must be guaranteed on a market basis that local generation capacity and international connections cover electricity consumption at all times. In addition, necessary measures must be implemented to deal with failures of production equipment or international connections.

27. If there is not enough capacity on the market and new capacity is not actively created, there is a risk that electricity prices could become too expensive for consumers in the event of a shortage.

28. According to the EU Regulation on the Internal Market for Electricity, the objective of the Energy Union is to ensure that end-users – both home consumers and businesses – have access to safe, secure, sustainable, competitive and affordable energy.[37]

29. The National Audit Office analysed whether local electricity production with international connections will cover peak electricity consumption in Estonia until 2032.[38] The National Audit Office also investigated whether the Ministry of Climate has assessed the impact of electricity prices on consumption and taken measures to ensure affordable electricity prices for consumers.

Did you know that

the electricity price is made up of the following components: network service, electricity price (without network service) and taxes (renewable energy fee, electricity excise and VAT).

According to the Competition Authority, in 2021 they accounted for 28%, 49% and 23% of the electricity price, respectively.

Source: https://www.energiatalgud.ee/Elektrienergia_hind?category=775

Estonia may not have enough market-based production capacity to cover electricity consumption already in 2027

30. In order to ensure the security of electricity supply in Estonia for the next ten years until 2033, peak electricity demand must be covered at all times by the necessary amount of local electricity production and imports.

31. According to the EU Regulation on the Internal Market for Electricity, ENTSO-E[39] has to analyse the electricity supply situation in the European Union, including the Baltic and Finnish regions, ten years in advance and for every year.

32. According to Elering AS, ENTSO-E has not carried out an annual security of supply assessment for the next ten years due to lack of capacity. Thus, in 2021, ENTSO-E assessed the situation of security of

Did you know that

The problem of shortages in Estonian production capacities should be solved in 2030, assuming that large amounts of production capacities based on renewable energy are added to the market.

Estonia has set itself the target that at least 100% of the total summary final consumption of energy as of 2030 is renewable energy. However, this does not solve the problem of controllable capacity (see point 71 for details).

[34] Emergency Act.

[35] Regulation of the European Parliament and of the Council on risk-preparedness in the electricity sector, (EU) 2019/941.

[36] Cybersecurity Act.

[37] Regulation of the European Parliament and of the Council on the internal market for electricity, (EU) 2019/943.

[38] See also "Annual report by the National Audit Office to the Parliament (2022–2023). Choices of the Estonian electricity system". 2023.

[39] European Network of Transmission System Operators for Electricity.

electricity supply in the European Union in 2025 and 2030. For both years, ENTSO-E did not identify any problem with exceeding the reliability standard in Estonia.

33. However, when in 2022 ENTSO-E assessed the production capacity situation in the interim period, i.e. in 2027, it concluded in its assessment of the capacity of the pan-European electricity system[40] that, if the situation on which the assessment is based were to materialise, oil shale power generation in Estonia would no longer be economically sustainable in 2027, and the owner may therefore decide to abandon or significantly reduce oil shale power generation.

Oil shale retort gas – residual gas from shale oil production

34. According to Eesti Energia AS, if the production of electricity from oil shale becomes uncompetitive, this will not lead to the closure of all Enefit Power AS power plants, but to the end or a very significant reduction in the use of oil shale as a fuel. Production of energy from oil shale retort gas and biomass would continue. As oil shale retort gas and biomass are not available in quantities comparable to oil shale, the amount of electricity produced will decrease.

35. According to ENTSO-E, there is a risk that Estonia would no longer be able to guarantee the reliability standard, i.e. the LOLE numbers, at the required level if electricity production from oil shale were to end in 2027.[41] Elering AS also refers to the issue identified by ENTSO-E in its 2022 report.[42]

Security of supply is guaranteed until the end of 2026 with controlled generation capacity

36. At the same time, ensuring the security of electricity supply is also affected by the owner's expectations of Eesti Energia AS, Estonia's largest electricity producer. Namely, in August 2019, the Ministry of Finance informed Eesti Energia AS for the first time in writing of its expectations, which included, among other things, a guideline to guarantee at least 1000 MW of managed electricity generation capacity within Estonia free of charge by the end of 2023.

37. In order to continue to keep the national controlled generation capacity at 1000 MW in the coming years, even if it is unprofitable for Eesti Energia AS, the same expectation was extended until the end of 2026 in the current owner's expectations document, which was updated in August 2022.[43]

38. However, for Eesti Energia AS, the obligation to guarantee a production capacity of 1000 MW means that it also needs to keep the two older dust incineration units in operation, which it would not otherwise do in the long term given the prevailing market situation.

39. Thus, in essence, the security of electricity supply in Estonia is not guaranteed on a market basis, but through the owner's expectations given to Eesti Energia AS. Experts also believe that such state interference adds to the uncertainty surrounding the investments needed to create new electricity generation capacity.

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[40] Report "European Resource Adequacy Assessment (ERAA)". ENTSO-e, 2022.

[41] According to ENTSO-E, the loss of load expectation (LOLE) number in Estonia would be 9.7 in 2027 (the required number is 9 or less hours per year). ERAA Report, 2022 (pp 17–18).

[42] Security of Supply Report of the Estonian Electricity System. Elering AS, 2022 (pp 87–88).

[43] Owner's expectations of Eesti Energia AS. 25.08.2022.

40. Already in its 2012 review[44], the National Audit Office pointed out that the Ministry of Economic Affairs and Communications (MEAC) should decide what the Estonian state's electricity generation portfolio should be, so that investors would be clear which generation capacities are expected in Estonia and which are not. At present, however, the investment environment for the creation of new power generation capacity remains uncertain and, as a result, there is no market-based addition of controlled generation capacity.

41. Thus, a situation has now arisen where the requirement for Eesti Energia AS to ensure at least 1000 MW of local controlled generation capacity in Estonia by 2026, as expected by the owner, will expire in 2027, after just four years and there may not be enough market-based generation capacity in Estonia to cover electricity consumption, and a reserve capacity mechanism will have to be created to maintain the necessary capacity.

Reserve capacity mechanism – a temporary measure to ensure sufficient capacity, the owners of which are remunerated for the availability and readiness of resources.

Source: Regulation of the European Parliament and of the Council on the internal market for electricity

The first signs that Estonia may face a problem with security of electricity supply were already apparent in the 2013 security of supply assessment

42. In order to assess whether sufficient generation capacities and import capacity is available to cover the expected consumption in each year, Elering AS has to carry out an annual security of electricity supply assessment with a ten-year preview, taking into account both the adequacy of electricity generation and the impact of international connections on the security of electricity supply. In addition, both planned and unplanned maintenance of generation capacity and international connections, weather conditions and other factors affecting capacity availability must be taken into account.

43. Before the EU Regulation on the Internal Market for Electricity entered into force in 2019, it was the responsibility of each Member State to identify security of electricity supply problems. In Estonia, Elering AS performed this task and analysed the security of supply situation. Elering AS is still performing this task.

44. Although Elering AS has analysed the security of supply situation in advance every year since 2011[45] and has also taken into account the existence of international connections in covering Estonia's electricity consumption since 2013, its deterministic assessment does not take into account renewable energy generation capacities and their impact on electricity price formation, nor does it take into account whether existing generation capacities will be competitive in the future at all given market conditions.

45. However, unlike the deterministic assessment methodology, the pan-European assessment on electricity security of supply developed by ENTSO-E also takes into account past climate conditions, i.e. historical climate years.[46] Based on all the indicators considered in the assessment, ENTSO-E generates 700 possible scenarios for every hour of electricity

[44] Possible choices of electricity production. National Audit Office 2012.

[45] The first security of supply assessment of Elering AS: Security of Supply Report of the Estonian Electricity System. 2011.

[46] The methodology optimises every hour of 35 climate years in which there are different hour-based values for demand, wind conditions, solar radiation, and hydrological situation.

production and consumption across Europe for each year analysed, where unlikely and extreme situations occur alongside the normal situations. For example, if several large power plants experience an outage at the same time when consumption has peaked, this can have a significant impact on the assessment of the capacity of the electricity system.

46. Elering AS claims that it prepares, at the same time as ENTSO-E, which uses a more complex assessment methodology with more variables to analyse the capacity of the pan-European electricity system,[47] its own regional security of supply assessment, including for forecasting generation capacities and import capacity, which is based on the data and methodology of ENTSO-E.

47. In its assessment, Elering AS focuses on the narrower Baltic Sea region, which means that it takes into account the data and specificities of the neighbouring countries in the region when assessing security of supply, and does not take into account data from more distant countries such as Spain and Portugal. If the results of the assessment done by Elering AS overlap with the results of the assessment of ENTSO-E, Elering AS will not disclose the results of its own assessment separately, but relies on the results of the pan-European ENTSO-E assessment.

48. The methodologies used by Elering AS to assess security of supply – both the deterministic and the regional assessment using ENTSO-E data – are based on the functioning of the European electricity market and do not take into account possible breaches of EU common market principles. For example, in autumn 2021, Sweden restricted electricity exports to ensure domestic security of supply, which is why trade between countries was limited and Estonia's import opportunities to ensure security of supply were smaller.

49. However, it is also important to note that whilst the previous analyses of ENTSO-E focused only on the assessment of compliance with the technical and environmental requirements imposed on production equipment, the methodology used for the 2022 assessment also took into account for the first time the factors related to the economic sustainability of electricity generation equipment.

50. Thus, for the first time, at the end of 2022, the assessment of ENTSO-E revealed that Estonia may face problems with security of electricity supply in 2027 if oil shale power generation is no longer competitive on the market by that time and the owner of oil power generation capacities that use oil shale may therefore decide to close down these capacities.

51. Elering AS reached the same conclusion in its assessment of the Baltic Sea region. Elering AS, which carries out annual security of electricity supply analyses with a horizon of about ten years, was unable to identify a potential threat to security of supply in 2027 before, because the economic sustainability of generation equipment was not assessed on the basis of the methodology applied before 2022.

52. Although the Ministry of Climate believes that the electricity market should ensure sufficient generation capacity, the Ministry of Climate

Did you know that

- **the Government of Finland** gave the permission for building Finland's newest nuclear power plant Olkiluoto 3 in February 2005, but the plant only started generating electricity on a regular basis in 2023.
- The additional generation capacity resulting from the launch of the new reactor at the nuclear power plant has led to a decrease in electricity prices on the market. For the first time in history, the daily average electricity exchange price in Finland was negative, i.e. –0.01 EUR/MWh, on 24 May 2023.

Source: Carl-Robert Puhm. Historic moment: Today's electricity price in Finland starts with a minus sign. Postimees, 24.05.2023

[47] ENTSO-E uses the Monte Carlo based probabilistic assessment methodology to assess the capacity of the electricity system.

(previously the MEAC) claims that the sustainability of oil shale-based power plants in ensuring security of supply has been under discussion for years and that this issue is not new or surprising to them.

53. However, as ENTSO-E did not forecast a shortage of generation capacity in Estonia either in 2025 or in 2030 in its assessment of 2021, the Ministry said that it was not possible to start solving the security of supply problem earlier. However, from 2021 onwards, the MEAC started to proactively create an additional strategic reserve.

