NVE

Regional cooperation program - Polish Academy of Science and NORCE (Poland, Norway, Iceland, Hungary, Slovakia)

Presentation May 25, 2022

About NVE – Comparison of power systems – EEA programs

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Norwegian Water resources and Energy Directorate – Areas of responsibility

Directorate/Agency subordinated the Ministry of Petroleum and Energy

Licenses related to energy and water resources

Floods and landslides - preventing damages

NVE: Main Office in Oslo and 5 regional Offices – about 600 employees

Energy system – energy analyses – security of supply - energy regulation

Hydrology – analysis, data and information.

Who are we?

- 600 employees
- 45% female and 55% male
- 20 nationalities
- Nature scientists, engineers, social economics, lawyers etc.

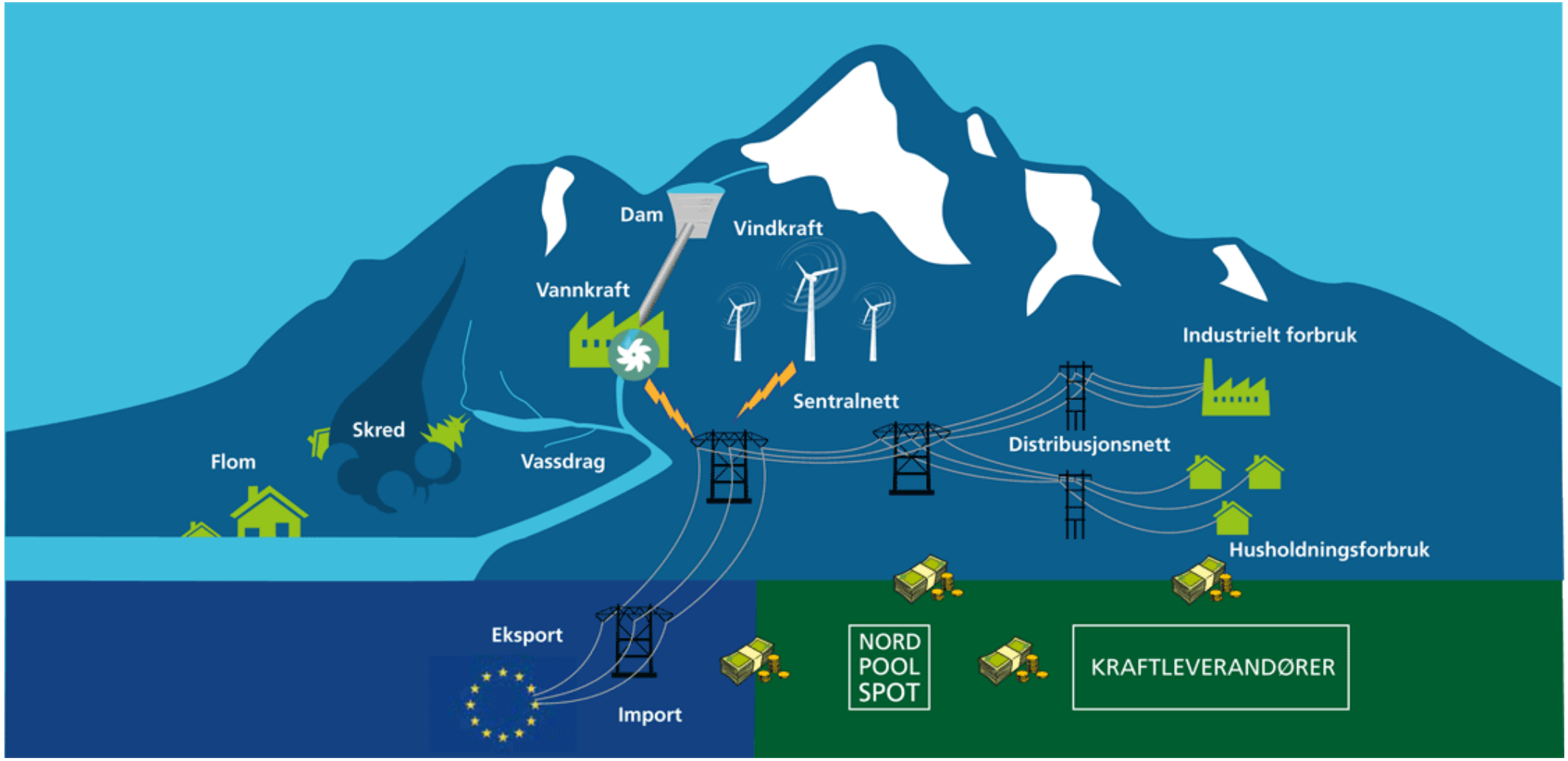
Expected changes in the climate

- Temperatures will increase, especially in the winter and Northern Norway, and average annual precipitation will generally increase throughout the country.
- It is expected that episodes of heavy precipitation significantly increases both in intensity and frequency – more storm water runoff and river floods
- The sea level will rise along the entire coast – higher storm surges

