

Lithuania's Prosumer Solar Community Model

The first online platform for solar energy

Lithuania's Solar Community (Lith. "Saulės bendruomenė") is a government-led project that allows citizens to buy or rent a remote solar panel through an online platform. Individuals are both producers and consumers, or 'prosumers' in this model. The project provides sustainable energy at low cost and empowers communities to lead in climate change mitigation strategies at a household level.

This shared scheme brings governments, organisations and private consumers together and ensures the creation of a shared goal. The government provides incentives and subsidies to citizens, as well as a public infrastructure and technological support.

While Lithuania is the first country in the world to launch an online platform to buy solar energy, we can expect to see more advanced solutions for developing solar energy production around the globe in future.

Background

In order to reduce Lithuania's dependence on energy supplies from a single source, a number of energy projects have been implemented in recent years. Since 31 December 2009, owing to the permanent shutdown of the state-owned Ignalina Nuclear Power Plant (INPP),¹ Lithuania's electricity generation structure has changed significantly, and Lithuania changed from being a net exporter of electricity to a net importer of electricity.

In June 2010, the government approved the National Renewable Energy Sources Development Strategy,² which aims to achieve at least a 30–45 per cent share in the gross final energy consumption to be produced from renewables by 2030 and 80 per cent by 2050. The biggest potential is foreseen in wind energy, hydropower and biomass.

In June 2018, the Parliament of the Republic of Lithuania approved the revised National Energy Independence Strategy.³ The 2018 Strategy provides four main directions for Lithuanian energy policy — energy security, the development of green energy, efficient energy consumption, competitiveness and innovation. Most importantly, Lithuania can partly supply itself with energy it has produced itself.

On 1 May 2019, Lithuania introduced a new aid scheme⁴ to support installations generating electricity from renewable sources such as wind, solar or hydropower. The scheme is designed to help Lithuania reach its national target share of renewable energy sources in gross final energy consumption, which has been set at 38 per cent by 2025. The renewable energy scheme will be applicable until 1 July 2025 or, alternatively, until the 38 per cent target is reached. With an overall budget of €385 million,⁵ the scheme will be open to all renewable installations, including the public grants for installation of solar panels.

Solar Community

Over the past few years, support for renewable energy has grown continuously, both at the national and European levels. Lithuania has taken steps to liberalise its electricity market and to ensure a consumer's right to choose their electricity supplier and to purchase electricity for a real market price. Therefore, in 2018, renewable energy sources accounted for 25.3 per cent of gross final energy consumption and 16.8 per cent of gross electricity consumption in Lithuania.⁶

It is claimed that Lithuania is the first country in the world to launch an online platform for buying solar energy. The platform allows consumers to purchase a share of solar energy generated in remote solar panels. This means that people living in one part of the country can use solar energy generated in other parts of the country. New opportunities for residents of apartments appeared as the Lithuanian Ministry of Energy introduced a new law to install solar plants on 1 October 2019. On 29 April 2020, the first 1 MW remote solar farm was opened near Elektrėnai,⁷ which will generate electricity for almost 300 households. Lithuania is one of the first countries in Europe to create opportunities for every resident and household to use renewable electricity – by producing electricity from renewable energy sources in one place that can be used in another.

New legislation in the country, changing consumer needs and growing demand for solar energy inspired a project called **"Solar Community"** (in Lithuanian, "Saulės bendruomenė"). The project is unique because it gives an opportunity to buy or rent a remote solar panel using one online platform.

The possibility of becoming electricity prosumers who can produce and consume energy in different places is especially relevant for people who live in blocks of flats. These consumers can purchase or rent part of a solar power plant at a solar farm or build their own power plant anywhere in Lithuania, and use the energy produced there in another location. The Ministry of Energy has also developed financial incentives that accelerate people's return on investment in solar power plants. Prosumers can currently install power plants using renewable energy sources with a capacity of up to 500 kilowatts (kW).

Household owners and businesses in Lithuania can also apply for financial compensation to help buy a remote solar panel. The buyer calculates how much energy a household uses and then accordingly buys a part of the remotely generated power. Capacities range from 1 kW to 10 kW and feed the electricity produced into the grid to cover their household needs later. The project is not only helping Lithuania to move towards climate neutrality, but it is also a practical way for citizens to save money.

An average Lithuanian household needs a 2-3 kW power solar panel. So, within a year of using a 2-kW solar panel, a household would save approximately €190 and could reduce CO₂ emission by 37 tonnes, as stated by the "Solar Community". It also fosters the connectivity of public, private and community involvement in a more sustainable future. Until now, in Lithuania, only a few companies and individual users had enough resources to build solar panels. However, the new platform opened the door for people living in shared premises and for companies with fewer resources.

