Navigating Power Grid Scarcity

Lithuania experiences with RES integration

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RES capacity in Lithuania: current situation

Generators

Solar plant

780 MW

Wind plant

1,34 GW

Bio plant

149 MW

Hydro plant

128,8 MW

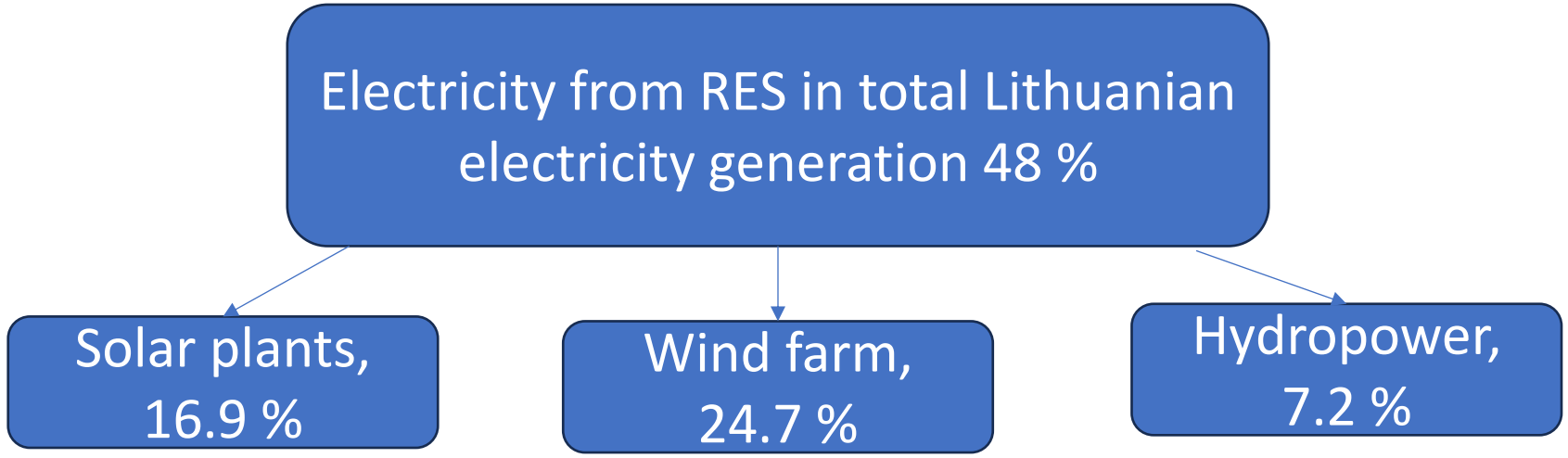
Prosumers (mostly solar, both businesses and citizens*)*

118 622 units
1,5 GW

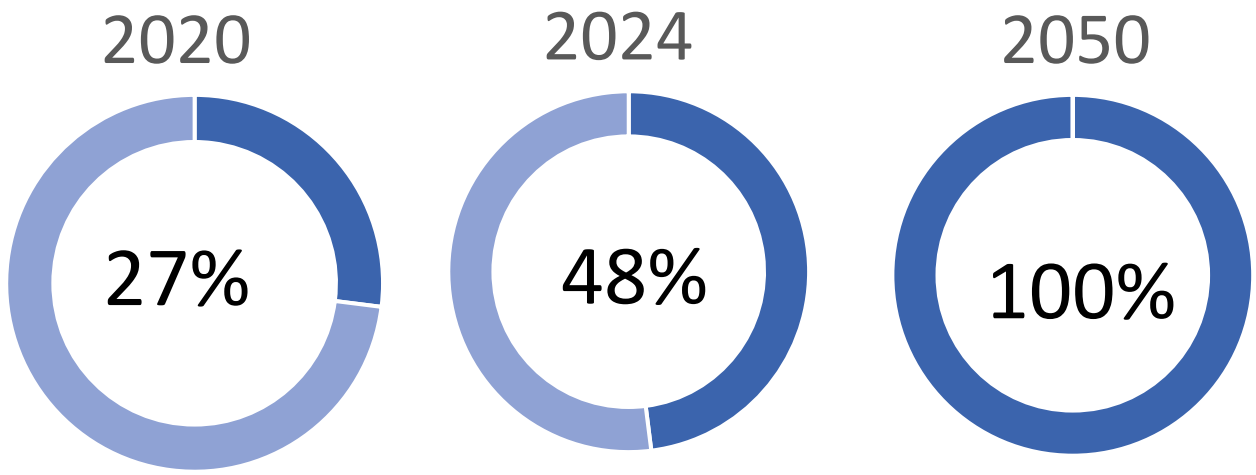
Prosumers (roof tops)
80 123 units
1,2 GW