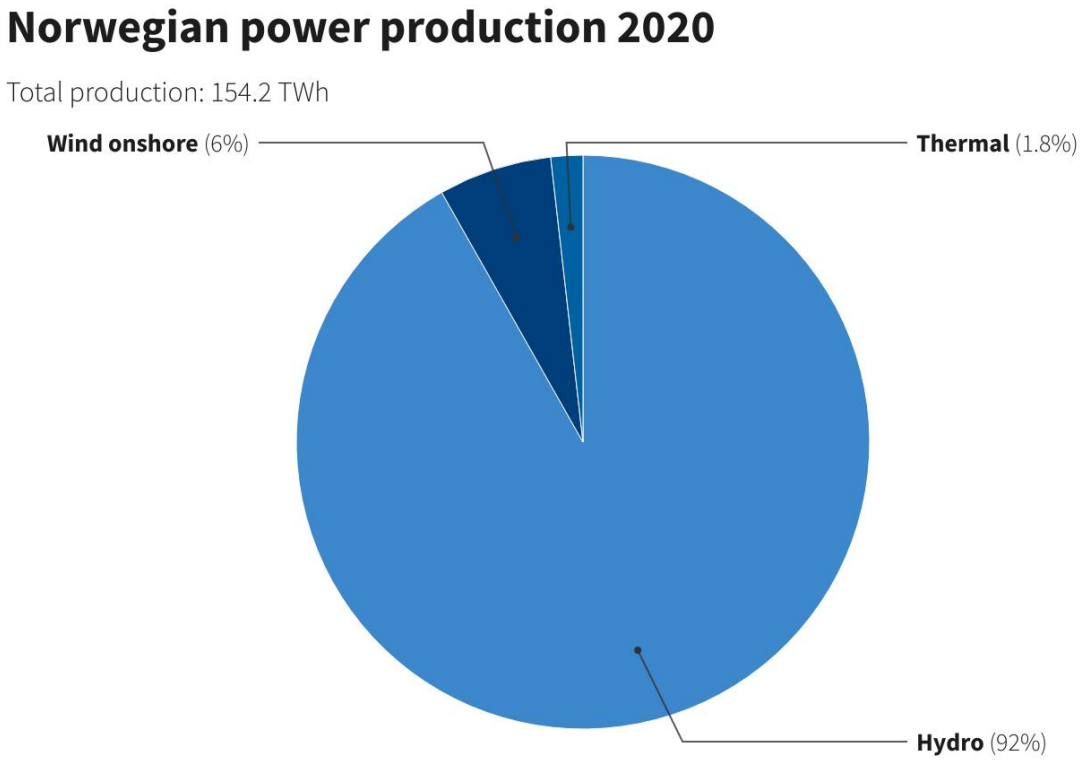
Climate change adaptation

Adaptation to climate change - NVE responsibilities to prevent damages from floods (rivers and urban flooding), landslides and avalanches.

The Norwegian powersystem



Comparison of the power systems in **Norway**, Iceland, Poland, Hungary and Slovakia.



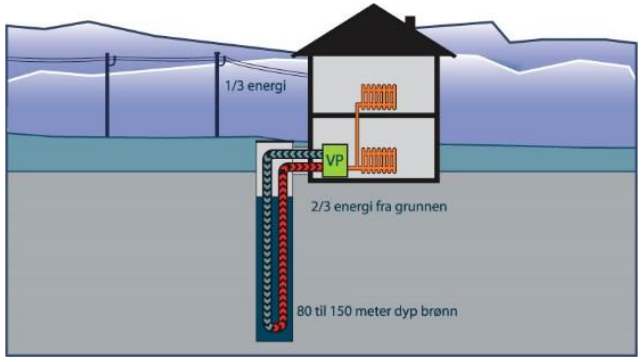
Note: Electricity production share by generation source
Source: Norwegian Water Resources and Energy Directorate (NVE)

Comparison of the power systems in **Norway**, Iceland, Poland, Hungary and Slovakia.

