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Shallow Geothermal Energy Application: a Case Study in Lithuania

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Legal regulation of geothermal energy in Lithuania

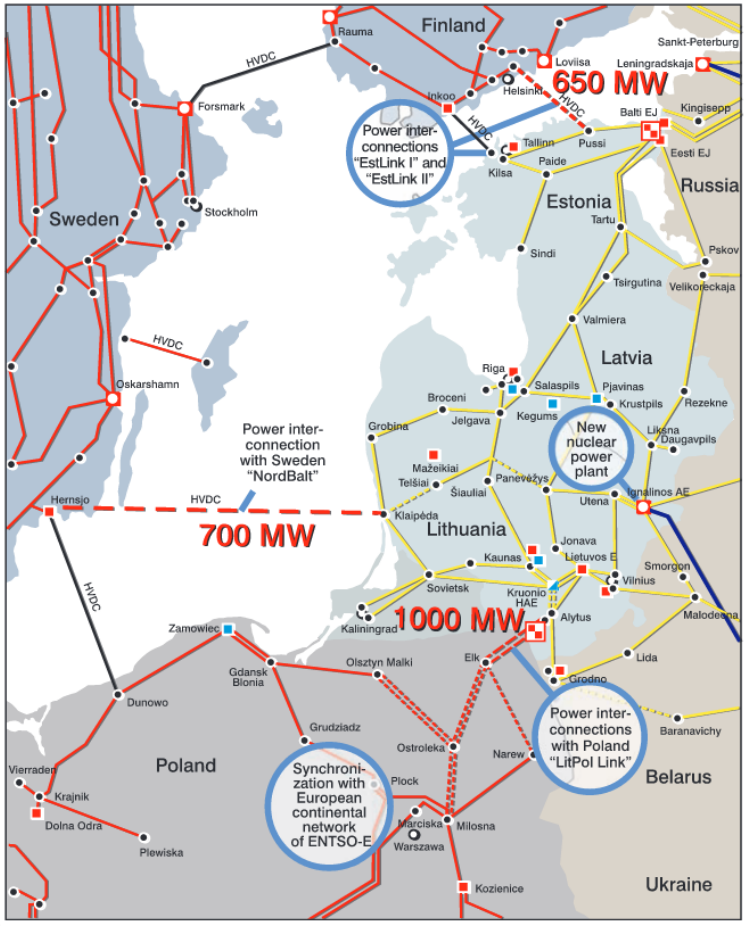
- Law on Energy from Renewable Sources (2011)
  - the support for investments in renewable energy technologies
  - National Control Commission for Prices and Energy is responsible for preferential rates of electricity used for the operation of heat pumps
  - support schemes to individual installations of heat pumps