Remote prosumers
40 165 units
322 MW

Percentage of electricity from RES



RES SHARE IN THE FINAL ELECTRICITY GENETATION



Future targets for RES deployment

Offshore Wind

1.4 GW 2030

Onshore Wind

4.5 GW 2030

Solar power plants

4.1 GW 2030

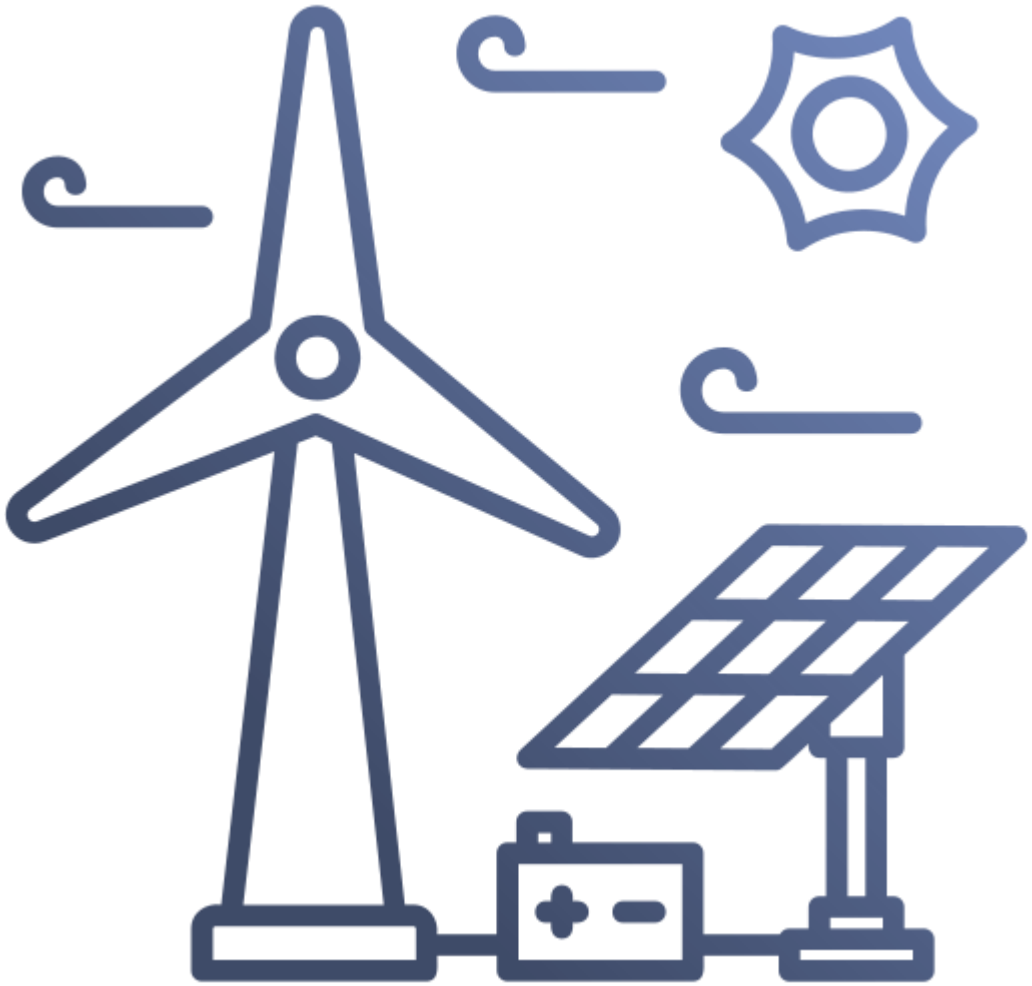
Overall installed RES capacity 10.3 GW in 2030

Current/future challenges caused by RES integration

- Renewable energy sources like solar and wind are intermittent, meaning they don't produce energy consistently. This can lead to reliability issues in the power supply;
- Efficient and cost-effective energy storage solutions are still under development. Storing energy for use when renewable sources aren't generating power is crucial for a stable energy supply;
- Integrating renewable energy into existing power grids can be complex and costly. The grids need to be upgraded to handle the variable nature of renewable energy;
- Large-scale renewable energy projects can require significant land and resources, which can lead to conflicts over land use and environmental concerns;
- There can be resistance from local communities regarding the installation of renewable energy projects due to aesthetic concerns, noise, and potential impacts on local wildlife.

Integration of RES system: challenges and possibilities

- Flexibility Services
- Incentives and Support
- Energy Communities
- Hybrid Power Plants



Options if generator faces lack of capacity

- Grid reconstruction
- Connection conditions with generation restrictions:

  Restriction of congestion on lines in transit and/or at a network node (step of 5 %);

  Restriction of system balance (step of 10 %);

  Real-time restrictions (step of 5 %).
- Hybrid solution with energy storage elements.

Sources :

- The National Energy Independence Strategy

https://enmin.lrv.lt/en/news/national-energy-independence-strategy-an-energy-independent-country-that-produces-energy-for-its-own-needs-and-exports-it/;

- Statistic of Prosumers

Reports and Document | ESO

THANK YOU FOR YOUR ATTENTION!

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