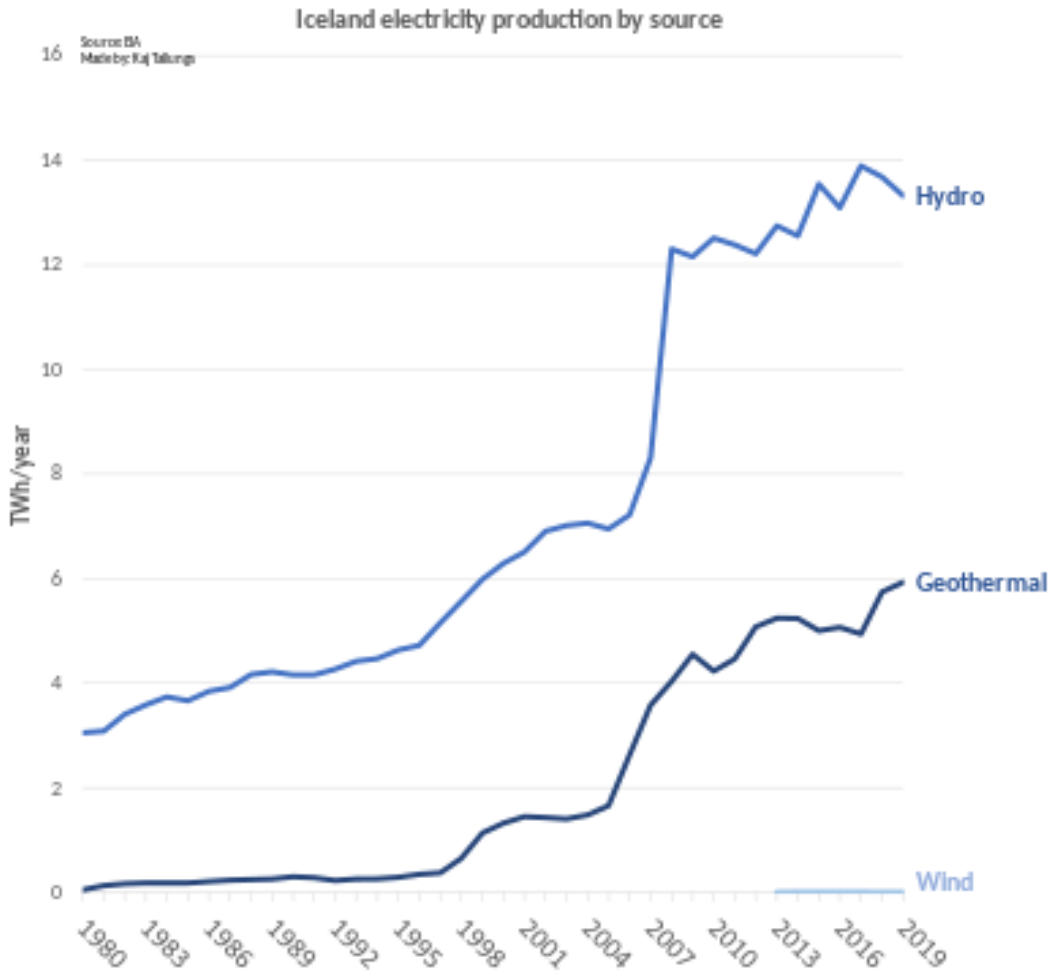
- 0,14 TWh Solar energy in Norway 2020 (not much, but rapidly increasing)
- Norway's first solar power license in May 2022 – ground based
  - Installed capacity of up to 7 MWp. It can provide around 6.4 GWh of renewable energy per. year, The ground-based facility covers around 175 acres.

Status of geothermal plants in **Norway** (ref. NORCE, February 2020)