Strategic projects of the electricity sector in Lithuania

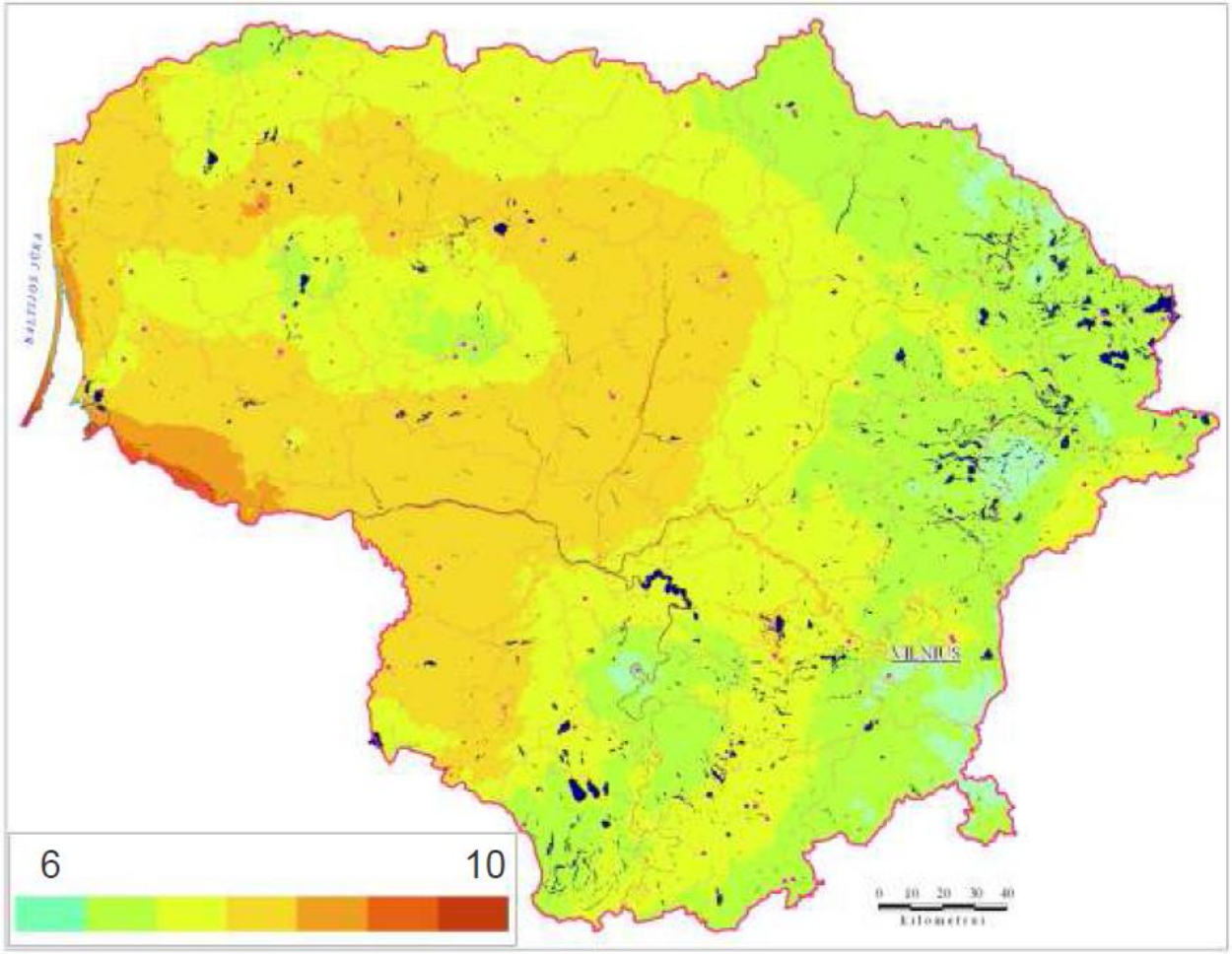
- National Energy Independence Strategy (2012)
  - integration into European Energy System
  - electricity interconnections:

    Sweden-Lithuania 700 MW "NordBalt" in 2015;

    Poland-Lithuania 500 MW "LitPol Link" in 2015.