54. According to Elering AS, it was also aware that some of the oil shale units might be left out from the market, and this fact was taken into account in the annual security of electricity supply analyses prepared by Elering AS.

55. This is also confirmed by the view expressed ten years ago in the Security of Supply assessment of 2013 prepared by Elering AS, that there are higher risks associated with oil shale because electricity generation from oil shale may no longer be competitive in the future. However, as the report indicated that capacity was to be maintained at least until 2021, Elering AS did not consider this to be a threat to the adequacy of generation over the next ten years.[48]

56. According to Elering AS, this is why, since 2020, preparatory activities have been carried out in cooperation with the Competition Authority and the MEAC (currently the Ministry of Climate) to ensure security of supply even after Eesti Energia AS decides to close down some of the oil shale units needed for electricity production.

57. The National Audit Office already pointed out in 2012, in its assessment of Estonia's electricity generation choices and possibilities[49], that as the price of CO_2 quotas rises, power plants producing electricity from oil shale will become uncompetitive, and in order to prevent this problem, renewable electricity generation capacity and the electricity grid supporting this should be developed in good time.

58. In a situation where an assessment of the security of electricity supply, i.e. an assessment of the system's capacity, reveals that the reliability standard is not met, the EU Regulation on the Internal Market for Electricity requires the Member State, led by the market regulator, which in Estonia is the Estonian Competition Authority, to first draw up a plan for the European Commission on how the market failures that prevent new generation capacity from entering the market will be removed.

59. If their removal is not sufficient to ensure security of supply, state aid approval must be obtained from the European Commission for the establishment of a reserve capacity mechanism. The Regulation states that in such cases the establishment of a strategic reserve is the preferred option and that other types of reserve capacity mechanism can be applied only if the problem of resource adequacy cannot be solved by a strategic reserve.

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[48] Security of Supply Report of the Estonian Electricity System 2013 (p 22, point 3.1.4). Elering AS, 2013.

[49] Possible choices of electricity production. National Audit Office 2012.

The establishment of a strategic reserve requires state aid approval from the European Commission

60. However, the Ministry of Climate points out that under the European Union Regulation on the Internal Market for Electricity, the state is generally not allowed to intervene in the functioning of the electricity market if the security of supply assessment of EN does not highlight the need to do so.[50]

61. Under the European Union Regulation on the Internal Market for Electricity, the pan-European assessment of ENTSO-E must also be validated by the European Union Agency for the Cooperation of Energy Regulators (ACER)[51].

62. However, ACER did not approve the ENTSO-E assessment of 2022, because it considered that the methodology used was flawed and therefore not accurate enough to ensure a reliable result.[52] Thus, ACER pointed out in its decision that ENTSO-E's assessment of 2022 should not be the basis for identifying security of supply problems, or even for requesting state aid approval and for the establishment of the strategic reserve.

63. The Ministry of Climate has also confirmed that it will not be possible to apply for state aid on the basis of the ENTSO-E assessment of 2022 and it will be done on the basis of the assessment of 2023, which is expected to be completed in December 2023.

64. Nonetheless, the Ministry of Climate and Elering AS are currently in the process of preparing the necessary documents to request state aid approval from the European Commission for the establishment of a strategic reserve, and plan to submit the request to the European Commission in early 2024.

65. According to Elering AS, all the steps necessary for the implementation of the strategic reserve – the calculation and implementation of the Estonian reliability standard, the assessment of the most appropriate reserve capacity mechanism for Estonia, the creation of the strategic reserve concept and public consultation, and the development of amendments to the legislation related to the reserve capacity mechanism – that could be taken before the security of supply risk was identified, were taken. Following the clarification of the security of supply problem, the process of requesting state aid approval for the implementation of the reserve capacity mechanism is now under way. Previously, this could not be done under the effective legislation.

66. However, the procurement needed to set up a strategic reserve can only be carried out after state aid approval is received. The size of the reserve will be determined during the preparation of the procurement and will depend on the market situation at that time. The cost of the reserve

Did you know that

Elering AS estimates that the cost of holding a 280 MW strategic reserve would be €18 million per year, or for an average Estonian household consuming *ca* 3000 kWh of electricity per year, this would mean an extra cost of *ca* 57 cents per month and *ca* €6.8 for the whole year.

Sources: Elering AS website; Krista Kaaver. Elering: Problems with security of supply of electricity mat arise in 2027. The ministry wants to create a strategic reserve. Delfi Ärileht, 14.03.2023

Did you know that

According to the Competition Authority, the Value of Lost Load (VOLL) per MWh for the society is €7,287. According to ENTSO-E's assessment, the load lost in Estonia in 2027 will be 1.75 GWh, so the total VOLL is €12.75 million.

Source: Madis Hindre. The state creates a strategic reserve from old production units of Eesti Energia. ERR, 09.03.2023

[50] Regulation of the European Parliament and of the Council on the internal market for electricity, (EU) 2019/943, point (43) and Article 21. The request for a state aid approval may also be based on a national assessment if it follows the methodology set out in the Internal Market Regulation and its results differ from those of the ENTSO-E assessment, provided that the results of the national assessment are also validated by ACER (Article 24 of the Regulation).

[51] Agency for the Cooperation of Energy Regulators (ACER).

[52] Decision 04/2023 of the European Union Agency for the Cooperation of Energy Regulators. 27.02.2023.

will also become clear when the type of the reserve capacities that will be offered is known.

67. Due to the fact that there is very little time left for the establishment of a possible reserve, during which it is highly unlikely that new power generation capacities can be planned and plants can be built, the Ministry of Climate does not rule out the possibility that the same old oil shale generation capacities owned by Eesti Energia AS that, according to ENTSO-E's assessment, may not be competitive in 2027 without state support, will serve as a strategic reserve in the future.

68. Elering AS finds that building new generation capacity to create a reserve would be more costly for electricity consumers than maintaining existing generation capacity. According to Elering, the security of supply problem that may emerge in 2027 can be solved on the basis of the existing generation capacity by no longer allowing capacity in strategic reserve to participate in the market, but keeping it operational and launching it for the moments when market-based capacities are exhausted.

69. The energy experts interviewed by the National Audit Office also pointed out that it is doubtful whether it would be possible to build new production capacities, if necessary, by 2027 when security of electricity supply problems may emerge in Estonia. According to them, security of supply should be assessed and the energy sector strategically planned even more than ten years in advance, as changes in the energy sector take a very long time, in particular investment planning and implementation.

70. The Ministry of Climate does not have a plan in place if the European Commission refuses to approve state aid for the establishment of the strategic reserve. The Ministry of Climate has so far hoped that, in the event of a refusal to approve state aid, the European Commission will itself propose alternative solutions to address the security of supply problem, after which these solutions can be considered.

71. It is also unclear whether there are plans to extend the obligation of Eesti Energia AS to keep oil shale-fired generation capacity in operation beyond 2026 through the renewal of the owner's expectations. Especially if the European Commission refuses to approve state aid for the establishment of the strategic reserve.

Even after 2030, there may be a shortage of controllable generation capacities

72. Although the assessment of ENTSO-E shows that Estonia will meet the reliability standard in 2030 and the Elering AS security of supply assessment for 2022 shows that there will be sufficient generation capacity in Estonia from 2030, Elering AS is of the opinion that there will be a shortage of controllable generation capacities in Estonia from 2031. This means that there will be significantly less than 1,000 MW of capacities by then.[53, 54]

73. However, as things stand, the requested state aid would not cover the period from 2030, when there will be sufficient generation capacity in

[53] Security of Supply Report of the Estonian Electricity System. Elering AS, 2022 (p 94).

[54] According to Elering AS, the maximum controllable capacities in 2031 will total 883 MW: 464 MW of hybrid power plants, 209 MW of small-scale generation such as waste incineration and biomass, and 210 MW of demand response, i.e. consumption control. This is the net capacity of the plants, not the actual production, which may be less than the net capacity.

Estonia according to the assessment of ENTSO-E. The Ministry of Climate considers that if the analyses of ENTSO-E show in the future that sufficient new capacities, including controllable capacities, will not be added on a market basis also after 2030, a new procurement will be organised to establish a strategic reserve.

74. In the opinion of the National Audit Office, the Ministry of Climate should not wait for the results of the next security of supply analyses, but should analyse the risks involved if the strategic reserve cannot be established and, if necessary, immediately develop measures in case the state aid for the establishment of the strategic reserve is not approved. The National Audit Office is also of the opinion that the potential problem of controlled capacities, which may arise after 2030, should be addressed now.

The Ministry of Economic Affairs and Communications has not monitored the affordability of electricity prices in addition to assessing the security of electricity supply

The problems of the adequacy of generation capacities also affect electricity prices

75. In a situation where there may not be sufficient generation capacities to meet electricity consumption on market-basis, and where the necessary new generation or transmission capacities are not added, electricity prices may become excessive for consumers and threaten their ability to cope. Therefore, the National Audit Office assumed that the MEAC also looks at the affordability of the electricity price[55] in addition to assessing the security of supply and has determined price level that is affordable for consumers, above which the price starts to threaten their ability to consume electricity.

Small consumer – for example, a household, apartment association, building association or business customer whose electrical installation is connected to the grid at low-voltage through main fuse of up to 63 ampere.

Network operator – an undertaking providing network services to customers through the power grid. The largest network operator in Estonia is Elektrilevi OÜ.

76. According to the Electricity Market Act, security of supply means the capability of the system to ensure that consumers are supplied with electricity in accordance with the requirements[56] and it must be possible for small consumers to buy the general service from the network operator to whose network his or her electrical installation is connected, for a price which is reasonable[57] and justified and which conforms to the principle of equal treatment.[58]

77. Over the last decade, consumers have had to buy electricity at a price determined by supply and demand on the electricity market, although this may not always be affordable.[59]

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[55] The definition of security of supply includes the electricity price component, both in the WEC Energy Trilemma Index and in the scientific literature – e.g. according to The Routledge Handbook of Energy Security (2010) by Lufti, Korin & Gupta, security of supply is the physical (availability, accessibility, reliability) and economic (affordability, price stability) availability of a product with the appropriate characteristics at the moment when it is needed. The European Commission and the International Energy Agency also define security of supply as the constant physical accessibility of energy products, including electricity, on the market at a price that is affordable to all consumers.

[56] Clause 3 28) of the Electricity Market Act.

[57] In this report, the National Audit Office regards the terms 'reasonable price' and 'affordable price' as synonyms, i.e. the same in meaning, and therefore uses the term 'affordable price' throughout the report.

[58] Subsection 76^1 (1) of the Energy Market Act.

[59] For example, the price of electricity on Nord Pool increased to the maximum possible, i.e. €4,000 per MWh, between 18:00 and 19:00 on 17 August 2022. The reasons for this increase in electricity prices and the proposals make the Baltic electricity market function better have been outlined by the Competition Authority in its Yearbook (2022).

78. High electricity prices have a direct impact on consumers' ability to consume electricity. If the price is very high, then even with an adequate supply of electricity, there is no certainty that everyone will be able to pay for it. High electricity prices also hinder economic development. The problem can be most acute during the heating season, when consumers cannot cut their electricity consumption down considerably to reduce their electricity costs.