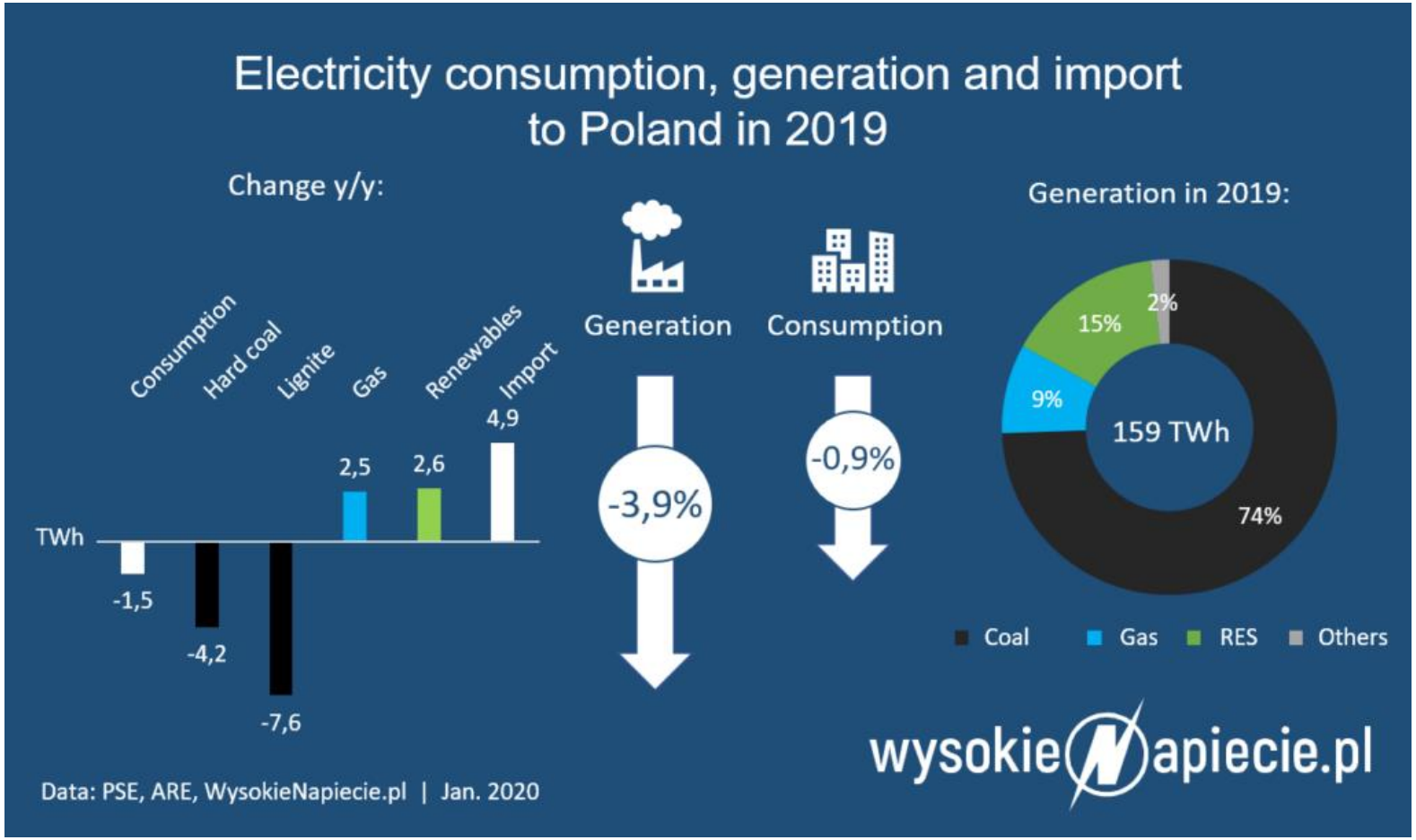
- About 60,000 geothermal plants
- 1520 larger facilities registered
- Installed power approx. 1200 MW
- 3.5 - 4.0 TWh per year



