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ESTONIAN ENERGY POLICY IN THE CONTEXT OF MODERN CHALLENGES

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Abstract. In today's political reality, the resilience and sustainability of Estonia's development depends on its ability to respond adequately to existing challenges and threats. Given the historical peculiarities of the development of the energy sector and the resulting dependence on Russian energy resources, energy independence is a key issue of national security. This raises the issue of developing the basic principles of energy policy, including the creation of new, potentially profitable gas and energy markets and the development of renewable energy. In developing its national energy sector, Estonia is taking into account EU initiatives aimed at overcoming dependence on Russian energy resources and transitioning to climate-neutral production. The *subject* of the study is the content and peculiarities of the Estonian energy policy formation. The *purpose of the paper* is to identify key areas and mechanisms for the implementation of Estonia's energy policy in the context of today's challenges. *Research methodology:* systematic approach, methods of analysis and generalization. The content of Estonia's energy policy is set out in a number of important documents, including the Strategy Estonia 2035 and the National Energy Development Plan until 2030. The key areas of energy policy implementation are synchronization with the power grid of continental Europe, participation in the formation of the European energy and gas market, renewable energy, development of cross-border cooperation in the energy sector, fulfillment of obligations under the European Green Deal to reduce CO_2 emissions, and the role of shale production in Ida-Viru County. The issue of energy sustainability of Estonia and other countries in the Baltic-Finnish region is a key issue on the EU energy agenda. This is evidenced by the active public diplomacy of EU leaders to intensify cross-border cooperation of energy sector stakeholders in order to completely abandon Russian energy resources under the REPowerEU plan and to intensify the transition to climate-neutral production in the context of the European Green Deal. The EU's main energy security initiative is the Baltic Energy Market Interconnection Plan (BEMIP), which implements various projects. Estonia uses both economic and political mechanisms to implement its energy policy. Economic mechanisms include active participation in strategic projects (Baltic Synchronization, Balticconnector), 75% of which are financed by the Connecting Europe Facility. The potential of cross-border cooperation, especially with the countries of the Baltic-Finnish region, aimed at intensifying the development of renewable energy and regional energy and gas markets, is actively used. Estonian government officials pay considerable attention to the formation of dialogue and cooperation among energy sector stakeholders, which is evidenced by their participation in various special events and declaration of their intentions for mutually beneficial cooperation in the energy sector. *Research findings:* the key areas of implementation of the Estonian energy policy are synchronization with the EU energy system, participation in the formation of regional gas and energy markets, and intensification of energy production from renewable sources. The implementation of Estonia's energy policy is correlated with EU initiatives and is carried out through a number of economic and political mechanisms.

Key words: renewable energy, energy policy, energy market, public diplomacy, regional development, cross-border cooperation.

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1. Introduction

In today's political reality, energy security is a key aspect of national security that determines the level of resilience and sustainability of state development. Energy sustainability has become especially important for modern states in the context of Russia's full-scale invasion of Ukraine, which has actualized the need to develop effective mechanisms for implementing energy policy. In this context, energy independence is considered a component of Estonia's national security, given the country's historical dependence on Russian energy resources and the existing practice of using energy as a mechanism of manipulation and pressure. This raises the issue of optimizing the national energy policy, the key aspects of which should include integration into the European gas and energy markets, renewable energy and cross-border cooperation.

In general, the issue of energy security in the Baltic-Finnish region is a key issue on the EU energy agenda, given the sanctions policy against the Russian energy sector due to the full-scale invasion of Ukraine. At the same time, EU leaders are making significant efforts to strategize the development of the energy sector and optimize key areas of energy policy, taking into account the goals of the European Green Deal. Achieving climate neutrality is seen as a key factor in increasing the competitiveness of the economy and the energy sustainability of the EU in the context of implementing the global leadership strategy.

Therefore, the need for an adequate response to threats and challenges raises the question of the effectiveness of the formation and implementation of Estonia's energy policy as a guarantee of energy sustainability and sustainable development. The main purpose of the research is to identify the key areas and mechanisms for the implementation of Estonia's energy policy in the context of today's challenges. The complexity of the study lies in specifying the content of Estonia's energy policy in the context of current challenges, including full-scale Russia's aggression in Ukraine and the fulfillment of its obligations under the European Green Deal. A systematic approach to the study will help to specify the key areas of Estonia's energy policy in the context of meeting today's challenges. The method of analysis will help to clarify the content of the energy policy, directions and mechanisms of its implementation. The application of the generalization method will help to specify the final results of the study.

2. Main directions of the Estonian energy policy

The content of Estonia's energy policy is defined in the strategy "Estonia 2035" (Estonian Government, 2021), including ensuring the sustainability of the energy security system and the reliability of energy supply in the context of the transition to climate-neutral energy production. First of all, it is about reducing the energy production from oil shale and increasing the share of renewable energy through the development of wind power. In this context, considerable attention is paid to measures to neutralize the socio-economic consequences of the reduction of oil shale production for the development of the Ida-Viru district.