According to the Ministry of Climate, the right electricity price is determined by the electricity market

79. According to the Ministry of Climate, the price of electricity is important in ensuring security of supply, but a high price does not in itself cause a disruption in the availability of electricity on the market. Although the price of electricity can fluctuate widely due to the small size of the Estonian market and its dependency on imports, the Ministry of Climate finds that its free formation on the electricity market is of primary importance and has not assessed what the affordable price should be to ensure the accessibility of electricity to consumers. Elering AS forecast very high electricity prices for the winter of 2022/2023 in its 2022 review "Security of Supply Report of the Estonian Electricity System"[60] even if there are no security of supply problems. However, Elering AS also found that considerably higher electricity prices than in the past would be likely in the event of security of supply risks materialising.

80. At the same time, Elering AS has, according to the Electricity Market Act, focused its security of supply assessment on the physical accessibility of electricity, i.e. the existence of sufficient electricity generation and supply infrastructure and markets. In a situation where the security of supply is ensured, Elering does not pass judgment on whether the electricity price on the market is right or wrong. But it is important for the offers from market participants to be justified and no one misuses their dominant position. This is supervised by the Competition Authority.[61]

81. In the opinion of the Ministry of Climate, it is the responsibility of the state to ensure that the electricity market develops in a transparent manner and in compliance with equal conditions of competition, and Elering AS must act primarily to ensure that electricity supply is technically guaranteed in the state at all times. The Ministry of Climate, as the owner, has not set an expectation for Elering AS to take the electricity price into account when ensuring security of supply. Nor does the Ministry have a methodology for setting electricity prices that are affordable for consumers.

The Ministry of Climate does not have a long-term plan for keeping electricity prices affordable

82. The Ministry of Climate explains that they proceed from the logic that if there is a shortage of generation capacities, the price of electricity will rise and this will attract private investors to build additional electricity generation capacities in Estonia. According to the Ministry, lower electricity prices can also be expected by increasing generation capacities in this manner.

[60] Security of Supply Report of the Estonian Electricity System. Elering AS, 2022.

[61] § 93 of the Electricity Market Act.

Did you know that

electricity prices increase generally as a result of low renewable energy production that depends on the weather, the limitation of cross-border capacity between price regions or a controllable production unit with low marginal costs undergoing maintenance or being out of order. In a situation where market demand will only be met by generation units with higher marginal costs, the electricity price may become very high at times.

This means that if there is not enough supply on the market or they are not cheap enough (wind and solar energy), generation plants with high marginal costs, such as gas and other fossil fuel plants, will enter the market and set the price.

In the opposite case, if there is a sufficient supply on the market, especially from renewable sources with low marginal costs, electricity prices will fall.

83. In the opinion of the Ministry of Climate, sufficient electricity generation must be ensured in order to achieve and maintain affordable electricity prices. However, lower electricity prices will be achieved in the future primarily through the addition of electricity from renewable sources (such as solar and wind) to the market, as well as through the further development of storage technologies.

84. According to the Ministry of Climate, a number of measures already in place to boost electricity generation, such as cleaning up the electricity grid from phantom connections or speculative power capacity bookings, speeding up planning and approval procedures, tackling the NIMBY[62] attitude through the regulation of the fees for tolerating wind turbines, as well as solving problems with the electricity distribution and transmission grid and launching the storage market, will also help ensure the affordability of the electricity price.

85. Elering AS also finds that in order to lower electricity prices and improve the capacity of the European energy system in the future, it will be necessary to increase renewable electricity generation capacities,[63] invest in the establishment of storage technologies and additional transmission capacities, and increase the flexibility and consumption management of the electricity system.[64]

86. According to the Ministry of Climate, Elering AS will not be able to use the Kiisa reserve power plant to increase electricity supply in the case of high electricity prices and thus ensure affordable prices for consumers. The Ministry explains that under EU law, the Kiisa reserve power plant can only be brought into operation if a generating capacity unexpectedly falls out of the market, and the total amount of generating capacities falls below the consumption need as a result. Thus, the Kiisa reserve power plant will only be launched in the event of a shortfall in generation capacities, as was the case, for example, in 2021 when there was an outage at a Finnish nuclear power plant.

Did you know that

based on the exchange price of electricity, consumers spent €1.524 billion on electricity in 2022 according to the data of the MEAC. In 2021, their total spending was only about half of that at €0.728 billion. At the same time, electricity consumption decreased, from 8397 GWh in 2021 to 7902 GWh in 2022, meaning that the increase in electricity costs in 2022 was mainly due to the high electricity price. The average exchange price of 19.28 cents/kWh of electricity in 2022 was used in the assessment (in 2021, electricity cost 8.67 cents/kWh).

Source: Argo Ideon. Energy costs increased more than a half for consumers last year. Nobody says how much revenue the state earned from this. Maaleht, 17.01.2023

87. If managing consumption is not enough to keep electricity production and consumption in balance, it is necessary to start limiting electricity consumption to keep the electricity system running. According to the agreement between the MEAC, Elering AS and Elektrilevi OÜ, in such situations electricity is provided first of all to sites related to guaranteeing the life and health of people, vital service providers, national defence facilities and, lastly, household consumers. However, this means that domestic consumers should also consider the possibility of power cuts.

88. However, the Ministry of Climate plans to develop legal amendments in 2023, which would give the Competition Authority a basis for creating a market model that would motivate the management of electricity consumption and thus encourage the entry of new necessary capacities to the market. The objective of the model for the day-ahead market is to make consumers curb their consumption during periods of high electricity prices and shift it to a time when there is more cheaper electricity on the

[62] NIMBY – not in my back yard.

[63] Wind and solar farms are meant here. According to Elering AS, solar power plants produced approximately 559 GWh of electricity in Estonia in 2022.

[64] Security of Supply Report of the Estonian Electricity System. Elering AS, 2022.

market. According to the new model, consumers would be paid an additional fee for managing their electricity consumption.

89. The National Audit Office is of the opinion that if electricity supply is not guaranteed in sufficient quantities, the high electricity price may make it more difficult for consumers to access electricity. Thus, if a problem with the adequacy of generation capacities were to arise in 2027, electricity prices could rise again to levels that could affect the subsistence of consumers.

90. In a situation where the high electricity price makes it difficult for consumers to buy electricity, there is no certainty that consumers will have sufficient access to electricity, including during the heating season. Thus, in the opinion of the National Audit Office, the price of electricity has a direct impact on the accessibility of electricity to different groups of consumers. In the light of this, it must be assessed whether consumers are able to pay for electricity when the price is too high. The duty of the Ministry of Climate is to ensure that energy policy is developed to address not only the sufficiency of electricity but also the price aspect.

91. **Recommendation of the National Audit Office to the Minister of Climate:** develop a methodology for determining the affordable price of electricity.

Response of the Minister of Climate: the goal of the Ministry of Climate is to ensure that 100% of the electricity consumed annually in Estonia is produced from renewable sources by 2030. The transition to renewable energy guarantees the consumer the most favourable electricity price. The Ministry does not consider it necessary to prepare a separate methodology for determining the affordable electricity price.

Comment of the National Audit Office: the aim of the recommendation is to avoid state support measures to mitigate high electricity prices in the future, as a result of which the state also spends taxpayers' money on consumers who do not need state support. Also, when measures to mitigate high electricity prices are proactively planned, the price sensitivity of consumers and the impact of possible subsidies on electricity consumption and peak load could also be analysed.

The universal service, which was meant to mitigate high electricity prices, is no longer fit for purpose

Various measures have been taken to try to reduce high electricity prices

92. In order to ensure the accessibility of electricity, it is important to avoid a situation where consumers are unable to buy electricity because of its excessively high price. In order to make sure this does not happen, the Ministry of Climate must have a plan in place regarding the measures that will be taken to protect consumers if electricity prices remain high for a long period of time.

93. Without knowing the price affordable to consumers beyond which their welfare may start to suffer, and how to ensure this price in the long term, the Ministry of Climate Change has so far been forced to implement solutions in a rush. The National Audit Office examined the measures taken by the MEAC in the 2022/2023 heating period to mitigate the steep rise in electricity prices and thus ensure affordability of household consumers.

94. European Union regulation allows, under certain conditions, the state to intervene in the formation of the price of supplied electricity. For a limited period of time, the state may provide consumers, including household consumers, with the possibility to buy electricity at a regulated price.[65]

Universal service – sales of electricity in the Estonian price region of the Nord Pool electricity exchange to the consumers of the universal service.

The household consumer of the universal service is both the household consumer as well as the person who buys electricity for the purpose of supplying and selling it to the household customer.

95. Thus, in autumn 2022[66], the state urgently took the decision to offer consumers electricity at a stable price that is cheaper than the exchange price, i.e. a universal service with a regulated basic price, due to the surge in electricity prices caused by the natural gas crisis. The right to provide this service was given to electricity sellers.[67]

96. Although consumers retained the option to choose other electricity plans if they so wished after the introduction of the universal service, electricity sellers providing the universal service were required to offer the universal service to their customers if the price of the customer's existing electricity plan was higher than the price of the universal service in force from 1 October to 31 December 2022.[68]

Electricity contract – a contract with an electricity seller for the purchase of electricity.

97. As such an arrangement did not require customers to submit a separate request to the electricity seller to switch or terminate their electricity contract, electricity sellers transferred their customers to the universal service and automatically concluded the necessary contract only on the basis of a comparison of electricity prices.[69]

98. In addition to the universal service, the state supported household consumers with €66.1 million from 1 October 2022 to 31 March 2023[70] to mitigate high electricity prices (see also Figure 5).

[65] Directive (EU) 2019/944 of the European Parliament and of the Council on common rules for the internal market for electricity and amending Directive 2012/27/EU, Article 5(4).

[66] On 15 September 2022, the Riigikogu approved the Draft Act for Amendment of the Electricity Market Act and the Competition Act initiated by the Ministry of Climate, on the basis of which electricity sellers could offer electricity to household consumers as a universal service from 1 October 2022. According to the explanatory memorandum of the draft, this measure will help implement the objectives for the years 2022-2023 set out in the cooperation agreement made between the Estonian Reform Party, Isamaa and the Social Democratic Party in July 2022, according to which the increase in the prices of energy carriers will be mitigated and the subsistence of Estonian families will be ensured, while consumers will also have the certainty that the electricity consumption prices are stable.

[67] In order to ensure the provision of the universal service by at least one electricity undertaking, Eesti Energia AS was required to sell electricity as a universal service to both household consumers and all electricity resellers on a temporary basis, i.e. from 1 October 2022 until 30 April 2026, during the period of the universal service (Electricity Market Act, subsection 76^5 (3)).

[68] Subsection 76^5 (1) of the Energy Market Act.

[69] The consumer also had the right to refuse to enter into a universal service contract by notifying the electricity seller at least two days before the universal service contract entered into force (Electricity Market Act, subsection 76^5 (2)).

[70] The compensation was paid on the basis of the Minister of Economic Affairs and Infrastructure Regulation No 72 of 15.09.2022 "Conditions and Procedure for Partial Compensation of Energy Prices" (subsection 4(1)).