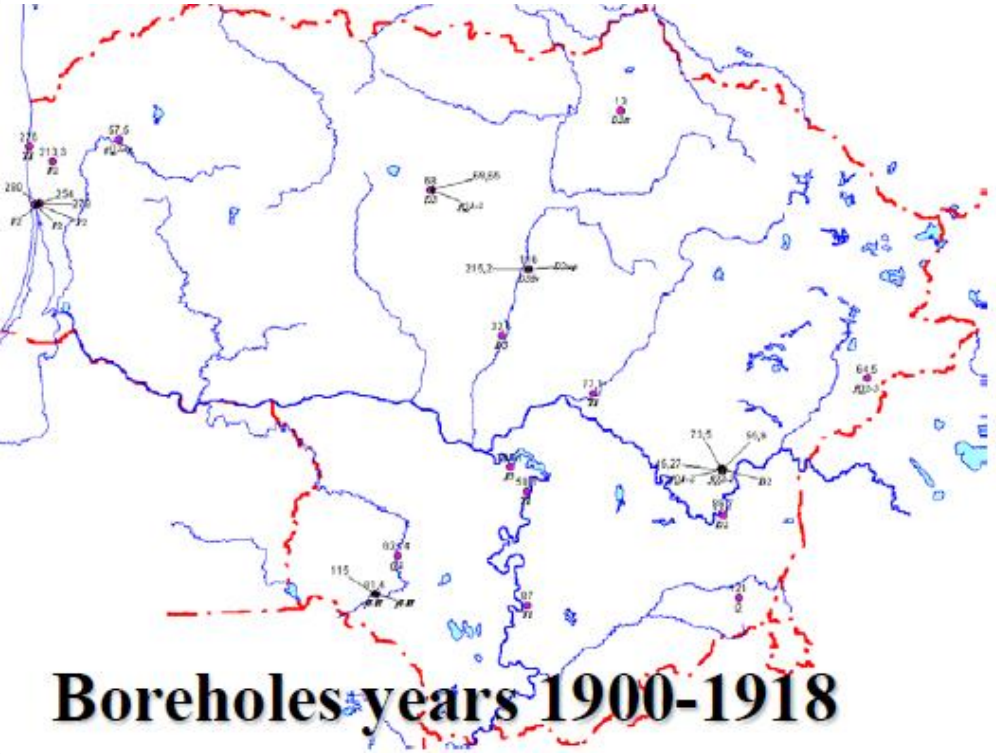


Temperature of shallow groundwater in Lithuania

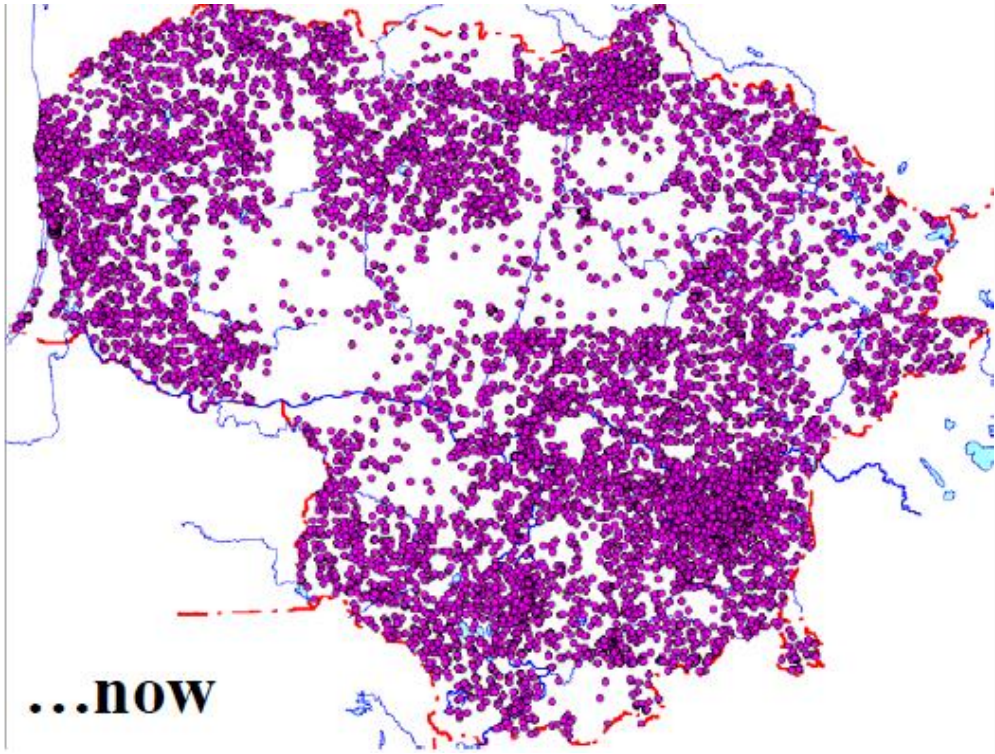


Lithuanian Geological Survey, Temperature of shallow groundwater in Lithuania (^{0}C), 2005-2010

