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Lithuania political briefing:
New Energy Strategy: Aiming for Green and Self-Sufficient Electricity and Heat Production

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New Energy Strategy: Aiming for Green and Self-Sufficient Electricity and Heat Production

Summary

Two years ago Lithuania adopted its new energy strategy package. The core aim of Lithuania's energy strategy is becoming self-sufficient in electricity and heat energy production, as well as transforming its electricity and heat production industry by almost entirely focusing on renewable energy sources. According to the adopted goals, Lithuania will aim to generate up to 90 per cent of its electricity needs domestically by 2030. Moreover, about 90 per cent of this domestic electricity and heat production will use renewable energy sources like solar, wind, biomass and hydro power. By 2050 Lithuania will aim to fully cover its electricity and heat energy needs by domestic production, 100 per cent of which should come from renewable energy sources. The progress towards the stated energy goals looks promising, with development of renewable energy sources in 2023 being the fastest in Lithuania's history and major renewable energy projects being announced on a regular basis. This energy strategy and transformation has already started to impact Lithuania's economy and society.

Introduction

The Ministry of Energy had prepared and introduced Lithuania's energy strategy package for the period 2021 to 2030, with some revisions made at the end of 2022.

Lithuania's government has set ambitious goals regarding electricity and heat energy generation. First, Lithuania will aim to generate 80-90 per cent of its electricity needs by 2030. [1] Second, by 2030, up to 90 per cent of locally produced electricity must come from renewable sources, and by 2050 all electricity and heat consumed in Lithuania will be produced from

[1] VERSLO ŽINIOS: Vyriausybės planas: 2030 m. iki 90% suvartojamos energijos turėtų būti vietinė, at: https://www.vz.lt/pramone/2022/03/25/vyriausybes-planas-2030-m-iki-90-suvartojamos-energijos-turetu-buti-vietine

renewable and other clean sources. [2] After implementing the package and changing environmental protection and renewable energy laws, Lithuania will become one of the greenest countries in Europe in the next 5-6 years.[3]

The article outlines the importance of and ambition behind this energy strategy and the set goals. The progress of transforming Lithuania's electricity production made so far is also summarized. Specifically, the summary of major new projects of renewable energy production in Lithuania is provided. Finally, effects of this energy strategy to Lithuania's competitiveness and possible weaknesses of Lithuania's electricity grid are briefly discussed.

Ambitious Goals

The stated goals of the electricity production package look even more ambitious when are compared against the current situation of Lithuania's electricity market.

Current annual electricity demand in Lithuania is about 11 to 12 TWh. Lithuania locally produces only 4 TWh per year, which means that it currently needs to import more than 60 per cent of its electricity needs.[4] Depending on a season, 50 to 70 per cent of all electricity produced locally in Lithuania is from renewable sources, including wind, solar, biomass as well as hydropower. That means that in order to reach the objective of producing 80 to 90 per cent of its electricity needs domestically, Lithuania must more than double its domestic electricity production in the next 7 years. No doubt, achieving this will be a challenging task.

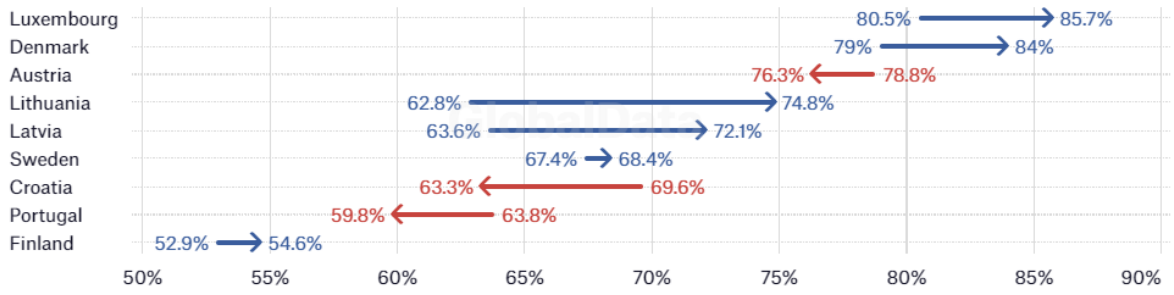
Moreover, most of this newly installed electricity production capacity must come from renewable sources. Lithuania is already one of the leading countries in terms of renewable electricity production. Of all EU countries, Lithuania saw the biggest growth: the share of renewable electricity generation in the country increased from 63% to 75% in 2022, see **Graph 1**.