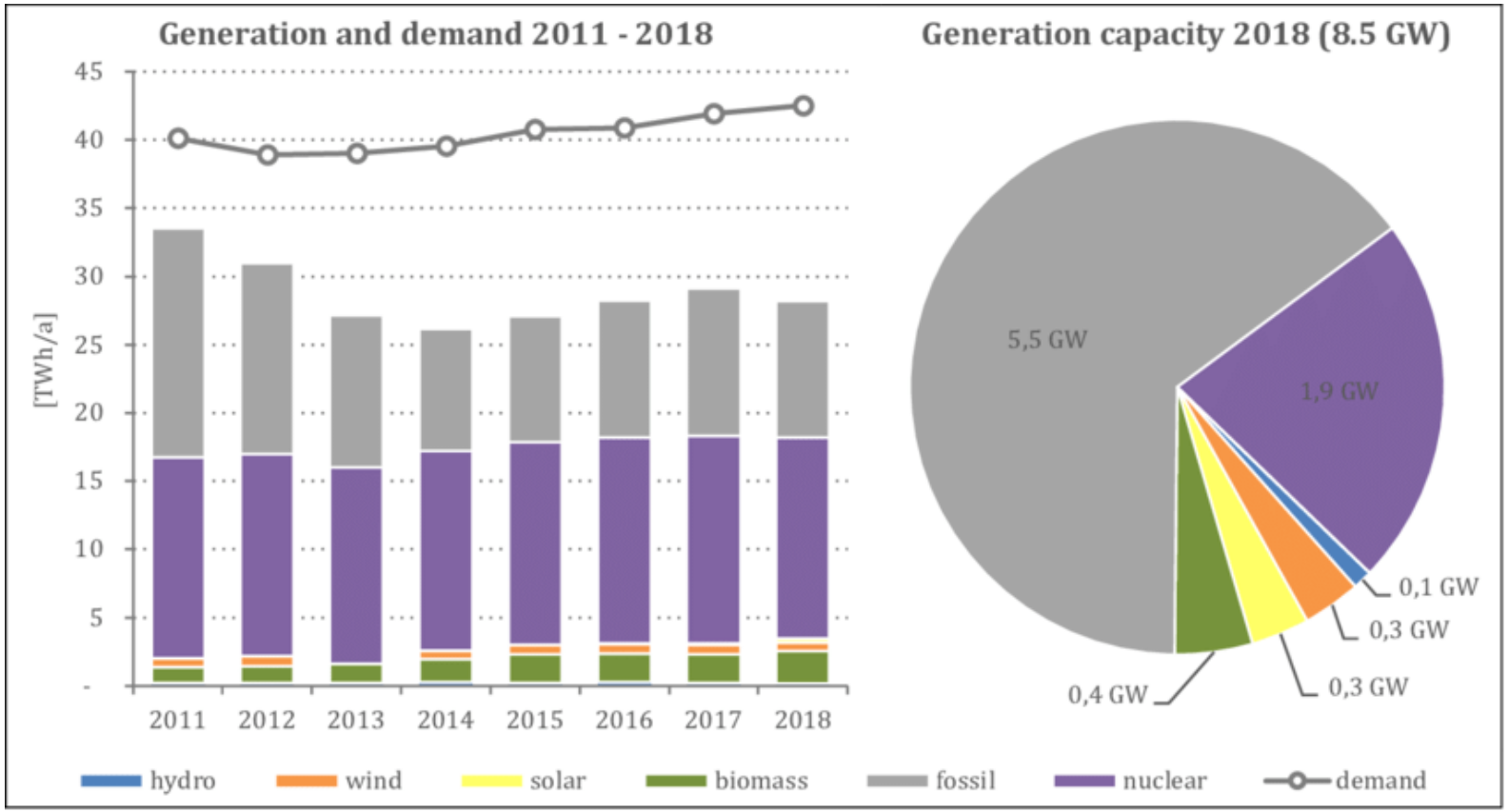
Comparison of the power systems in Norway, **Iceland,** Poland, Hungary and Slovakia.



Comparison of the power systems in Norway, Iceland, **Poland,** Hungary and Slovakia.