Did you know that

the **price of the universal service** is determined off-exchange and is made up of the electricity generation costs (the generation price), the reasonable commercial profit of the electricity producer and the reasonable costs (the selling costs) of the electricity seller in providing the universal service.

Electricity sellers can therefore offer consumers the universal service with different final prices.

For example, from 1 September 2023, the final price of the universal service offered by Eesti Energia AS including VAT is 18.93 cents/kWh (including the production fee of 15.41 cents/kWh set for the electricity producer Enefit Power AS), plus the network fee and the renewable energy fee.

Sources: subsection 76[5] (4) of the Energy Market Act and website of the Competition Authority: universaalteenus

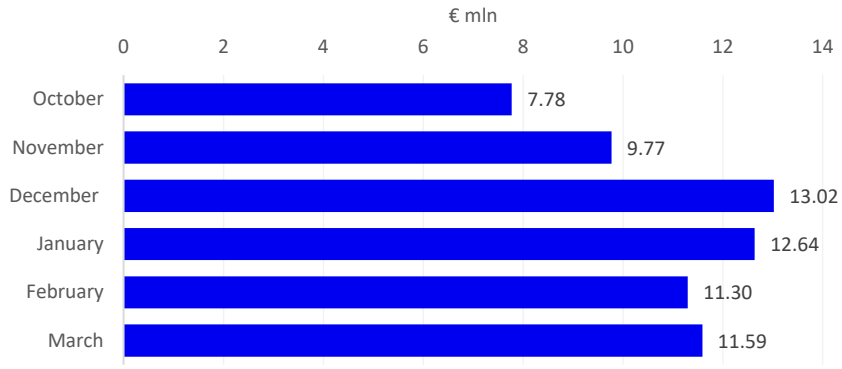
Did you know that

In addition to Eesti **Energia AS**, the universal service may also be provided to their customers by other electricity sellers who have the right to purchase the electricity they need for this from Enefit Power AS, an electricity producer belonging to the Eesti Energia AS Group, which in turn has the obligation to sell electricity to the electricity sellers for the provision of the universal service.

Source: subsection 76[6] (1) of the Energy Market Act

The price of the universal service has proven to be more expensive than the exchange price of electricity and does not protect consumers

Figure 5. Support paid to compensate household consumers for electricity prices from October 2022 – March 2023



Source: National Audit Office based on the data of the MEAC

99. Under this temporary measure, electricity sellers automatically reduced the unit price of electricity on the bills of household consumers on the condition that the consumer pays 8 cents/kWh of the electricity consumed during this period and the state compensates the electricity sellers for the excess up to the amount of 5 cents/kWh. Thus, only consumers whose electricity price was equal to or above 13 cents/kWh received the maximum compensation.[71]

100. At the same time, the production price of the universal service, which was designed to protect household consumers against high electricity prices, exceeded the monthly average exchange price of electricity already three months after its entry into force, i.e. in early 2023, and since then the universal service has no longer fulfilled its protective purpose. The price of the universal service may even become more expensive than it is now, as Enefit Power AS and the Competition Authority are in dispute over the current provisional production price.[72]

101. The application of the price based on the production price of the universal service to household customers who had not opted for an electricity plan of any electricity seller and were using electricity on the basis of the general service started from 1 October 2022.[73] This means that residential customers using the general service also pay many times more for their electricity than the exchange price.

[71] The prices are given exclusive of VAT. The price of electricity including VAT was 9.6 cents/kWh and the compensation paid by the state was 6 cents/kWh, i.e. 15.6 cents/kWh in total. This means that if the consumer's electricity bill was between 9.6 and 15.6 cents/kWh, the consumer paid 9.6 cents/kWh of this amount.

[72] In September 2022, Enefit Power AS submitted a request for the price of the universal service – a production price of 18.18 cents/kWh – to the Competition Authority, which considered it justified to set a provisional production price for the universal service of 15.41 cents/kWh on 29 September 2022. On 31 October 2022, the Competition Authority accepted a new request from Enefit Power AS (at 17.63 cents/kWh) for approval of the production price of the universal service for household consumers. Enefit Power AS is still having a dispute with the Competition Authority, which has not yet confirmed the company's requested production price, https://aastaraamat.konkurentsiamet.ee/aastaraamat-2022-elekter/universaalteenuse-hind

[73] The principle for the pricing of electricity sold within the scope of the general service was changed so that instead of the hourly exchange price, the production price of the universal service must be used as the base price of the general service for as long as the universal service regulation is in force.

Did you know that

the production price of the universal service, which includes the price of the fuels used to generate electricity (e.g. oil shale and biomass), the price of CO_2 quotas, environmental charges, labour, repair and other costs, is set by the Competition Authority.

If the Competition Authority fails to approve the production price submitted in the electricity producer's request, it has the right to set a provisional production price, which will remain in force until the producer approves with the Authority a price that complies with the law.

The Authority has the right to verify that the mark-up added to the production price and applied by the electricity seller complies with requirements.

Source: subsection 76[5] (6); subsections 76[6] (1), (7) and (8) of the Electricity Market Act

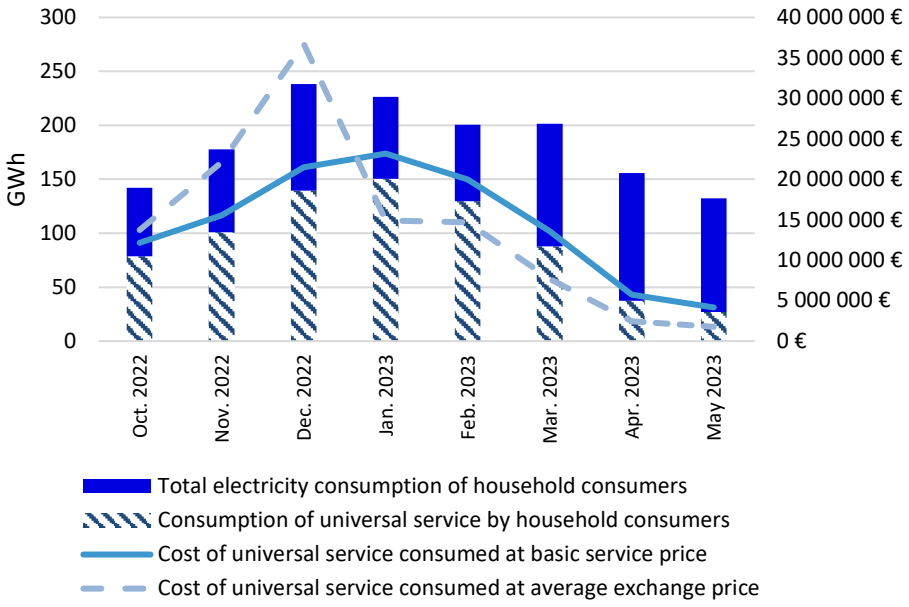
Did you know that

the final price of the **universal service** to the household customer is 20,55 cents/kWh, which forms from the producer's price of the universal service (15,41 cents/kWh) and the reasonable costs of providing the general service, a reasonable profit (0,1 cents/kWh) and VAT.

102. Despite this, a total of 192,196 customers were still using the universal service and the general service linked to its production price at the end of July 2023.[74] This suggests that a significant number of people have probably not been sufficiently aware of, or interested in, electricity plans that are cheaper than the universal service.

103. According to the calculations of the MEAC, the total electricity consumption of household customers[75] using the universal service in May 2023 amounted to 27 GWh, which at that time represented 20.4% of the total electricity consumption of household customers. Taking into account the production price of the universal service, which was 15.41 cents/kWh, and the average electricity exchange price of 6.56 cents/kWh in May 2023,[76] household consumers using the service paid €2.4 million more than the average electricity exchange price in May 2023 alone. For the first five months of 2023, this totalled more than €25 million (see also Figure 6).

Figure 6. Consumption of the universal service by household consumers (GWh) and the price of the quantity consumed based on the production price of the universal service and the average price of electricity (euros) from October 2022 – May 2023



Source: National Audit Office based on the data of the Ministry of Climate

104. The Ministry of Climate believes that excessive interference in electricity price formation could discourage consumers from planning their electricity consumption and thereby saving energy. Therefore, the Ministry monitors the developments on the market and if electricity prices rise, new support measures will be considered. However, the Ministry of Climate does not currently plan to introduce any additional benefits to ensure affordable electricity prices to consumers in the long term.

[74] According to Eesti Energia AS.

[75] According to the MEAC, *ca* 210,370 household customers were using the universal service in May 2023.

[76] The average weighted exchange price excluding VAT in May 2023 according to 220 Energia OÜ.

Did you know that

the survey prepared by the University **of Tartu** revealed that the switch from electricity exchange prices to the universal service caused a short-term increase in consumption, especially during peak hours, and that the price sensitivity of the consumers should be used as an input when creating the energy policy.

Source: How to get light. *Riigikogu Toimetised* 47/2023, (p 111)

105. However, according to the Ministry of Climate, the price of the universal service, which has already become relatively high, should rather motivate consumers to consume less electricity, and thus should not increase energy consumption in the future and endanger the security of electricity supply. At the same time, the Ministry has not assessed what the real impact of the universal service on electricity consumption and ensuring the accessibility of electricity is and may be in the longer term.

106. Although Elering AS believes that supporting consumers when electricity prices are high is generally right and necessary, it also finds that in certain cases, this may start working against ensuring the security of supply. Therefore, it finds that in order to mitigate high electricity prices, it is necessary to avoid support measures as a result of which consumers are not interested in shifting their consumption from periods where the electricity price is high to periods with cheaper prices in order to save electricity.[77]

107. The Ministry of Climate agrees that the universal service was appropriate in the last quarter of 2022, when the average exchange price of electricity exceeded the production price of the universal service, but from January 2023, when the average exchange price has proved to be more favourable than the production price of the universal service, it no longer protects the consumers of either the universal or the general service from excessively high electricity prices, but increases their electricity consumption costs.

108. The Ministry of Climate believes that if the electricity exchange price continues to follow its downward trend, consumers of the universal service should switch back to a lower-priced electricity plan, i.e. consumers should actively compare electricity prices themselves and take action to get lower electricity bills.

109. If, according to current forecasts, a shortage of controlled generation capacities occurs in Estonia after 2026, and not enough renewable generation capacities available at a lower cost to cover consumption have been added by then, electricity prices for consumers could remain high after 2026, when the temporarily established universal service ends. However, the Ministry of Climate says it has not analysed how such a situation could affect electricity prices for the consumers in the future.

110. Given that it will take years for new generation capacities to come to the market, the Ministry of Climate should already have a plan in place to protect consumers in the event of high electricity prices in the long term, i.e. also after 2026.

111. The National Audit Office finds that the universal service, the objective of which was to mitigate the impact of high electricity prices on the subsistence of consumers, should continue to be an option after the energy crisis is over. At the same time, the Ministry of Climate should consider whether it is appropriate to continue with the universal service as it is in the current situation, where its production price significantly exceeds the electricity exchange price and consumers need to be protected not from the high exchange price but from the universal service.

[77] Security of Supply Report of the Estonian Electricity System. Elering AS, 2022.