According to the National Energy Development Plan until 2030, Estonia has ambitious goals to increase the share of renewable energy sources in final consumption to 50%, reduce greenhouse gas emissions from the energy sector by at least 70% by 2030, and gradually increase this figure to 80% by 2050. Achieving these targets will require decisive and timely action to decarbonize the electricity and transport sectors (IEA, 2019). At the same time, Estonian officials have initiated the preparation of the Energy Sector Development Plan until 2035, which aims to update the trends, goals and directions of the national economy in line with the new realities associated with the EU's movement towards climate-neutral production, energy efficiency and energy security (Ministry of Economic Affairs and Communications, 2021).

There are key areas in the implementation of the energy policy aimed at ensuring Estonia's energy security and sustainability. First, the completion of the processes of synchronization with the energy grid of continental Europe, as well as the intensification of the participation in the functioning of the European energy and gas markets in order to overcome the dependence on Russian energy resources. Second, the fulfillment of commitments under the European Green Deal to reduce CO_2 emissions and the role of shale production in the energy sector. Third, the development of renewable energies and an increase in their share of final consumption in households and transport.

3. Economic and political mechanisms for implementing energy policy of Estonia

The issue of energy sustainability of Estonia and other Baltic-Finnish countries is on the EU agenda as an important component of sustainable development and the ability to respond effectively to global challenges. EU leaders are actively using the potential of public diplomacy to intensify dialogue and cooperation among stakeholders in the energy sector. At the Energy Security Summit in Copenhagen, Ursula von der Leyen called for increased cooperation to create effective regional energy and gas markets, expand the use of renewable energy to complete the greening of the economy, and strengthen the

EU's energy independence from Russian energy resources (European Commission, 2022). The summit participants (including the Prime Minister of Estonia) signed the Marienborg Declaration (Baltic Sea Energy Summit, 2022), which provides for increased imports of liquefied natural gas and liquefied biogas by sea, the development of offshore wind energy production in the Baltic Sea region, and research into the possibilities of implementing cross-border renewable energy projects. In recognition of current and future energy security risks, the EU provides funding for strategic projects.

In this context, an initiative to implement the Baltic Energy Market Interconnection Plan (BEMIP) was launched in 2009 (with subsequent extensions in 2015 and 2021) with the aim of creating an effective system of regional cooperation to overcome dependence on Russian energy resources (European Commission, 2009). The plan provides for the gradual implementation of projects, including in Estonia, aimed at the development and further synchronization of regional energy and gas markets, increasing the final consumption of renewable energy in the context of achieving the goals of the European Green Deal program.

As part of the BEMIP initiative, the Baltic Synchronization project is being implemented, involving Estonia, Lithuania, Latvia and Poland. The aim of the project is to synchronize the energy system of the Baltic countries with continental Europe. The European Commission has given the project the highest priority status, which is why 75% of the financing will be provided by the Connecting Europe Facility and the remaining 25% by investments (see Table 1). In total, about 30 investment objects in Estonia will be financed under the Synchronization Project.

Estonia has been quite successful in integrating into the European gas market, increasing its independence from Russian gas supplies. Since 2015, consistent steps have been taken to create a unified regional gas market with the participation of Estonia, Latvia, Lithuania and Finland (Directorate-General for Energy, 2020). This will be the first cross-border gas market in the EU, which will increase the ability of the participating countries to use existing and build new gas transport infrastructure necessary to improve the quality of service, stabilize gas prices and increase energy resilience in the Baltic-Finnish region.

In cooperation with Finland, the Balticconnector project was implemented and included in the Trans-European Energy Networks (Elering, 2020). The estimated cost of the project was EUR 206 million, 75% of which was financed by the European Commission. It enabled the interconnection of the Finnish and Estonian gas transmission networks, contributing to the diversification of gas supply routes and the expansion of the use of renewable energy (biomethane). The project also included the modernization of the interconnector between Estonia and Latvia, including the installation of a compressor and metering station in Estonia.

Estonia and Finland signed a Memorandum of Understanding and Cooperation on the Organization of Additional Supplies of LNG (Ministry of Economic Affairs and Communications, 2022). The cooperation includes the joint chartering of a 30 TWh per year floating storage and regasification unit (FSRU) and the construction of port and onshore infrastructure to ensure its operation. The signed memorandum is intended to synchronize the efforts of these states to implement the REPowerEU plan (European Commission, 2022) aimed at overcoming Europe's dependence on Russian energy resources in the context of Russia's invasion of Ukraine.