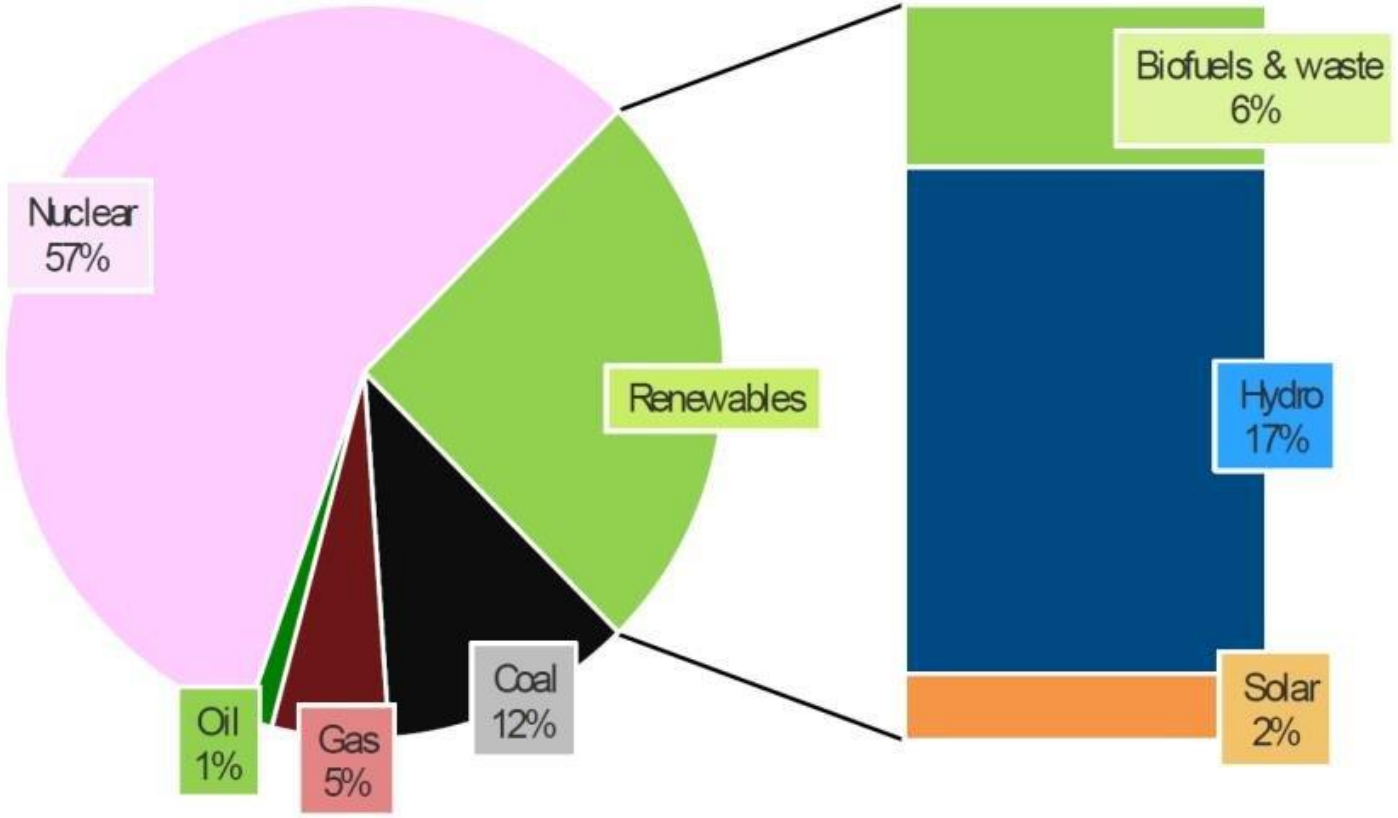


Comparison of the power systems in Norway, Iceland, Poland, **Hungary** and Slovakia.



Source: ENTSO-E [39]

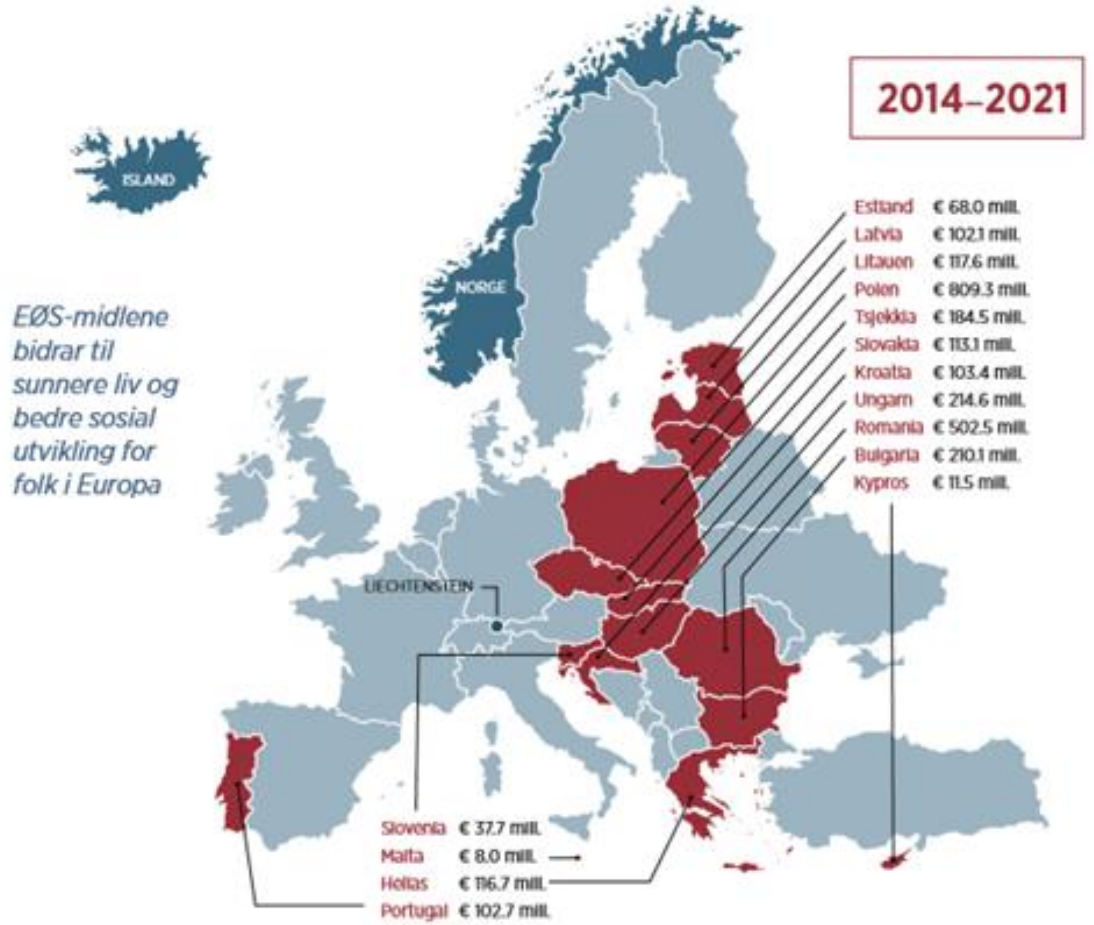
Comparison of the power systems in Norway, Iceland, Poland, Hungary and **Slovakia**.