112. Recommendations of the National Audit Office to the Minister of Climate:

- to make sure that people who have been using the universal service until now make informed choices when buying electricity, they should be more actively informed about the functioning of the free electricity market, the freedom of choice of electricity consumers and the available energy plans;
- to review the methodology for setting the price of the universal service and untie it from the universal service price;
- to consider how it would be appropriate to continue with the universal service in a situation where the production price of this service can be several times higher than the electricity exchange price, and, if necessary, to initiate a draft act to amend the Electricity Market Act;
- to prepare a plan to ensure that electricity prices remain affordable for consumers in the event of a prolonged period of high electricity prices.

Response of the Minister of Climate: The developments on the energy market are under constant public scrutiny. As part of this, we periodically inform the public about the developments on the energy market. In addition, we regularly update the information on the Ministry's website and on the website energiatalgud.ee.

In November 2023, we will send the draft Act amending the Electricity Market Act to the Government of the Republic. Among other things, the draft act stipulates that if the market price of the next day market in the Estonian bidding area of the electricity exchange for a calendar month is lower than the production price of the universal service for two consecutive calendar months, the electricity trader will be obliged to send the consumer a notice of termination of the contract. In the notice, the seller must offer an electricity sales contract on the most favourable terms of those offered by the seller. The consumer still has the choice of continuing with the universal service or accepting the seller's offer.

The Ministry of Climate has prepared a draft act amending the Electricity Market Act, which will untie the price of the general service from the price of the universal service and retie it to the exchange price. The draft act will be submitted to the Government of the Republic in November 2023.

The purpose of the universal service at the time it was created was to provide consumers with a safeguard mechanism in case the energy market situation leads to very large jumps in electricity prices on the electricity exchanges. This objective was successfully achieved by the universal service established last year. The Ministry of Climate analyses the need to continue with the universal service after the end of the current heating season in spring 2024.

The Ministry of Climate has a plan for affordable energy prices and is implementing it – to ensure that by 2030, the annual volume of electricity consumed in Estonia is produced from renewable sources. The Ministry of Climate is working on the respective actions today, including

simplifying the bureaucracy related to renewable energy developments, organising reverse auctions to bring renewable energy to the market, working with the Ministry of Defence to remove most of the height restrictions that have hindered the development of wind energy by 2025, etc.

This is where the consumer can do the best preventive work. Different electricity plans for consumers with different levels of risk are offered on the electricity market. Consumers can already take the necessary steps today to protect themselves from rising electricity prices. In order to do this, the consumer must choose an electricity plan (e.g. with a price fixed for the long-term) with an electricity trader that suits their risk appetite.

The risk of a large-scale blackout must be reduced until the Estonian electricity system is synchronised with the continental European frequency area

Russia's war against Ukraine has significantly increased the risks to Estonia's security of electricity supply

113. Russia's full-scale war against Ukraine, which started on 24 February 2022, has significantly increased the risks to Estonia's energy security. The risk that Russia will use hybrid warfare techniques against Europe's vital energy infrastructure, including attacks on electricity infrastructure and its control systems, has increased.

114. According to the nationwide risk assessment, a large-scale blackout due to natural, technological, etc. causes is very likely in Estonia.[78] The risk is increased if Russia were to disconnect the Baltic countries extraordinarily from its electricity grid.

115. According to an agreement made in 2018 between the Baltic States, Poland and the European Commission, synchronisation with the continental European frequency area was to be completed by the end of 2025. On 3 August 2023, the Baltic prime ministers signed a joint declaration agreeing that connection with the Continental European frequency area will take place in February 2025.

116. If Russia were to undertake extraordinary desynchronisation, the power plants of Enefit AS would play an important role in ensuring security of electricity supply. The cooling water needed to run these power plants is taken from the Narva reservoir and the equipment that regulate its water level is located in Russia.

Industrial control systems – systems for controlling and monitoring the generation, transmission, storage and distribution of electricity, and the control and monitoring of the supporting processes of these processes.

Source: Data Protection and Information Security Portal (AKIT)

117. According to the Information System Agency (RIA), the risk of cyber/kinetic hybrid attacks and attacks against industrial control systems in the energy sector has increased significantly. The RIA estimates that the likelihood of an emergency caused by a cyber incident is currently low, but it would have severe consequences.

118. The level of preparedness for continuity of electricity supply, including the prevention and elimination of a major blackout, must correspond to the assessment of the likelihood of such a blackout.

[78] Nationwide Risk assessment. Government Office, 2023.

119. The National Audit Office checked

- whether the MEAC has a plan to address the situation that would result from extraordinary desynchronisation;
- whether the synchronisation of the Estonian electricity system with the continental European frequency area has taken place according to schedule;
- whether the risk mitigation measures related to cooling water in Enefit Power AS power plants are being implemented according to schedule;
- whether the synchronisation project is supported by an appropriate investment plan; and
- what has been done to speed up the process.

Emergency – an event or chain of events or an interruption of a vital service which threatens the life or health of a large number of people, causes major damage to property, major environmental damage or serious and widespread interference with the continuity of a vital service, and responding to which requires rapid coordinated action by several agencies or persons involved, different management arrangements and the involvement of significantly more persons and resources than usual.

Source: subsection 2 (1) of the Emergency Act.

120. The audit revealed that in the event of extraordinary desynchronisation, the Ministry of Climate will use the emergency response plan prepared by the MEAC (which was responsible for managing the continuity of electricity supply until 1 July 2023) – a cooperation agreement on how to respond to an emergency caused by the disruption of electricity, natural gas and liquid fuel supply as a vital service. The current plan is not up to date and does not meet the established requirements. The Ministry of Climate has repeatedly postponed updating the emergency response plan. In October 2023, the Ministry confirmed that the plan would be renewed in the first half of 2024.

121. The Baltic TSOs have a joint plan that will be triggered if Russia suddenly desynchronises the Baltic countries. The purpose of the plan is to ensure that extraordinary desynchronisation does not lead to a blackout of the electricity system and to provide concrete guidance on how to respond to the crisis.

122. Enefit Power AS has put in place a temporary solution to mitigate the risks associated with the cooling water in its power plants to ensure the normal operation of the generating equipment necessary for the normal functioning of the power system. The permanent solution will be completed according to the action plan.

123. The activities required for synchronisation of Estonia with the continental European frequency area are being carried out according to schedule. According to Elering AS and the Ministry of Climate, the Estonian electricity system will reach a level of technical readiness by early 2025 where the probability of major risks to synchronisation with the continental European frequency area is low, assuming that the reconstruction of the third overhead line between Estonia and Latvia is accelerated and completed by the end of 2024.

124. According to Elering AS, the acceleration of synchronisation has created new risks. Some major electricity system developments are due to be completed in the second half of 2025 and Estonia, as the most distant country from the continental European electricity system, faces the highest post-synchronisation electricity system management risks compared to the other Baltic countries.

125. In addition to the audit report, the National Audit Office prepared a memorandum with restricted access and sent it to the audited ministries, the Government Office and the providers of vital services. The memo includes a number of recommendations to solve systemic bottlenecks. Some of these recommendations are recognised in the report.

126. **Recommendation of the National Audit Office to the Minister of Climate:** update the Electrical Emergency Response Plan.

Response of the Minister of Climate: in our opinion, the current emergency response plan is working well. We are planning a periodic review of the plan. We are planning to update the Electrical Emergency Response Plan in the first half of 2024.

Comment of the National Audit Office: the audit showed that the current Electrical Emergency Response Plan is not up to date or operational. Among other things, the plan does not address the actions of the Ministry of Climate in the event of extraordinary disconnection of the Baltic States from the Russian power grid and attacks on electricity infrastructure, nor the specific tasks of the Ministry of Climate, the Government of the Republic and the vital service providers in responding to electrical emergencies.

The preparedness to respond to an electricity supply emergency or the immediate risk of it occurring must be improved

Elering AS, Enefit Power AS and Elektrilevi OÜ experienced problems in fulfilling their obligations to ensure the continuity of vital services

127. Elering AS, Enefit Power AS and Elektrilevi OÜ will prepare a risk assessment and plan to ensure the continuity of electricity supply. The Ministry of Climate, as the authority responsible for managing the continuity of the vital service, is responsible for, among other things, verifying that these documents comply with the legal requirements.

128. Among other things, these vital service providers are required to prepare an assessment of the cyber risks affecting the security of network and information systems, which may or may not be part of the business continuity risk assessment. The risk assessment of network and information systems does not have to be submitted separately to any authority for approval.

129. The risk assessment of network and information systems must be updated at least every three years. A vital service provider must update the business continuity risk assessment and plan at least once every two years or whenever significant circumstances affecting the provision of the vital service change.

130. Russia's war against Ukraine is an important factor affecting the provision of the vital service, because of which it is necessary to reassess the risks to the continuity of electricity supply and to submit up-to-date plans to the Ministry of Climate for approval. Due to the increased level of risk (including energy infrastructure risks) caused by the war, the MEAC asked vital service providers to review their vital service continuity risk assessments and plans.

131. The National Audit Office audited whether the business continuity risk analyses of the services of Enefit Power AS, Elering AS and Elektrilevi OÜ, including the network and information system and continuity plans, exist and are up-to-date.

132. It found that Elering AS has not updated its vital service continuity risk assessment and continuity plan for more than two years. Elektrilevi OÜ has also not updated its continuity risk assessment or continuity plan since the start of the Russian war against Ukraine, nor has it brought it into line with legislation.

133. The continuity risk assessment (including of the network and information system) and continuity plan, which was approved by the MEAC in February 2023 after the company had taken into account the changed security situation in its continuity documents, is up to date, but also has some shortcomings.

134. **Recommendation of the National Audit Office to the Minister of Climate:** to intensify supervision that providers of vital services assess risks as soon as significant circumstances affecting the provision of vital services change.

Response of the Minister of Climate: we agree that the providers of vital services must be subject to more effective control. Additional resources must be found for the Ministry of Climate to ensure this function.

The supervision exercised by the Ministry of Economic Affairs and Communications over compliance with the requirements of the continuity of electricity supply was inadequate

135. The Ministry of Climate (previously the MEAC) is responsible for verifying, during the approval of continuity documents, that measures to prevent interruptions to vital services have been implemented, that the risk analyses and plans of vital service providers comply with current legislation, and for pointing out shortcomings and, if necessary, issuing precepts for remedying them.

136. In order to prevent and minimise the impact of incidents that compromise the security of the network and information systems of vital services, the Cybersecurity Act requires the RIA to verify that vital service providers have an up-to-date risk assessment of their network and information systems.

137. The National Audit Office audited whether the MEAC has supervised the compliance of the risk analyses and continuity plans of Elering AS, Elektrilevi OÜ, Enefit Power AS with the requirements of the Emergency Act and the implementation of preventive measures, as well as the accuracy of the information contained in the risk analyses of vital network and information systems.

138. The audit revealed that the MEAC has approved the risk analyses and plans of the continuity of electricity supply, which do not comply with effective legislation. For example, not all known risks have been assessed and the required recovery plans have not been drawn up. Thus, in the event of an emergency concerning electricity supply, the implementation of inadequate business continuity plans may lead to risks that could have

been mitigated independently and proactively by the vital service providers.