[2] MINISTRY OF ENERGY: Seimas Approves Progressive and Innovative Lithuanian Energy Strategy, at: https://enmin.lrv.lt/en/news/seimas-approves-progressive-and-innovative-lithuanian-energy-strategy

[3] VERSLO ŽINIOS: Vyriausybės planas: 2030 m. iki 90% suvartojamos energijos turėtų būti vietinė, at: https://www.vz.lt/pramone/2022/03/25/vyriausybes-planas-2030-m-iki-90-suvartojamos-energijos-turetu-buti-vietine

[4] WORLD DATA: Energy consumption in Lithuania, at: https://www.worlddata.info/europe/lithuania/energy-consumption.php

Graph 1: Share of renewables in electricity generation in 2021 and 2022 in selected EU countries [5]



Reasons for the new energy strategy

There is a number of reasons why Lithuania decided to come up with such ambitious electricity production goals.

After Lithuania shut down its Ignalina Nuclear Power Plant in 2009, as part of the agreement with the European Union, and ultimately failed to replace it with a new nuclear power plant, Lithuania's domestic electricity production was drastically reduced and the country started important around 70 per cent of its electricity needs. Therefore, one reason of the energy strategy package is to ensure energy security and become self-sufficient in electricity production. Specifically, Lithuania is eager to reduce its dependence on Russian energy markets and electricity imports. When you cannot produce essential goods and services domestically, you must import them. Importing something essential unavoidably involves some geopolitical risks, especially if the countries you import from are less trustworthy. For example, after Russia attacked Ukraine, it started using energy resources as a weapon, choosing how much to supply to countries in the region and for what price depending on their geopolitical goals. Domestic production helps to mitigate these types of risks.

Economic and environmental factors driving the push to produce electricity domestically are also closely intertwined with those of energy security. Vytautas Mitalas, the senior member of Freedom Political Party, told the media, "we are safe enough in the gas sector, but

[5] ENERGY MONITOR: Europe: Renewables in 2022 in five charts – and what to expect in 2023, at: https://www.energymonitor.ai/tech/renewables/europe-renewables-in-2022-in-five-charts-and-what-to-expect-in-2023/

unfortunately we are still not safe in the electricity sector and therefore the development of solar and wind power plants is needed as quickly as possible." The Minister of the Environment, Simonas Gentvilas, said that Lithuania has been paying about 3 billion euros per year for Russian electricity, oil and gas, but this money could remain in Lithuania. "Poland has a lot of coal and a lot of jobs, and a lot of investments have been made, Estonia has shale oil, Lithuania does not have these things, we send almost 3 billion. euros every year for foreign businesses that produce electricity or oil and gas resources. [With domestic production from renewables], this money could stay here, and we would not cause pollution. This is a double win for Lithuania and the country's economy," S. Gentvilas told journalists.[6]

Economic factors behind the energy strategy are also stressed by the Minister of Energy Dainius Kreivys, currently Lithuania pays dearly for energy resources, because it does not produce them itself, and electricity prices in Europe are dictated by the German market. "Having our own electricity, our own production, we will have significantly lower electricity prices for our consumers, our industry, our business," said the minister. [7]

A survey carried out in 2022 revealed that Lithuanian society understands very well the importance of being self-sufficient with energy production to energy security, as well as the importance of green energy to slowing the climate change. Two-thirds, or 65 percent, of Lithuanians believe that the war in Ukraine and its consequences on energy prices should accelerate the green transition, a survey conducted by the European Investment Bank (EIB) has shown. "Lithuanians believe that further developing renewable energy should be a priority in fighting the global energy and climate crisis," a press release quoted EIB vice-president Thomas Östros as saying. According to the survey, 71 percent of Lithuanians believe that the consumption of energy and goods should be reduced drastically in the coming years to prevent a global catastrophe. Moreover, 76 percent of respondents feel that the government is reacting too slowly to climate change, while 54 percent think that Lithuania will not succeed in substantially reducing its carbon emissions by 2030. [8]

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[6] VERSLO ŽINIOS: Vyriausybės planas: 2030 m. iki 90% suvartojamos energijos turėtų būti vietinė, at: https://www.vz.lt/pramone/2022/03/25/vyriausybes-planas-2030-m-iki-90-suvartojamos-energijos-turetu-buti-vietine

[7] Ibid.