Comparison of the power systems in **Norway**, Iceland, Poland, Hungary and Slovakia.

- Norway, Hydro power (some from wind).
- Iceland, Hydro plus power from geothermal.
- Poland, basically power from coal (some renewables).
- Hungary, fossils plus nuclear.
- Slovakia, nuclear plus renewables.

EEA and Norway Grants



Overall goals for all programs

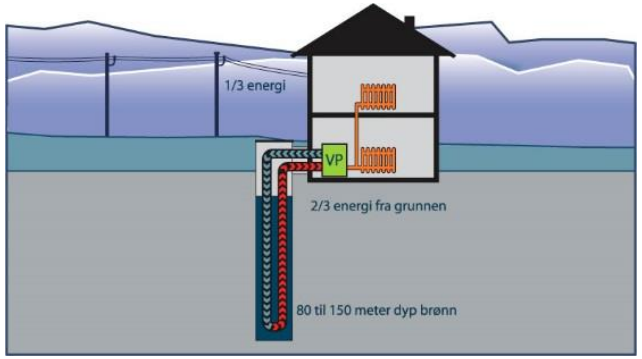
- "The objective of the Grants is to reduce social and economic disparities and **strengthen bilateral relations**. This strengthens the internal market, leading to a more prosperous Europe."

NVE is Donor Program Partner in 5 climate-, energy- and environment programs in 5 countries under the EEA- and Norway grants arrangement.

Budget 300 mill. euro (total EEA 2,2 bill. euro over 7 years)

Main goal for the EEA funded climate and energy programs - less carbon intensive energy (energy transition), more efficient use of energy and adaptation to climate change

New energy plants based on renewable energy – hydro, geothermal, wind, solar… other renewables.



NVE

Saving energy with more efficient energy solutions in industry and buildings – almost always means reduced CO2 emissions

Projects on geothermal energy in EEA programs where NVE is program partner (15 projects, 17,1 mill. euro out of 300 mill. euro)