139. Regarding risks to network and information systems, the MEAC as an authority that organises a vital service pointed out that the Ministry lacks the skills to verify whether vital service providers regularly analyse and assess cyber threats to continuity. The MEAC was of the opinion that within the scope of its competences under the Cybersecurity Act, the RIA checks, among other things, whether the electricity undertaking takes into account the risk of a cyber-attack against the information system in its continuity risk assessment and plan. However, the RIA does not have the right to require the submission of a continuity risk assessment if the vital service provider has submitted a separate network and information system risk assessment.

140. In the opinion of the Government Office, the competence of the Ministry of Climate (previously the MEAC), i.e. the right to check whether and how cybersecurity risk and its solution have been reflected in the risk assessments and plans of providers of vital services, was and still is clearly stated in legislation. Therefore, it is the responsibility of the Ministry to make sure that cyber threats are reflected in the continuity risk assessment.

141. The auditees also drew attention to the fact that the supervision provided for in the Cybersecurity Act does not extend to companies providing critical services to vital service providers. The RIA is of the opinion that supervision under the Act should at least extend to service providers who operate control systems for the provision of a vital service. Currently, the RIA can only check whether a vital service provider has required compliance with information security measures in its contracts with suppliers, not whether the supplier complies with them. According to the RIA, there are few examples in practice where the control of vital service providers over external service providers actually works well.

142. According to the Ministry of Climate, a cybersecurity review is planned, which will also include a review of supervision issues, including cooperation and information exchange with the authorities that organise vital services.

143. In the opinion of the National Audit Office, the supervision of the MEAC was not sufficient to ensure that the providers of vital services are prepared to prevent and resolve interruptions in electricity supply and are able to practically implement the necessary actions. The MEAC itself did not verify the accuracy of the information provided in the continuity documents and, as a result, it has subsequently become apparent that there are significant weaknesses in the approved documents. The audit also revealed that the vital service providers did not, on their own initiative, notify the MEAC of any shortcomings in their electricity continuity plans, as there is no direct requirement to do so.

144. Recommendations of the National Audit Office to the Minister of Climate:

- to improve the supervision of continuity documentation in such a manner that the compliance of the documentation with legal requirements is actually verified;

- to require vital service providers to comply with the requirements laid down in the legislation and, where appropriate, impose financial penalties for breaches of the requirements for preparing for emergencies or the obligations of vital service providers.

Response of the Minister of Climate: the Ministry of Climate deals with crisis management horizontally. The last few years have been particularly challenging from a crisis management perspective. In addition to crisis management, checking the documents of continuity effectively is a major challenge. We are looking for solutions.

The Ministry of Climate periodically carries out inspections of ETOs according to available resources. We have sent and will continue to send the memos, which are described above, to the ETOs. In order to ensure that ETOs fulfil their obligations as well as possible, we are also amending the Emergency Act under the leadership of the Government Office. This amendment is scheduled to enter into force at the end of 2024.

Comment of the National Audit Office: the preparation of business continuity documents in accordance with the requirements of the legislation is important, as it helps prevent bottlenecks and gives the Ministry assurance that the providers of vital services are prepared to respond to power outages. Checking the content of vital service continuity documents, being involved in their preparation and not merely approving them should therefore be in the interest of the authority organising a vital service and part of its crisis management activities.

145. **Recommendation of the National Audit Office to the State Secretary:** consider creating a legal basis to require a company that has been delegated the provision of a critical activity (e.g. management of distribution network systems) for the provision of a vital service to comply with the same requirements as those set out in the legislation for the vital service providers.

Response of the State Secretary: The Government Office finds that the legal basis exists in the Emergency Act, more specifically, clause 37 (3) 5) of the Emergency Act provides: the regulation on requirements may, if necessary, establish requirements for outsourcing the services supporting the core business of a vital service provider from another undertaking. The subjects are the vital service providers, but this regulation provides a basis for modifying the contracts between the vital service provider and the subcontractors. In the case of the more important subcontractors, the Riigikogu has provided for the determination of permanent crisis tasks in the draft Civil Crisis and National Defence Act and permanent national defence tasks in the draft Emergency Act and other Acts Amendment Act (transposition of Directive 2022/2557 on the resilience of critical entities).

Comment of the National Audit Office: The purpose of the recommendation of the National Audit Office is to ensure that all parties have a common understanding of the scope of supervision. The audit indicated that the current wording results in different interpretations of the scope of supervision of vital service providers and their contractual partners by the authority that organises the vital service and the Information System Authority. The understanding must therefore be harmonised.

Systematic information security management consists of policies and associated resources and activities that an organisation collectively manages in an effort to protect its information assets.

Systematic information security management is a systematic approach to the establishment, operation, monitoring, maintenance and improvement of information security. An example of systematic information security management is compliance with the Estonian Information Security Standard or the ISO/IEC 27001 standard.

Source: Website of the Estonian Information Security Standard

There are significant shortcomings in the implementation of information security measures by vital service providers

146. The electricity undertaking must implement measures to prevent and respond to an interruption caused in a vital service by a cyber incident in accordance with the systemic information security management process.

147. In order to reduce the risk of an attack against the supply as a result of which access to the networks and information systems of the targets is gained through a common IT service provider, the electricity undertaking must ensure that the contractor complies with the security measures for information systems and related information assets when outsourcing services supporting the provision of the vital service.[79]

148. As a cyber-attack against an undertaking in the supply chain could cripple the ability of either the vital service provider or its supplier to deliver the service, it is important to consider information security in supplier contracts. If the vital service provider itself has not stipulated an obligation to comply with specific information security requirements in its contracts with suppliers and does not have the right to verify compliance with this obligation, then neither the vital service provider nor the Ministry of Climate or the RIA can be satisfied that the provision of the service has mitigated cyber risks.

149. Neither the MEAC, i.e. the authority that organises the provision of the vital service, nor the RIA have assessed whether sufficient measures have been implemented to mitigate cyber risks to critical network and information systems to ensure electricity supply, as the parties are of the opinion that until August 2022, electricity undertakings were not obliged to comply with a specific information security standard.

Did you know that

following the adoption of Regulation No 121 "Cybersecurity requirements for network and information systems" on 9 December 2022, vital service providers are obliged to implement a specific information security standard, i.e. either the Estonian Information Security Standard or the international standard ISO/IEC 27001.

150. The Information System Authority has examined the adequacy of information security measures more narrowly during the supervision it carried out in 2022. Until 15 August 2022, vital service providers had to follow the requirements set forth in the Minister of Entrepreneurship and Information Technology Regulation No 40 "Requirements for risk assessment of network and information systems and description of security measures". This regulation set out certain requirements for information security management, but did not require a specific information security standard to be implemented.

Did you know that

until August 2022, security measures provided for at least:

- the management of access rights to systems and the identification and authorisation of users;
- the making of regular backups and restoring data from backups;
- the need to keep the software that keeps systems running and is handled in systems up-to-date;
- the logs of operations carried out in the systems;
- solutions for detecting and combating activities and software that threaten the security of systems;
- actions to restore the security of systems or the continuity of service.

Source: Minister of Entrepreneurship and Information Technology Regulation No 40 "Requirements for risk assessment of network and information systems and description of security measures", subsection 4 (2)

151. The National Audit Office examined whether vital service providers themselves have checked the implementation of information security measures (documentation of the compliance certificate of the security audit, internal audit, documentation of RIA supervision activities, etc.) and whether due diligence has been exercised in solving the weaknesses identified during the checks.

152. It became evident that all vital service providers have checked the implementation of information security measures. In general, the importance of the findings of the checks is low or medium, and concern the documentation of the scope of processes and rights. The shortcomings

[79] Regulation No 37 of the Minister of Economic Affairs and Infrastructure "Description of vital services and requirements for continuity of supply of electricity", subsections 4 (2), 7 (2); Cybersecurity Act, subsections 7 (1), (3).

in the implementation of a number of key security measures are known to service providers and are being addressed.

153. The National Audit Office considers it positive that all vital service providers have carried out checks on their own initiative and are up to date with the state of implementation of information security measures. However, service providers need to pay more attention to correcting the significant weaknesses identified during the checks, as several security measures indicating weaknesses in critical resources are not implemented (including weaknesses known for more than a few years). Failure to eliminate weaknesses increases the risk that systems are not adequately protected.

Undertakings do not practice all of the electricity supply continuity plans, so there is no confidence that they work

Crisis management exercise is used to control or practise the response to emergencies and is generally attended by all the authorities involved.

154. The Ministry of Climate is required to organise a crisis management exercise, and a vital service provider is required to organise an exercise to check the continuity of the vital service it provides at least once every two years. The Government of the Republic must organise an exercise to respond to two or more emergencies or an emergency that has led to the declaration of a state of emergency at least once every four years. A summary of an exercise must be prepared after it has been carried out and it must include an action plan and a timetable for resolving problems and addressing suggestions.

155. In its audit, the National Audit Office checked whether crisis management exercises concerning electricity supply continuity have been organised with the regularity prescribed by law and whether the follow-up of the exercises has been implemented. Specifically, the National Audit Office examined whether critical service providers have tested measures to prevent, respond to and mitigate sabotage and cyber incidents since the start of Russia's war against Ukraine.

156. At the national level, the response to a large-scale blackout was practiced in an exercise carried out at the level of the Government of the Republic on 1 December 2022. The Government proceeded from a scenario in which Russia disconnects Estonia, Latvia and Lithuania from its electricity grids and connecting the Baltic countries to the continental European synchronous area starts.

157. Since the start of Russia's war against Ukraine, all vital service providers have been practising cyber incident response scenarios.

158. According to Elering AS, practicing all the recovery plans at two-year intervals would be costly and require more resources, which the Competition Authority does not currently allow to be added to the electricity tariff, as it is not a cost directly set forth in legislation.

Recovery plan – a description of how an interference or interruption will be solved. The recovery plan is submitted for scenarios assessed as at least 'significant'.

Source: Guide to preparing a continuity risk assessment and plan, Government Office

159. The National Audit Office is of the opinion that vital service providers must work harder to practice all the recovery plans in the continuity plan within two years, otherwise there is no certainty that the instructions for action provided in the plan will be usable in a crisis. Practicing recovery plans gives the reassurance that effective measures are in place to respond to a specific threat scenario. Following major changes, recovery plans must be tested immediately to ensure that the

employees participating in recovery are aware of their roles and responsibilities.

160. **Recommendation of the National Audit Office to the chairmen of the management boards of Elering AS, Elektrilevi OÜ and Enefit Power AS:** to conduct exercises of all recovery plans described in the continuity plans to ensure that the employees participating in recovery are aware of their roles and responsibilities.

Response of Elering AS: we definitely agree that the recovery plan exercises described in the continuity plan must be carried out regularly. However, due to their cost and the working hours, it is not rational to carry out all full-scale exercises within a two-year cycle.

Response of Eesti Energia AS: in the opinion of Elektrilevi and Enefit Power, the National Audit Office's recommendation to carry out exercises of all recovery plans within two years is appropriate and both companies confirm that they will address this. Regular crisis exercises and testing of different recovery plans are standard practice for both Elektrilevi and Enefit Power, but it is certainly possible to increase the frequency of these exercises, and we have set a target that recovery plans should be tested at least once every two years, and that different scenarios should be used for each scheduled test until all scenarios have been tested. It simply has to be taken into account that the costs of testing the recovery plans must be reasonable, so that they do not start to affect, for example in the case of Elektrilevi, the network charges of electricity consumers.