"Solar Community" is an example of how governments and organisations can involve more individual and private consumers in contributing to the clean energy transition. With these changes, it's expected that the popularity of solar energy will increase, encouraging other countries to follow Lithuania's example.

People and Planet: how to become prosumer?

Energy poverty – meaning inadequate ability to heat, cool, use lighting or appliances – is an issue that affects more than 50 million households in the European Union (EU).⁸ Putting in place structures to support prosumers (an individual who both consumes and produces) has been seen as a way to support the transition away from energy poverty and to provide more energy security for citizens and residents. "Solar Community" seems to have a strong focus on that too. The Lithuanian Energy Ministry has recently released a support scheme that allows consumers to apply for a one-time compensation of €323 per installed kW. This is expected to increase the current number of producing consumers of 6000.

To reach the ambitious 30-45 per cent share in the gross final energy consumption to be produced from renewables by 2030 and 80 per cent by 2050, we need citizens to join in and to create a space and possibilities for inclusion. This will mostly be achieved by the development of producing consumers – a prosumers movement. The share of prosumers in the amount of total electricity consumers is planned to be increased: up to two per cent in 2022, up to 30 per cent by 2030 and up to 50 per cent by 2050. Historically, homes in Lithuania were formed mainly as multifamily houses. Therefore, in order to reach such ambitious goals, residents have to be involved in the production of the electricity for personal needs by becoming prosumers.

Additionally, creating energy communities would make this process much easier. Relevant conditions require non-standard decisions for the members of communities across Lithuania to become prosumers. The compensation and the mechanism aim to create equal gender, social class opportunities but do not specifically focus on the most vulnerable groups, i.e. those who suffer most from energy poverty. The focused adjustment of the possibilities, taking the social vulnerabilities into account, could solve holistic challenges. However, "in Lithuania, there is no specific strategy for addressing energy poverty, instead energy poverty is addressed as part of general social policies".⁹ This could also be an opportunity to address the holistic challenges and adjust accessibility to those who are most in need.

The development of the prosumer in Lithuania requires the implementation of the net-metering¹⁰ system, which has already been in action in Lithuania for a few years. However, very important changes to the expansion of the net-metering were made through the improvement of Lithuanian legislation, which came into force in October 2019.¹¹ The main solutions and new possibilities include:

1. Net-metering system can be applied for photovoltaic (PV) installations up to 500 kW.
2. The 500kW limit can be used by every legal or personal entity: by private households, by commercial units, by communities, etc.
3. It is possible to construct PV power stations in one part of the country and consume its electricity in another; it means that, e.g. you can construct a PV station in the rural area on a cheap land plot or summer house, and consume it in your accommodation in the city centre; only the electricity transmission fee has to be paid, which goes to the grid operator.
4. It is possible for individuals to buy or lease part of a big PV station. The electricity produced here can be used in a remote house, e.g. a person can buy 5kW from a station with 1,000kW power capacity, developed by the investor. For such acquisition, the net-metering system also applies.

Improving energy efficiency

The largest Lithuanian public energy producer (IGNITIS p.c.) created an internet platform for the implementation of this model. The developer can announce their intention to construct the power station and to distribute it to small consumers. The platform allows households to obtain property or lease part of a power station and to pay for that purchase. The results of the first three months saw 6,000 applications received, and the activities have not slowed down.

It is very important that the Lithuanian residents of multi-family houses can very easily become producing consumers. Such flexibility would allow the creation of energy communities, which could obtain energy in a more economically efficient way. The flexibility of net-metering opens up new possibilities for the wider usage of solar electricity, e.g. conversion of solar electricity for the heat and hot water production. Such production becomes very economically attractive when using aero thermal and geothermal heat pumps. In that case the prosumer can produce electricity in summer to store it in the electrical grids, and very effectively use it for the heating in winter. In that case, the price of heat is three times lower than the typical price of heat produced by the gas or other fossil fuels. It is very attractive that multifamily buildings can thus become carbon neutral.