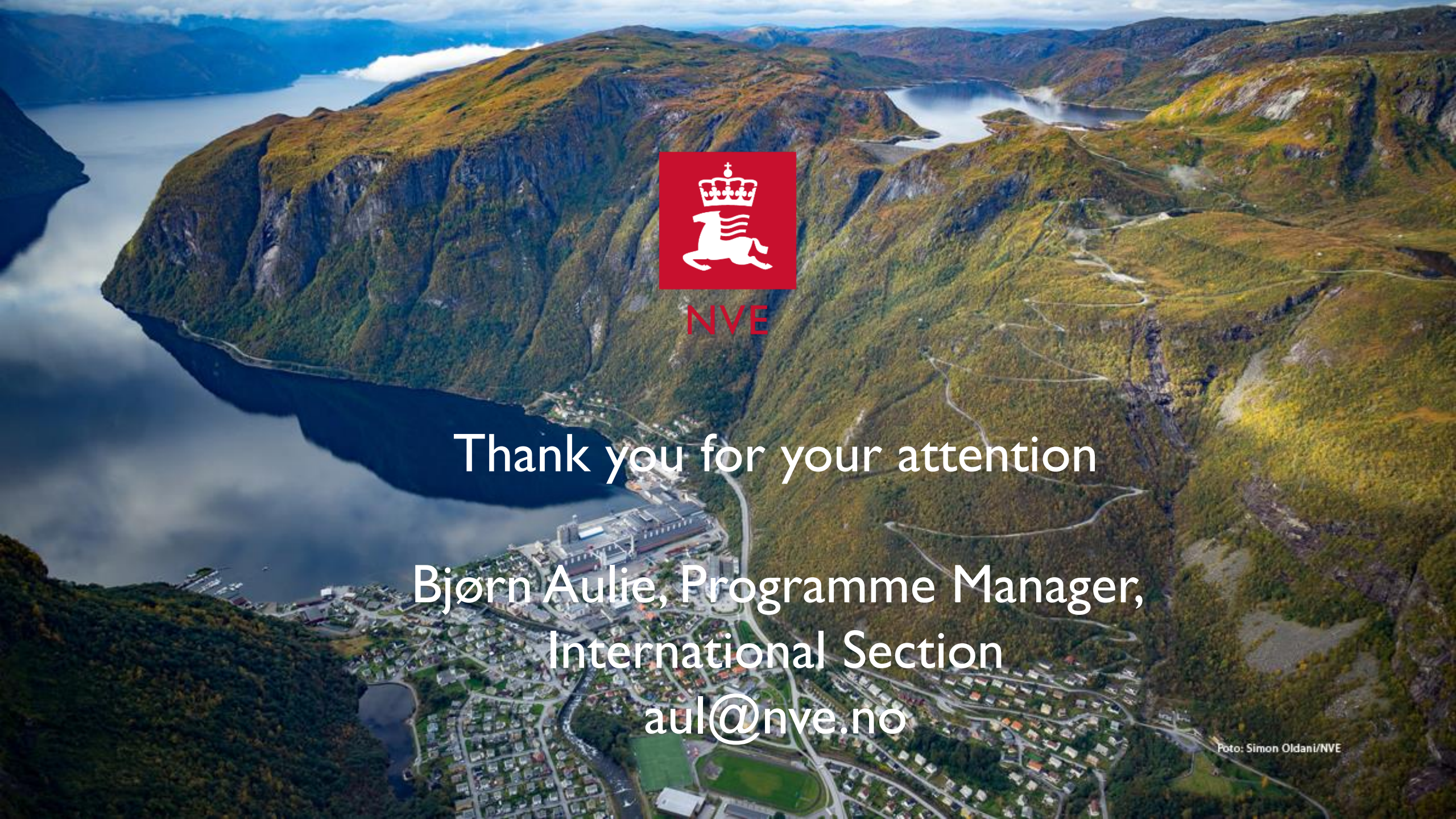
- **Poland program, 2 projects, 7,3 mill. euro.** (1. Drilling of the Turek GT-2, construction of a geothermal heating plant and a pipeline between the Turek GT-1 well and the Turek GT-2 well. II. Construction of a geothermal cogeneration installation to produce heat, electricity and cold at Chochołowskie Thermal Baths (HYDRO-GEO)

- **Romania program, 4 projects, 3,2 mill. euro**. (**I.** To increase the energy security supply of energy for the home of elderly in Alba Iulia Municipality three ground-water geothermal pumps of 130 kW thermal power each with reversible cycle. **II.** To create a geothermal station (by increasing the flow of geothermal water extracted from two currently unused wells) for the purposes of offering a surplus of geothermal water for use in the Iosia-South area district heating systems in Oradea. **III.** Breaza Municipality. The technical solution is based on closed circuit heat pumps and efficiency in energy. The heat pumps extract their main energy from the ground. **IV.** SC TRANSGEX SA. Execution of a geothermal well in length of 1.500 m. Geothermal investment project to ensure increased thermal comfort (heating and hot water) to 30 private buildings, Swimming Pool and future Sports Center.)

- **Bulgaria program, 6 projects, 1,7 mill. euro**. All projects with heat pump solutions.

- **Croatia program, 3 projects, 4,9 mill. euro**. (District heating). Also calls regarding technical documentation for geothermal energy.

All calls are announced, and funds are distributed. May be challenges regarding too short implementation period and large price increases.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Thank you for your attention
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Foto: Simon Oldani/NVE