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Ines Metsalu-Nurminen
Director of Audit, Audit Department

Recommendations made by National Audit Office and responses of the auditees

The National Audit Office issued several recommendations to the Ministry of Climate, the Government Office, Elering AS, Elektrilevi OÜ, which belongs to the Eesti Energia AS Group, and Enefit Power AS. The Minister of Climate sent his response to the recommendations of the National Audit Office on 2 November, the State Secretary on 17 October, the Chairman of the Management Board of Elering AS on 20 October, the Chairman of the Management Board of Elektrilevi OÜ on 20 October and the Chairman of the Management Board of Enefit Power AS on 20 October 2023.

General comments on audit report

Ministry of Climate: the situation on the energy landscape has been constantly changing for years. Considering and anticipating the changes, energy policy has been implemented by both the Ministry of Climate and the Ministry of Economic Affairs and Communications, which coordinated the energy sector until the establishment of the Ministry of Climate. Ensuring security of supply has always been the most important dimension of energy policy. The target we have set ourselves by today is to ensure that by 2030, Estonia will produce enough renewable electricity to meet its annual electricity consumption, and we are in the process of establishing a strategic reserve regulation in case Estonia's security of supply standard is no longer met.

Elering AS: in the conclusion of your report you have written "Although the first signs that Estonia might have a problem with security of electricity supply emerged from the security of supply assessments carried out by Elering AS already in 2013, ...". We would like to point out here that the previous security of supply reports from before 2022, including the 2013 report, have not identified a security of supply problem and have shown that Estonia's consumption is covered by production capacities and import capabilities. Therefore, there was no reason or basis to grant state aid and to apply for state aid approval. Premature and unjustified interference with the electricity market is not allowed and would lead to a long-term increase in the overall price of electricity for the final consumer. Market-based investments in the electricity market are the best socioeconomic solution and only if market-based investments are not sufficient to ensure security of supply is state aid justified. We also draw your attention to the fact that you did not point out that the actual result for this period has also indicated that these estimates have been correct and that there have been no security of supply problems. We also advise you to point out that since 2013, when the Estonian electricity market was opened, Estonian consumers have had access to very competitive electricity prices. As you have also pointed out in the report, electricity prices went up in 2021, when geopolitical influences were already manifesting themselves due to European supplies of primary fuels, not Estonian security of supply issues.

Of course, we have thought through and prepared for possible scenarios should the situation arise that power plants in Estonia are not competitive on a market basis and the owner wishes to close them due to economic conditions. As European law provides for the possibility of creating a capacity mechanism to address the respective potential security of supply problem, preliminary work on the capacity mechanism has been carried out already before 2022, so that it would be possible to implement the necessary measures as quickly as possible if necessary.

1. In 2020, a study was carried out in cooperation between Elering, the MEAC and the Competition Authority to establish the most suitable capacity mechanism for Estonia. The strategic reserve proved to be the most appropriate: https://elering.ee/sites/default/files/2021-10/V%C3%B5imsusmehhanismi%20uuring_0.pdf.

2. In 2020, an assessment of Estonia's security of supply standard was carried out in cooperation between Elering, the MEAC and the Competition Authority, which found the optimal standard for Estonia. https://elering.ee/sites/default/files/2021-10/Varustuskindluse%20standard_2.pdf

3. In 2021, Estonia's security of supply standard was approved in the Grid Code on the Functioning of the Electricity System.

4. In 2021, Elering drafted a strategic reserve concept describing the design of a possible strategic reserve measure. In 2022, Elering carried out a public consultation on the concept and submitted the concept to the Competition Authority and the MEAC as a recommendation for the implementation of a possible measure.

5. In 2022, the MEAC started working on a draft Electricity Market Act, which would allow the implementation of the strategic reserve.

6. In late 2022, an ENTSO-E ERAA assessment was completed, which indicated a possible non-compliance with the security of supply standard in 2027. As a result, Elering proposed the establishment of a strategic reserve to the Competition Authority and the MEAC as required by law. The outcome of the 2022 ERAA was the first definite identification of the problem and provided an opportunity to move forward with the creation of a capacity mechanism under the European Internal Market Regulation.

7. In 2023, activities to apply for state aid from the Commission and ACER will be launched.

The style and rhetoric of how the summary of the report is written makes it look like something extra should have been done in previous years to ensure security of supply, which has not been done by today. If this is the case, we ask the National Audit Office to highlight what the possible steps should have been that would have been in line with EU law and would have led to a socioeconomically better outcome in terms of security of supply. We believe that we have taken all the necessary steps with a sufficient time margin, proceeding from the best socioeconomic outcome. Please note that a substantive assessment of security of supply is missing from the summary of the National Audit Office's report.

Recommendations of the National Audit Office	Responses of auditees
Affordability of electricity price 91. Recommendation to the Minister of Climate: develop a methodology for determining the affordable price of electricity. **(points 75–90)**	**Response of the Minister of Climate:** the goal of the Ministry of Climate is to ensure that 100% of the electricity consumed annually in Estonia is produced from renewable sources by 2030. The transition to renewable energy guarantees the consumer the most favourable electricity price. The Ministry does not consider it necessary to prepare a separate methodology for determining the affordable electricity price. **Comment of the National Audit Office:** the aim of the recommendation is to avoid state support measures to mitigate high electricity prices in the future, as a result of which the state also spends taxpayers' money on consumers who do not need state support. Also, when measures to mitigate high electricity prices are proactively planned, the price sensitivity of consumers and the impact of possible subsidies on electricity consumption and peak load could also be analysed.
Universal service, electricity price 112. Recommendations to the Minister of Climate: ▪ to make sure that people who have been using the universal service until now make informed choices when buying electricity, they should be more actively informed about the available energy plans; ▪ to review the methodology for setting the price of the universal service and untie it from the universal service price; ▪ to consider how it would be appropriate to continue with the universal service in a situation where the production price of this service can be several times higher than the electricity exchange price, and, if necessary, to initiate a draft act to amend the Electricity Market Act; ▪ to prepare a plan to ensure that electricity prices remain affordable for consumers in the event of a prolonged period of high electricity prices. **(points 92–111)**	**Response of the Minister of Climate:** the developments on the energy market are under constant public scrutiny. As part of this, we periodically inform the public about the developments on the energy market. In addition, we regularly update the information on the Ministry's website and on the website energiatalgud.ee. In November 2023, we will send the draft Act amending the Electricity Market Act to the Government of the Republic. Among other things, the draft act stipulates that if the market price of the next day market in the Estonian bidding area of the electricity exchange for a calendar month is lower than the production price of the universal service for two consecutive calendar months, the electricity trader will be obliged to send the consumer a notice of termination of the contract. In the notice, the seller must offer an electricity sales contract on the most favourable terms of those offered by the seller. The consumer still has the choice of continuing with the universal service or accepting the seller's offer. The Ministry of Climate has prepared a draft act amending the Electricity Market Act, which will untie the price of the general service from the price of the universal service and retie it to the exchange price. The draft act will be submitted to the Government of the Republic in November 2023. The purpose of the universal service at the time it was created was to provide consumers with a safeguard mechanism in case the energy market situation leads to very large jumps in electricity prices on the electricity exchanges. This objective was successfully achieved by the universal service established last year. The Ministry of Climate analyses the need to continue with the universal service after the end of the current heating season in spring 2024. The Ministry of Climate has a plan for affordable energy prices and is implementing it – to ensure that by 2030, the annual volume of electricity consumed in Estonia is produced from renewable sources. The Ministry of Climate is working on the respective actions today, including simplifying the bureaucracy related to renewable energy developments, organising reverse auctions to bring renewable energy to the market, working with the Ministry of Defence to remove most of the height restrictions that have hindered the development of wind energy by 2025, etc. This is where the consumer can do the best preventive work. Different electricity plans for consumers with different levels of risk are offered on the electricity market. Consumers can already take the necessary steps today to protect themselves from rising electricity prices. In order to do this, the consumer must choose an electricity plan (e.g. with a price fixed for the long-term) with an electricity trader that suits their risk appetite.
Emergency desynchronisation 126. Recommendation to the Minister of Climate: update the Electrical Emergency Response Plan. **(points 113–125)**	**Response of the Minister of Climate:** in our opinion, the current emergency response plan is working well. We are planning a periodic review of the plan. We are planning to update the Electrical Emergency Response Plan in the first half of 2024. **Comment of the National Audit Office:** the audit showed that the current Electrical Emergency Response Plan is not up to date or operational. Among other things, the plan does not address the actions of the Ministry of Climate in the event of extraordinary disconnection of the Baltic States from the Russian power grid and attacks on electricity infrastructure, nor the specific tasks of the Ministry of Climate, the Government of the Republic and the vital service providers in responding to electrical emergencies.

Recommendations of the National Audit Office	Responses of auditees
A vital service provider is: 134. Recommendation to the Minister of Climate: to intensify supervision that providers of vital services assess risks as soon as significant circumstances affecting the provision of vital services change. **(points 127–133)**	**Response of the Minister of Climate:** we agree that the providers of vital services must be subject to more effective control. Additional resources must be found for the Ministry of Climate to ensure this function.
A vital service provider is: 144. Recommendations to the Minister of Climate: ▪ to improve the supervision of continuity documentation in such a manner that the compliance of the documentation with legal requirements its actually verified; ▪ to require vital service providers to comply with the requirements laid down in the legislation and, where appropriate, impose financial penalties for breaches of the requirements for preparing for emergencies or the obligations of vital service providers. **(points 135–143)**	**Response of the Minister of Climate:** the Ministry of Climate deals with crisis management horizontally. The last few years have been particularly challenging from a crisis management perspective. In addition to crisis management, checking the documents of continuity effectively is a major challenge. We are looking for solutions. The Ministry of Climate periodically carries out inspections of ETOs according to available resources. We have sent and will continue to send the memos, which are described above, to the ETOs. In order to ensure that ETOs fulfil their obligations as well as possible, we are also amending the Emergency Act under the leadership of the Government Office. This amendment is scheduled to enter into force at the end of 2024. **Comment of the National Audit Office:** the preparation of business continuity documents in accordance with the requirements of the legislation is important, as it helps prevent bottlenecks and gives the Ministry assurance that the providers of vital services are prepared to respond to power outages. Checking the content of vital service continuity documents, being involved in their preparation and not merely approving them should therefore be in the interest of the authority organising a vital service and part of its crisis management activities.
A vital service provider is: 145. Recommendation to the State Secretary: consider creating a legal basis to require a company that has been delegated the provision of a critical activity (e.g. management of distribution network systems) for the provision of a vital service to comply with the same requirements as those set out in the legislation for the vital service providers. **(points 135–143)**	**Response of the State Secretary:** The Government Office finds that the legal basis exists in the Emergency Act, more specifically, clause 37 (3) 5) of the Emergency Act provides: the regulation on requirements may, if necessary, establish requirements for outsourcing the services supporting the core business of a vital service provider from another undertaking. The subjects are the vital service providers, but this regulation provides a basis for modifying the contracts between the vital service provider and the subcontractors. In the case of the more important subcontractors, the Riigikogu has provided for the determination of permanent crisis tasks in the draft Civil Crisis and National Defence Act and permanent national defence tasks in the draft Emergency Act and other Acts Amendment Act (transposition of Directive 2022/2557 on the resilience of critical entities). **Comment of the National Audit Office:** The purpose of the recommendation of the National Audit Office is to ensure that all parties have a common understanding of the scope of supervision. The audit indicated that the current wording results in different interpretations of the scope of supervision of vital service providers and their contractual partners by the authority that organises the vital service and the Information System Authority. The understanding must therefore be harmonised.
Exercising recovery plans 160. Recommendation to the chairmen of the management boards of Elering AS, Elektrilevi OÜ and Enefit Power AS: to conduct exercises of all recovery plans described in the continuity plans to ensure that the employees participating in recovery are aware of their roles and responsibilities. **(points 154–159)**	**Response of Elering AS:** we definitely agree that the recovery plan exercises described in the continuity plan must be carried out regularly. However, due to their cost and the working hours, it is not rational to carry out all full-scale exercises within a two-year cycle. **Response of Eesti Energia AS:** in the opinion of Elektrilevi and Enefit Power, the National Audit Office's recommendation to carry out exercises of all recovery plans within two years is appropriate and both companies confirm that they will address this. Regular crisis exercises and testing of different recovery plans are standard practice for both Elektrilevi and Enefit Power, but it is certainly possible to increase the frequency of these exercises, and we have set a target that recovery plans should be tested at least once every two years, and that different scenarios should be used for each scheduled test until all scenarios have been tested. It simply has to be taken into account that the costs of testing the recovery plans must be reasonable, so that they do not start to affect, for example in the case of Elektrilevi, the network charges of electricity consumers.