[8] LRT: Most Lithuanians say war in Ukraine should accelerate green transition – EIB, at: https://www.lrt.lt/en/news-in-english/19/1810452/most-lithuanians-say-war-in-ukraine-should-accelerate-green-transition-eib

Ways to reach the set goals

One of the key ways to achieve the stated goals is reducing red tape and bureaucracy in renewable energy sector. Vytautas Mitalas believes that the current energy strategy package will ensure that Lithuania will drop those bureaucratic barriers and make it possible for every private user and legal entity to expand wind and solar power plants." [9]

According to the Minister of Energy Dainius Kreivys, the package will help to reduce bureaucracy and allow for the installation of renewable energy generating plants faster, and Lithuania will have by 2030 will be able to produce up to 90% of the energy it needs. "Today, it takes more than three years to build a renewable energy plant, big or small. With this package, the power plant will be able to be built in three months. Of course, if it is large, has an impact on the environment, the procedures will be longer. But basically, this is a wide gate for renewable energy, for its rapid development", said D. Kreivys.[10]

The so-called breakthrough package adopted by the Seimas last June will enable the rapid development of green energy, reducing bureaucratic obstacles and excessive restrictions on solar and wind power plants and creating favorable conditions for the growth of the number of producing electricity consumers, as well as supporting investments and creating more flexible conditions for business to participate in the market. [11]

Lithuania's transformation of electricity production

Indeed, the year 2023 saw the fastest development of renewable energy resources in Lithuania in its history, according to the Ministry of Energy.

"The Ministry of Energy points out that the development of renewable energy in Lithuania since the 2020s is the fastest in the country's history. In three years, the amount of renewable energy in Lithuania has more than tripled (...) and today already exceeds 30% of

[9] VERSLO ŽINIOS: Vyriausybės planas: 2030 m. iki 90% suvartojamos energijos turėtų būti vietinė, at: https://www.vz.lt/pramone/2022/03/25/vyriausybes-planas-2030-m-iki-90-suvartojamos-energijos-turetu-buti-vietine

[10] Ibid.

[11] LRT: Ministerija: atsinaujinančių energijos išteklių plėtra Lietuvoje sparti kaip niekad, at: https://www.lrt.lt/naujienos/verslas/4/2108343/ministerija-atsinaujinanciu-energijos-istekliu-pletra-lietuvoje-sparti-kaip-niekad

total energy consumption," the commentary states. According to the Ministry's data, 699 megawatt hours (MWh) of this energy from renewable sources were produced in a month of December in 2020, and it is estimated that 2.3 gigawatt hours (GWh) will be produced in a month of December in 2023, and in December of 2025 this amount will reach 8.1 GWh. It means that in the next two years the amount of renewable energy produced in Lithuania will increase by another 3,5 times.[12]

Although there are considerable challenges to be overcome in order to keep the momentum of energy production transformation and reach the set goals, the progress made so far is a very strong start for this multi-year energy strategy.

Newest projects of renewable energy

Although the new strategy and the set goals are very ambitious, it seems there are first signs of an actual breakthrough in transformation of Lithuania's electricity production.

Once the government created more flexible and favourable regulatory system and offered subsidy schemes for private individuals, there has been a significant uptick in households that bought their own solar panels and installed them on their property, usually on rooftops of their houses or in private yards and gardens. The households that generate electricity with their own solar panels are called generating electricity consumers, or producing electricity consumers As of April 2023, there were more than 50,000 generating electricity consumers in Lithuania. Together they have already installed more than 550 megawatt (MW) solar electricity generation capacity. The government has prepared another tranche of subsidies – 40 million euros – for generating electricity consumers.[13]

Those individuals or businesses that do not have a private rooftop or a yard, are offered to buy solar panels that are installed in so called remote solar parks, and become remote generating electricity consumers. Each individual investor buys and owns a certain amount of electricity generation capacity. The amount of electricity produced by solar panels of each remote generating electricity consumer is being accounted for, is transferred straight to the

[12] Ibid.