Research of geothermal energy in Lithuania



Boreholes years 1900-1918



…now

Varena multi-family building

- 5 floor building
- 40 individual flats
- 2700 m^2 total area
- 500 m^2 roof area

Renovation of Varena multi-family building

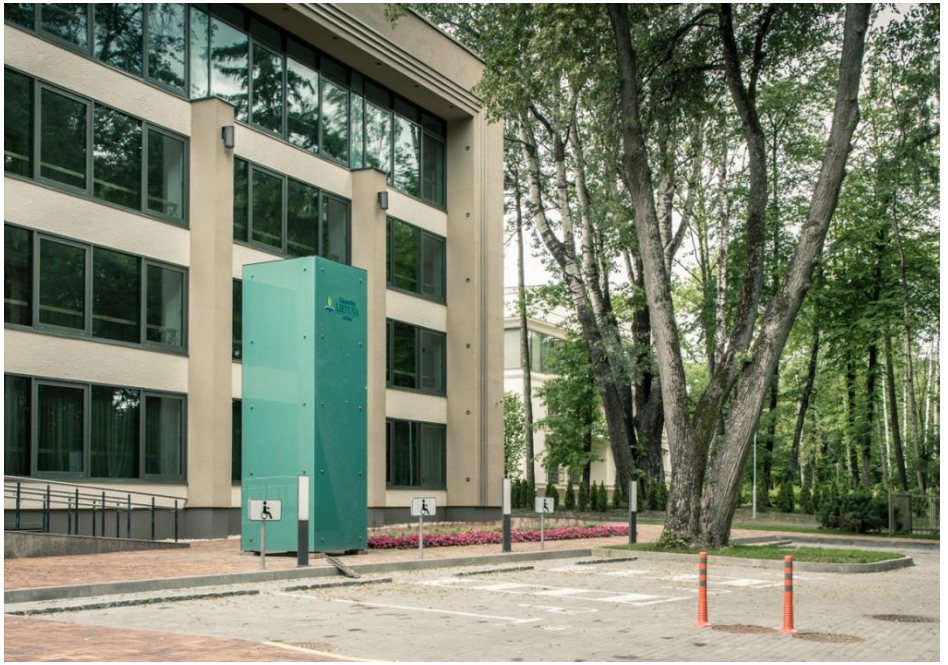
- Structure of renovation costs:
  - 30 percent from the JESSICA fund
  - 30 percent from the local municipality
  - 40 percent from the owners
- Total: 350 thous. Euro
- Costs of solar collectors and ground source heat pump are 15 percent from total costs.

Druskininkai Grand SPA Lietuva treatment centre

- One of the largest and most modern in the Baltic countries.
- Luxurious apartments with geothermal heating.

Druskininkai Grand SPA Lietuva treatment centre

- The complex has implemented the largest in the Baltics geothermal heating project valued at 2 million Euro.
- The issue of the huge demand for heat is resolved, preserving the pure air of the resort.
- Geothermal heating costs for the complex more than twice cheaper than central heating.



Project details

- Project is implemented for a “Grand SPA Lietuva ” 20 000 m^2 wellness complex (Wellness center, Aqua park, 3 Hotels, Apartments buildings and Conference center).
- Heating (1800 kW) and cooling (500 kW) demand is covered by the combination of air/water and brine/water heat pumps which efficiently recovers energy of complex waste waters, exhaust air and geothermal energy (140 boreholes, 100 m).
- Heat pumps are covering more than 80% of heating demand (heating, domestic hot water, preparation of hot mineral water, swimming pool water heating) and 100% of cooling demand.
- Additional heat generator: heating from a district heating network.

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Thank you for the attention

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