The implementation of the Estonian-Latvian cross-border offshore wind project ELWIND in the Baltic Sea has started (Elwind, 2020). It foresees a hybrid grid connection of the Estonian and Latvian power systems and the construction of two offshore wind power plants to generate renewable electricity in the range of 3-3.5 TWh per year. The ELWIND project will help to expand the use of wind energy resources, which will significantly reduce CO_2 emissions. Currently, Estonia has received a grant from the EU in the amount of 99 thousand euros to conduct research on the cost of the project, take into account possible environmental impacts and forecast the benefits of obtaining

Table 1
Investment Fund of the Baltic Synchronization Project

Stages of financing	Amount of investment in the project, million euros	Investment objects in Estonia
1	430	Renewal of the internal power network and construction of a synchronous compensator
2	700	Construction of two synchronous compensators
3	230	Upgrading of IT, control and monitoring systems at the control center, upgrading of the control and monitoring system for the Estlink 1 and 2 submarine cables and improvement of substation continuity

Source: Elering.ee (2020)

additional sources of renewable energy production (ECIEEA, 2022). This project is included in the CB RES list, which is promising in the context of obtaining funding under the Connecting Europe Facility.

Enefit Green, one of the most important producers of electricity from renewable sources in the Baltic region, plays an important role in the development of renewable energy in Estonia. Enefit Green is planning to implement several projects in Estonia. First, the construction of Estonia's first hybrid solar and wind power plant in Purtse, which will help synchronize the production of energy from renewable sources at different times of the year. Its estimated capacity will be 78 GW, which will meet the needs of about 24 thousand consumers (Enefit Green, 2022). Second, the construction of a modern wind farm in Sopi Tootsi with a capacity of 255 MW, which will double the production of wind energy in Estonia. Enefit Green has signed an agreement with SEB and Nordic Investment Bank for EUR 325 million, part of which will be used to implement these projects (SEB, 2023).

It should be noted that Estonia is one of the EU leaders in the field of renewable energy. In 2017, the share of renewable energy in gross final consumption was 29.2%, which significantly exceeded the target of 25% planned for 2020. According to EU Directive 2018/2001 (European Commission, 2018), which regulates the development and use of renewable energy, member states must increase the share of renewable energy consumption by increasing its production to 27%. At the same time, states that manage to exceed the existing targets can carry out a statistical transfer of renewable energy. In this context, Estonia has a successful experience of cooperation with Luxembourg on the transfer of 300 GWh (2018) and 400 GWh (2020) for a total of 10.5 million euros (IEA, 2019). In 2020, Estonia also received a benefit of EUR 37.5 million for similar cooperation on the transfer of renewable energy to Ireland (Horgan, 2019). The Estonian government is using the proceeds to reduce tariffs and implement a national renewable energy program that includes modernizing wind turbines, increasing the use of biogas and biomass in power generation, and developing solar and hydroelectric power.

At the same time, the transition to renewable energy sources requires solving a number of socio-economic problems in certain regions. Ida-Virumaa is home to one of the world's largest oil shale mines, resulting in a high level of employment in oil shale mining and electricity and heat production. The closure of oil shale development means the layoff or retraining of a significant number of professionals. The European Commission is providing Estonia with €354 million in grants under the Territorial Fair Transition Plan to support national initiatives for the development of this region (European Commission, 2022). In this context, the Estonian Ministry of Finance, in cooperation with the Estonian Nature Fund, the Estonian Green Movement and the Environmental Law Center, has developed the "Fair Transition of Ida-Viru County in the Field of Renewable Energy and Energy Efficiency" plan. The plan provides financial support for the development of small businesses in order to diversify the labor market, retrain professionals, and stimulate regional solar energy development.

Thus, a key aspect of Estonian energy policy is to overcome the energy sector's dependence on Russian influence. In this context, Estonian officials are focusing on the synchronized use of economic and political mechanisms to ensure energy sustainability by intensifying the processes of engagement in the European energy and gas markets. This means using the resource potential of EU financial mechanisms, attracting investments, and intensifying public diplomacy to deepen partnerships with stakeholders in the field of energy security.

4. Conclusions

Estonia's energy policy aims to ensure the sustainable development and energy security of the country, as well as the ability to respond adequately to current challenges, including the green economic transition and the Russian invasion of Ukraine. The issue of energy sustainability of Estonia and the Baltic-Finnish region is a key issue on the EU agenda. In this context, the European Commission initiated the BEMIP strategic plan, which envisages gradual steps towards the formation and functioning of energy and gas markets and the expansion of renewable energy consumption opportunities to ensure energy independence. The invasion of Ukraine by Russian troops forced EU leaders to adopt the REPowerEU plan aimed at accelerating the green economic transition and member states' refusal to buy Russian energy resources.

The key areas of implementation of the Estonian energy policy are related to the formation of regional energy and gas markets, the construction and development of gas and energy infrastructure, and the increase of energy production from renewable sources. In this context, Estonia is actively involved in the implementation of projects such as Balticconnector, Baltic Synchronization and ELWIND. The EU actively supports their implementation through the financial resources of the Connecting Europe Facility. Estonian officials are also using the potential of public diplomacy to establish mutually beneficial partnerships and cooperation with other EU member states in the energy sector.

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