[13] LRT: Gaminančių elektros vartotojų Lietuvoje – jau 50 tūkstančių, artimiausiu metu – dar viena 40 mln. paramos injekcija, at: https://www.lrt.lt/naujienos/verslas/4/1960620/gaminanciu-elektros-vartotoju-lietuvoje-jau-50-tukstanciu-artimiausiu-metu-dar-viena-40-mln-paramos-injekcija

electricity grid, and then can be allocated to be consumed at certain properties at any time. During the first half of 2023, the number of remote generating consumers more than doubled - more than 13,000 of them were connected to the grid. As of July 2023, there were more than 22,6 thousand remote generating electricity consumers in Lithuania.[14]

The number of manufacturing users has been growing exponentially in Lithuania for the past two years. The absolute majority of them use state grants. For comparison, in 2021 at the end of 2018, there were 18,800 producing users, at the end of last year - over 42,000, and in the first three months of this year, their number has already exceeded 50,000. [15]

Corporate investments in renewable energy production in Lithuania are no less impressive.

For example, in August 2023 the Danish renewable energy company “European Energy” presented to the public the first 65 megawatt (MW) solar park under construction in Lithuania. The solar park, which will cost over 55 million euro, should produce around 95 MWh electricity per year and satisfy electricity needs of more than 90 thousand households. It is the largest solar park currently being built in the Baltic States. Energy Minister Dainius Kreivys says that the project is big and significant for Lithuania. As of July 2023 “European Energy” has already installed more than 306 MW worth of solar electricity generation capacity in Lithuania, and by 2026 it plans to build new solar parks and install additional 960 MW in Lithuania. “European Energy” plans to invest in Lithuania more than 1,6 billion euros and build more than 1 gigawatt (GW) worth of solar and wind electricity generation capacity.[16]

Wind energy is also riding high in Lithuania. The international green energy company "Ignitis Renewables", part of “Ignitis Group”, together with its strategic partner "Ocean Winds" will develop the first offshore wind farm project in Lithuania. It is estimated that a 700 megawatt (MW) power plant park in the Baltic Sea could produce about 3 terawatt hours (TWh)

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[14] LRT: Per pirmąjį pusmetį daugiau nei dvigubai išaugo nutolusių gaminančių vartotojų skaičius, at: https://www.lrt.lt/naujienos/verslas/4/2046237/per-pirmaji-pusmeti-daugiau-nei-dvigubai-isaugo-nutolusiu-gaminanciu-vartotoju-skaicius

[15] LRT: Gaminančių elektros vartotojų Lietuvoje – jau 50 tūkstančių, artimiausiu metu – dar viena 40 mln. paramos injekcija, at: https://www.lrt.lt/naujienos/verslas/4/1960620/gaminanciu-elektros-vartotoju-lietuvoje-jau-50-tukstanciu-artimiausiu-metu-dar-viena-40-mln-paramos-injekcija

[16] LRT: Kreivys: „European Energy“ statomas saulės parkas – reikšmingas Lietuvai, at: https://www.lrt.lt/naujienos/lietuvoje/2/2062821/kreivys-european-energy-statomas-saules-parkas-reiksmingas-lietuvai

of green electricity per year, which would provide a quarter of Lithuania's current electricity demand. "The offshore wind farm developed by our group is a significant step towards Lithuania's energy independence. Thanks to the project, the increased production of local electricity from renewable energy sources will ensure a lower dependence of the country on electricity imports. This is the largest energy project currently under development in Lithuania, which will be the first of all the Baltic countries to have an offshore wind farm," says Darius Maikštėnas, head of Ignitis Group.[17] "Ignitis Renewables" earlier this year made an initial investment and commitment to develop another wind park, for 300 million euros, which will produce enough electricity for 250 thousand households. Ignitis Renewables is responsible for the implementation of onshore and offshore wind power, solar energy, biomass and waste-to-energy projects. The company currently manages five wind parks in Lithuania, as well as one wind park in Poland and one in Estonia.[18]

Renewable energy and Lithuania's competitiveness

How will Lithuania's electricity production strategy and heavy focus on renewables affect its industry and economic competitiveness?