Characteristics of audit

Purpose of audit

The objective of the audit was to assess whether the accessibility of electricity to Estonian consumers is guaranteed in the long term, at the required time, in the required quantity and at an acceptable price, and whether the continuity of the Estonian electricity system is ensured until the connection to the continental European frequency area.

Assessment criteria

In providing its assessment, the National Audit Office was guided by the following criteria:

1. **Security of electricity supply is guaranteed**

   - Elering AS has assessed the impact of both local generation and international connections on security of supply until 2032.
   - Estonia has sufficient production capacity to meet peak demand in Estonia if needed.
   - The MEAC and Elering AS have set targets to ensure local electricity generation, have drawn up an action plan, and the actions are being implemented on schedule.
   - The concept of security of supply has been defined at the level of legislation in such a way that, under normal circumstances, the price of electricity is taken into account as a component of security of supply.
   - The MEAC has a methodology to assess the affordability of electricity prices and the MEAC has done it as well.
   - The MEAC has implemented measures to keep electricity prices affordable for consumers.
   - The MEAC and Elering AS have assessed how much should be invested in new generation capacity to keep electricity prices affordable in the long term, what these investments should be like and when they should be made.

2. **The state's electricity security is guaranteed until synchronisation with the Continental European frequency area**

   - A plan of measures for overcoming a major power cut has been drawn up at the national level and its implementation has been practiced at the level of the Government of the Republic.
   - The investments required for connecting the Estonian electricity system with the continental European frequency area are being made according to schedule.
   - Elering AS has prepared a plan for the resolution of the extraordinary Baltic synchronous area scenario and the Kiisa emergency reserve power plant is ready to operate in case of a long-term capacity shortage.
   - Enefit Power AS has prepared measures that will be implemented in the event of the dam of the Narva reservoir breaking and/or extraordinary synchronisation.
   - Elering AS, Enefit Power AS and Elektrilevi OÜ have up-to-date continuity risk assessments and continuity plans and cyber incident prevention, response and mitigation measures have been tested.
   - Elering AS, Enefit Power AS and Elektrilevi OÜ will prepare a risk assessment and plan to ensure the continuity of electricity supply.

- The RIA has an up-to-date overview of the cyber risks in the electricity system control system and the measures taken to mitigate them.

Scope and focus of audit

The audit assessed the performance of the Ministry of Climate (previously the Ministry of Economic Affairs and Communications) as the policy maker for security of electricity supply and the organiser of the continuity of electricity supply (vital service), Elering AS as the transmission system operator, Enefit Power AS as the largest producer and Elektrilevi OÜ as the distribution system operator in ensuring security of electricity supply. In addition, it analysed whether the capacity of the electricity system is sufficient to cover peak electricity consumption in Estonia and looked at what measures the Ministry is taking to keep electricity prices affordable for consumers.

The audit also examined whether the activities of the Ministry of Climate as the organiser of the continuity of electricity supply and of the three audited vital service providers meet the requirements of the Emergency Act and other legislation in ensuring the continuity of electricity supply, and the preparedness of the Estonian electricity system for emergency synchronisation with the continental European frequency area and for mitigating the risks associated with war, including those arising from information technology. The activities of the RIA in supervising the implementation of information security measures by vital service providers under the Cybersecurity Act were reviewed separately.

The audit did not cover issues related to the electricity exchange and the transition to renewable energy, nor did it review developments under the National Defence Development Plan.

The audited institutions were the Ministry of Climate (previously the Ministry of Economic Affairs and Communications), the Ministry of Finance, the Information System Authority and the state-owned companies Eesti Energia AS (and its group companies Enefit Power AS and Elektrilevi OÜ) and Elering AS. The Government Office was also involved as a party to the proceedings. In addition, the audit included a focus group interview with energy experts.

Table 1. People interviewed in the course of the audit by authorities

Date		Authority and position	Topic of the interview
01.09.2022	Evelin Pärn-Lee	Director General of the Competition Authority	Preliminary explanation of audit
01.09.2022	Külli Haab	Head of Regulatory Division at the Competition Authority	Preliminary explanation of audit
01.09.2022	Marilin Tilkson	Head of Energy Market Department at the Competition Authority	Preliminary explanation of audit
13.09.2022	Karl Kivinurm	Strategy Manager at Elering AS	Preliminary explanation of audit
13.09.2022	Erkki Sapp	Energy Market Development Manager at Elering AS	Preliminary explanation of audit
13.09.2022	Märt Allika	Head of Control Centre at Elering AS	Preliminary explanation of audit
22.09.2022	Jaanus Uiga	Head of Energy Department at the Ministry of Economic Affairs and Communications	Preliminary explanation of audit
18.10.2022	Kaupo Raag	Head Analyst of State Stakeholdings at the Ministry of Finance	Preliminary explanation of audit
18.10.2022	Tarmo Porgand	Deputy Head of the State Assets Department at the Ministry of Finance (18 October 2022)	Preliminary explanation of audit
17.11.2022	Triin Reisner	Advisor at the Strategy Unit of the Government Office	Preliminary explanation of audit
17.11.2022	Galina Danilišina	Advisor at the National Security and Defence Coordination Unit of the Government Office	Preliminary explanation of audit

17.11.2022	Gert Siniloo	Advisor at the European Union Secretariat of the Government Office	Preliminary explanation of audit
18.11.2022	Hando Sutter	CEO of Eesti Energia AS	Preliminary explanation of audit
23.11.2022	Kaie Pukk	Advisor at the Equality Policy and Subsistence Department of the Ministry of Social Affairs	Preliminary explanation of audit
05.12.2022	Priit Kaup	Lead Cyber Security Expert at the Critical Information Infrastructure Protection Department of the Estonian Information System Authority	Preliminary explanation of audit
05.12.2022	Ilmar Toom	Head of Supervision Department of the Estonian Information System Authority	Preliminary explanation of audit
05.12.2022	Erika Adams	Lead Expert at the Supervision Department of the Estonian Information System Authority	Preliminary explanation of audit
05.12.2022	Ramo Tomingas	Expert at the Supervision Department of the Estonian Information System Authority	Preliminary explanation of audit
11.01.2023	Kaie Pukk	Advisor at the Equality Policy and Subsistence Department of the Ministry of Social Affairs	Audit overview
11.01.2023	Agnes Einman	Head of the Equality Policy and Subsistence Department of the Ministry of Social Affairs	Audit overview
20.01.2023	Karl Kivinurm	Strategy Manager at Elering AS	Audit overview
20.01.2023	Erkki Sapp	Energy Market Development Manager at Elering AS	Audit overview
20.01.2023	Märt Allika	Head of Control Centre at Elering AS	Audit overview
06.04.2023	Paul Taklaja	Senior Lecturer at the TalTech Department of Electrical Power Engineering and Mechatronics	Focus group interview with energy experts
06.04.2023	Heiki Jakson	Electrical Engineer at Greenergy Data Centers	Focus group interview with energy experts
06.04.2023	Jako Kilter	Tenured Associated Professor at the TalTech Department of Electrical Power Engineering and Mechatronics	Focus group interview with energy experts
06.04.2023	Andres Annuk	Professor of Energy Supply at the Estonian University of Life Sciences	Focus group interview with energy experts
13.04.2023	Karl Kivinurm	Strategy Manager at Elering AS	Issues related to the security of supply methodology
13.04.2023	Erkki Sapp	Energy Market Development Manager at Elering AS	Issues related to the security of supply methodology

The following documents were analysed during the audit:

- sectoral legislation and its explanatory memoranda, in particular the Electricity Market Act, the Emergency Act and the Cybersecurity Act;
- sectoral strategy papers, development plans and action plans;
- Directives and Regulations of the European Parliament and of the Council;
- assessments, studies, contracts concerning security of electricity supply;
- security of supply reports of Elering AS;

- reports of the Competition Authority on the electricity market;
- data of the Ministry of Economic Affairs and Communications on compensation of electricity price;
- Elering AS, Enefit Power AS and Elektrilevi OÜ (including Imatra Elekter AS) vital service continuity risk assessments and plans; network and information system risk assessments;
- emergency response plans of the MEAC and the RIA
- documented follow-ups of exercises, including IT-related exercises, of the last three years
- descriptions of information security measures implemented by Elering AS, Enefit Power AS and Elektrilevi OÜ to prevent, respond to and mitigate the impact of vital service interruptions
- documented follow-ups of checks of the implementation of information security measures (security audit, certificate of compliance documentation, internal audit, etc.)
- memos of the cabinet meetings of the Government of the Republic, presentations on the security of electricity supply, including the issues of synchronisation with the Continental European frequency area

Completion date of audit:

The audit activities were carried out from January 2023 to June 2023.

Audit team:

The audit team consisted of Audit Manager Silver Jakobson and auditors Janne Kurg, Meeli Saksing, Sigrid Nuutre and Rando Paurson.

Contact information

Further information on the audit is available from the Communication Unit of the National Audit Office by telephone at +372 640 0777, email: riigikontroll@riigikontroll.ee

An electronic copy of the audit report (PDF) is available online at www.riigikontroll.ee.

A summary of the audit report is also available in English.

The number of the audit report in the record management system of the National Audit Office is 80095.

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Previous audits of National Audit Office in the area of electricity

18 September 2012 – **Potential choices of electricity generation**

All reports are available on the website of the National Audit Office at www.riigikontroll.ee