Administrative and operational guidelines

The most important remedy measures include:

- Simplification of administrative procedure for self-consumers who want to generate their own electricity and do not want to supply energy to the grid. Those producers do not need to apply for a permit.
- Making information on support measures, legal information, organisations, statistics available and accessible for everybody.
- Information on the issuance of certificates for the operation of energy facilities are available and accessible for everybody.
- Introduction of one contact point for the permit granting procedure. The contact point for the permit granting is Lithuanian Energy Agency.¹²

The Lithuanian plan proposes a series of measures to simplify the administrative procedures and facilitate the development of projects creating opportunities for inclusion. This could be defined as stated in Solar Power Europe Assessment of the National Energy and Climate Plan Lithuania:¹³

- **Support schemes for prosumers:** A support scheme is available to prosumers totalling €16 million. This was provided by the European Union Structural Funds and the National Climate Change Programme from 2019 and is expected to last until 2023.
- **Collective self-consumption framework:** The Ministry of Energy, together with the Office of the Government of the Republic of Lithuania, carried out a public consultation on the main barriers and incentives for renewable energy communities in 2019. This consultation allowed Renewable Energy Communities to participate in auctions without obligation to produce and supply to the networks the total amount of electricity won in the auction. These communities can carry out any activity in the energy sector, although they need a permit.
- **Targets for demand side response:** General reference to demand-side response is needed to avoid peaks in electricity demand.
- **Support framework for flexibility** (i.e. market access, balancing markets, network charges): The plan refers to technology-neutral capacity mechanism; clean energy package provisions for market integration, including adapting the electricity system to variable renewable energy sources and distributed generation; rewards for flexibility and innovation; dynamic pricing; competition and easy access to liberalised market; introduction of smart meters.

Although this does not fulfil all the requirements when it comes to mapping current demand-side flexibility, storage capacity and specific provisions on battery storage, it provides an extensive set of clear measures and targets to advance the electricity market. This will help to improve its flexibility, including removal of price cap regulation, promotion of aggregator business models, smart grid development, promotion of balancing and other network services by renewal energy sources-based generators as well as fostering integration of energy storage facilities and services, and dynamic pricing.

Around 89 per cent¹⁴ of Lithuania's population said they would be very keen to generate their own electricity from the sun, and 60 per cent would seriously consider such an option if they did not have to take care of the installation of the solar power plant themselves. The majority of the population would like to produce electricity from the sun due to the possibility to reduce the cost of electricity. However, a strong motive is also the support of the ideas of environmental protection and energy independence, according to the national opinion poll conducted in 2019.

While Lithuania is the first country in the world to launch an online platform to buy solar energy, there are other similar projects in progress. For instance, floating solar panels have been installed on the upper reservoir of Lake Kruonis. It is the first project of its kind in the Baltic region. We can expect to see more advanced solutions for developing solar energy production around the globe in future.

Endnotes

- 1 Ignalina Nuclear power plant. For more information, see <https://www.iaa.lt/en/about-us/history/137>
- 2 The Ministry of Energy of the Republic of Lithuania (2010). National Renewable Energy Sources Development Strategy: <https://bit.ly/2Orhfgs>
- 3 The Ministry of Energy of the Republic of Lithuania (2018). National energy independence strategy: <https://bit.ly/2Oo9xUr>
- 4 European Commission (2019). "State aid: Commission approves support for production of electricity from renewable energy sources and for electro-intensive users in Lithuania". Press release: https://ec.europa.eu/commission/presscorner/detail/en/IP_19_242
- 5 Emerging Europe (2019). EU gives green light to Lithuanian 385 million-euro renewable energy scheme: <https://emerging-europe.com/news/eu-gives-green-light-to-lithuanian-385-million-euro-renewable-energy-scheme/>
- 6 IAEA, Country energy overview, 2020 edition.
- 7 Ministry of Energy of the Republic of Lithuania (2020). A new wave of household use of solar electricity is coming: [https://enmin.lrv.lt/en/video/a-new-wave-of-house-](https://enmin.lrv.lt/en/video/a-new-wave-of-household-use-of-solar-electricity-is-coming)
[hold-use-of-solar-electricity-is-coming](https://enmin.lrv.lt/en/video/a-new-wave-of-household-use-of-solar-electricity-is-coming)
- 8 See <https://www.energy-poverty.eu/about/what-energy-poverty>
- 9 EU Energy Poverty Observatory (EPOV) (2020). Member State Report. Lithuania: <https://www.energy-poverty.eu/observatory-documents/lithuania>
- 10 Net metering is a mechanism which allows domestic or commercial users who generate their own electricity using solar panels or photovoltaic systems to export their surplus energy back to the grid.
- 11 Aleksiejuk-Gawron, J., Milciuviene, S. et al. (2020). Net-Metering Compared to Battery-Based Electricity Storage in a Single-Case PV Application Study Considering the Lithuanian Context.
- 12 See <https://www.ena.lt/about-us/>
- 13 Solar Power Europe Assessment of the National Energy and Climate Plan Lithuania. Retrieved: <https://www.solarpowereurope.org/lithuania-country-profile/>
- 14 The national opinion poll on green energy (2019): <https://www.delfi.lt/projektai/eko-energetika/gyventoju-apklausa-89-proc-lietuviu-noretu-gamintis-elektra-is-saules.d?id=82299777>