Although initially renewable energy had been considered expensive, there is evidence and data showing that costs of electricity generation of low-carbon generation technologies have been falling and are increasingly below the costs of conventional electricity generation from fossil fuels. Renewable energy costs have continued to decrease in recent years and their costs are now competitive with dispatchable fossil fuel-based electricity generation in many countries.[19]

In addition to direct costs of electricity generation, the EU Carbon market and the EU Emission Trading System (EU ETS) is an increasingly important factor that determines the final

[17] LRT: „Ignitis grupė" su „Ocean Winds" paskelbta pirmojo jūrinio vėjo projekto vystytoja, at: https://www.lrt.lt/naujienos/verslas/4/2098755/ignitis-grupe-su-ocean-winds-paskelbta-pirmojo-jurinio-vejo-projekto-vystytoja

[18] LRT: „Ignitis renewables" įsigijo vėjo parką Kelmės rajone, investuos 550 mln. Eurų, at: https://www.lrt.lt/naujienos/verslas/4/2022291/ignitis-renewables-isigijo-vejo-parka-kelmes-rajone-investuos-550-mln-euru

[19] INTERNATIONAL ENERGY AGENCY: Projected Costs of Generating Electricity 2020, at: https://www.iea.org/reports/projected-costs-of-generating-electricity-2020

energy cost. EU ETS currently regulates different EU sectors, ranging from energy-intensive sectors of industry to aviation operators, which together represent around 40 per cent of EU's total greenhouse gas emissions. Under EU ETS, factories, power plants and other businesses have allocated greenhouse gases emission allowances of how much greenhouse gases they can emit. Companies exceeding the allocated limits may buy extra emission allowances from companies that emit less greenhouses gases.[20] With EU's carbon permits trading, over the last 6 months, from 80 to 100 euros per 1 tonne of emitted CO2 [21], it represents a sizeable opportunity for companies that switch to green sources of energy.

When Lithuania becomes a country with large clean energy generation capacity, having developed good electricity network infrastructure as well as flexible regulatory environment for renewable electricity production, it may well become much more attractive place of investment for high energy consumption businesses.

Will current electricity network be able to cope?

Significant and swift changes in Lithuania's electricity production patterns will put significant pressure on its electricity network. Therefore, the government has already started to prepare for eventual situation when the current capacity of the electricity network may not be enough for everyone.

The government confirmed that by 2030 4.4 GW will be allocated to solar power plants, and 3.6 GW to onshore wind power plants of the Lithuanian energy system. From the part of the network dedicated to solar energy, 2.4 GW are left for producing electricity consumers - residents who have already installed or are planning to install a solar power plant or part of a remote park, businesses, municipal institutions and public institutions, and energy companies. The remaining 2 GW is for commercial solar park developers.[22]

[20] EUROPEAN COMMISSION: U Emissions Trading System (EU ETS), at: https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets_en

[21] TRADING ECONOMICS: EU Carbon Permits, at: https://tradingeconomics.com/commodity/carbon

[22] DELFI: Saulės elektrinių vystytojus papiktinusi tvarka tikslinama: Vyriausybė numatė papildomus apribojimus, at: https://www.delfi.lt/verslas/energetika/saules-elektriniu-vystytojus-papiktinusi-tvarka-tikslinama-vyriausybe-numate-papildomus-apribojimus-92421911

According to new government's resolution, amened in February 2023, once the total capacity of the commercial solar parks exceeds 2 gigawatts, there would be extra procedures and restrictions for developers of solar power plants in order to ensure fair and efficient distribution of electricity network bandwidth. "With the resolutions, we aim to ensure the further development of solar power plants and the conditions for balanced utilization of the electricity grid, as well as the implementation of the strategic goals of the country and the Government", - the statement of the Ministry of Energy quoted its head Dainius Kreivys. [23]

The new procedure will not stop development of new commercial solar parks beyond the 2 gigawatts limit, however, the developers will have to obtain special development permits before they are allowed to develop new projects. [24]

The problem of allocating the existing electricity grid bandwidth shows that Lithuania needs more investment in its electricity network in order not to stall the huge transformation of electricity production that is taking place.

Conclusion

If Lithuania manages to reach its energy goals by 2030, it will become one of the greenest countries in terms of electricity and heat energy production. There are a number of reasons for Lithuania's new energy strategy, including energy security, economic and environmental factors. If becoming an economy run by green energy brings tangible competitive advantage, it will encourage other sectors in the economy, as well as other countries, to pursue green and sustainable strategies.

[23] Ibid.

[24] VERSLO ŽINIOS: VERT patvirtino naują komercinių saulės parkų plėtros tvarką, at: https://www.vz.lt/pramone/energetika/2023/02/07/vert-patvirtino-nauja-komerciniu-saules-parku-pletros-tvarka