



# Poprawa efektywności wykorzystania energii geotermalnej przez dopasowanie charakterystyki odbiorcy

User4GeoEnergy

# Działania promocyjne, budowanie potencjału dla współpracy



# WP 3 Capacity building

Kirsti Midttømme, NORCE

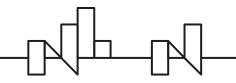
## WP3 Outcome, Outputs and Activities

#### 1. Outcome

Enhanced cooperation and improved mutual knowledge and understanding between the donor and beneficiary states.



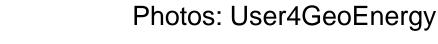
Outputs	Activities	Forecasted start date	Forecasted end date	Name of responsible partner
2 Capacity building events organised	Development of learning materials and capacity building in Reykjavik	01/09/2020 Capacity building events 26-28/4/202	<del>31/12/2020</del> 2	National Energy Authority
	Development of learning materials and capacity building in Bergen	01/03/2021 Capacity building events 23-25/5/202	<del>30/06/2021</del> 2	NORCE Norwegian Research Centre AS
3 Joint stakeholder consultation events oganised	materials and stakeholder	01/09/2021 Site visit & stakeholder seminar 6-8/12/2022		Mineral and Energy Economy Research Institute, Polish Academy of Sciences
	materials and stakeholder	01/03/2022 Site visit & stakeholder seminar 10-12/5/2023	30/06/2022	SLOVGEOTERM a.s.
	materials and stakeholder	01/09/2022 Site visit & stakeholder seminar 8-10/5/2023	31/12/2022	InnoGeo Research and Service Nonprofit Public-benefit Ltd



## Site visit Reykjavik, Iceland 26-28 April 2022

- How Iceland has utilized its geothermal resources.
- Spin off markets and industries based on cheap geothermal heat and electricity
- Developing of more energy energy-efficient high temperature geothermal energy technologies.



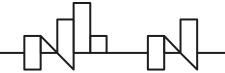


Site visit Norway 23-25 May 2022

- How Norway has utilized its low-temperature geothermal resources.
- Underground Thermal Energy Storage (UTES) and Ground Source Heat Pump Applications
- Utilization of lowtemperature 6-8°C groundwater for heating and cooling



Photos: User4GeoEnergy



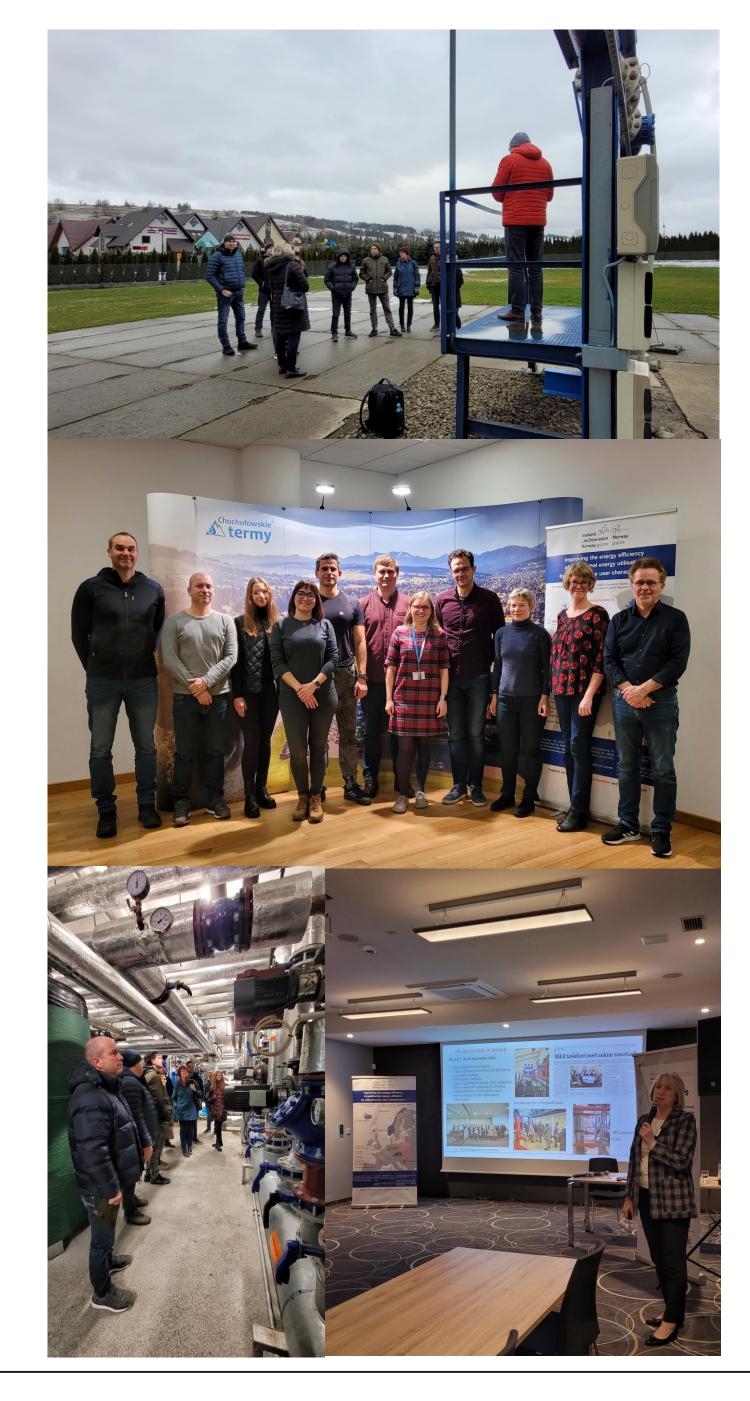
#### Site visit & stakeholder events Krakow 6-8 December 2022

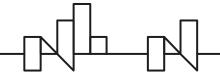
#### Day 1 Technical tour, Podhale

- Visit at geothermal facility of MEERI PAS in Bańska Niżna
- Visit at geothermal installations in PEC Geotermia Podhalańska
- > Technical visit Chochołowskie Termy

#### Day 2 Geothermal workshop, Krakow

- Presentation of USer4GeoEnergy results
- Presentations of ongoing geothermal activities in Poland





# Site visit & stakeholder events Budapest and Szeged, Hungary 8-10 May 2023

#### Site visit Szeged

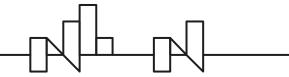
- Drilling site
- Heating plant

#### **Geothermal workshop**

Participants from DH companies, researchers from universities and personnel from enterprises

#### Site visit thermal spas in Budapest





#### Site visit & stakeholder events Bratislava, Slovakia, 10-12 May 2023

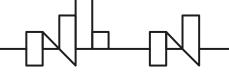
#### Day 1 Technical tour

- Galanta geothermal district heating system
- Velky Meder geothermal DHS

#### Day 2 Geothermal workshop

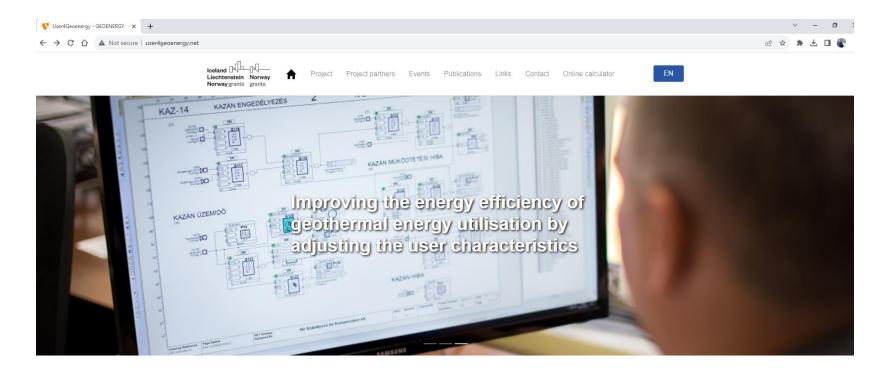
- > Geothermal projects in Slovakia
- Results from User4GeoEnergy





### WP3 Deliverables

- User4GeoEnergy web page, http://user4geoenergy.net/
  - Presentations from project workshops
  - Reports from project events.
  - Press release
  - Photos & videos
- Publication
  - Differences in Direct Geothermal Energy Utilization for Heating and Cooling in Central and Northern European Countries Nordgård-Hansen et al. 2023, Energies

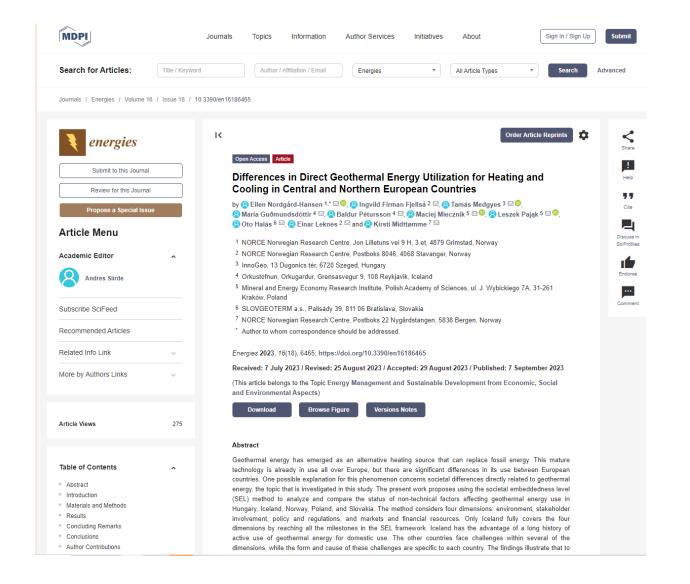


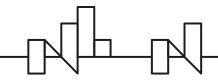
#### **User4GeoEnergy**

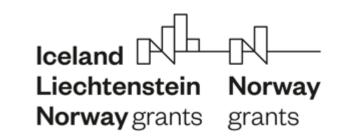
The use of geothermal energy for heating and its efficiency is becoming more and more important, in contrast to heating by fossil fuels. In the area covered by the project (Central Europe, Norway, Iceland), energy used in the residential sector for space and water heating accounts for more than 80% of the final energy consumption, being several times greater than the energy used for cooking, lighting and powering household equipment.

A heating system is characterised by certain technical requirements, e.g. supply temperature and required flow of water. Heat demand and the temperatur of the return water are mainly dictated by the efficiency of the heating systems and weather conditions, but also the characteristics of the user(s) and the technology used. The selection of appropriate parameters and management of the system is referred to as the control of power delivery. Suitable equipment and software control the work of an energy source.

The inability to reach the temperature required by the energy user (the installation that the user uses) results in the need to use additional supporting heat sources (peaking sources). The peaking sources generate additional investment outlays and their use occurs when the supply temperature isn't high







## Dziękuję za uwagę

Partnerzy:



Instytut Gospodarki Surowcami Mineralnymi i Energią Polskiej Akademii Nauk







