

# Geothermal Synergy Project Closing Conference

## Strategic cooperation in Geothermal Synergy: Closing conference and future framework

February 26, 2025; 12:00~14:30 online via ZOOM

Topic: **Geothermal Synergy Closing Conference**

Time: Feb 26, 2025 12:00 PM Warsaw (11:00 Reykjavik)

Join Zoom Meeting

<https://us06web.zoom.us/j/82323471150?pwd=qLFsT7Kvlg8EspZ4xMMZN5uHRrAgD5.1>

Meeting ID: 823 2347 1150

Passcode: 241120

Geothermal Synergy Closing Conference		
<b>Welcome, opening remarks /</b> Przywitanie, rozpoczęcie spotkania	<b>12:00</b>	<b>Krzysztof Galos</b> Chief State Geologist and Undersecretary of State (Ministry of Climate & Environment) <b>Gestur Petursson</b> CEO Umhverfis og Orkustofnun (UOS)
<b>GEOHERMICA initiative</b> Inicjatywa GEOHERMICA	<b>12:10</b>	<b>General Information – GEOHERMICA Initiative /</b> Informacje ogólne – Inicjatywa GEOHERMICA <b>Stephan Schreiber</b> (Geothermica Initiative Cabinet, co-chair)
		<b>Focus Areas &amp; Benefits for Poland /</b> Obszary tematyczne i korzyści dla Polski <b>Paul Ramsak</b> (Geothermica Initiative Cabinet, co-chair)
<b>Framework building: future of Poland-Iceland cooperation</b> Budowanie ram przyszłej współpracy polsko-islandzkiej	<b>12:40</b>	<b>Panel Discussion /</b> Dyskusja panelowa Chairman <b>Grzegorz Burek</b> (Globenergia) Panelist: <b>Magdalena Wdowin</b> (MEERI PAS, director) <b>Wojciech Łysik</b> (Ministry of Climate & Environment) <b>Baldur Petursson</b> (UOS) <b>Witold Nowak</b> (Association of Polish Cities) <b>Stephan Schreiber</b> (Geothermica Initiative Cabinet)
	<b>13:20</b>	<b>break /</b> przerwa
	<b>13:35</b>	<b>Poland's energy policies and strategies in the context of geothermal energy /</b> Polityki i strategie energetyczne Polski w kontekście energii geotermalnej <b>Grzegorz Burek</b> (Globenergia)
<b>GeoSynergy Project</b> Projekt Synergia Geotermalna	<b>14:00</b>	<b>Presentation on main activities and results of the Geothermal Synergy Project /</b> Prezentacja głównych działań i wyników projektu <b>Alicja Wiktoria-Stokłosa</b> (UOS), <b>Magdalena Tyszer</b> (MEERI PAS)
		<b>Feedback from Participants /</b> Opinie uczestników
<b>Closing /</b> Zakończenie spotkania	<b>14:30</b>	

\* Please note that this agenda is subject to change, and any updates will be communicated

\* Należy pamiętać, że plan spotkania może ulec zmianie, a wszelkie aktualizacje zostaną przekazane

# GEOHERMICA INITIATIVE



**Paul Ramsak, Co-Chair GEOHERMICA Initiative**

Netherlands Enterprise Agency/RVO, Ministry of Climate Policy & Green Growth

**Stephan Schreiber, Co-Chair GEOHERMICA Initiative**

Project Management Juelich/PtJ, Germany

**26 February 2025**

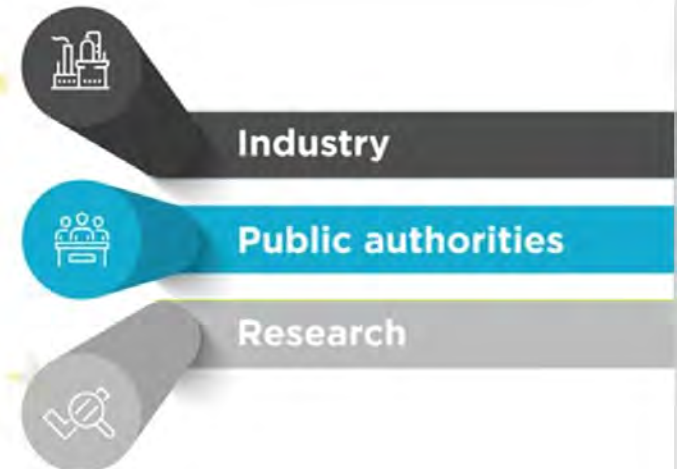
Online, Final Meeting Geothermal Synergy

# About Us

- **Unique collaboration** of member states **Public** authorities
- Focused on **Geothermal**
- Over **ten years** of solid partnership
- **Thirty** granted Innovation projects involving **sixteen** countries
- Multiple **strategic joint activities** to foster knowledge transfer & accelerate geothermal deployment on national & transnational level.

## Cooperation of public authorities

Towards  
a stronger  
European  
geothermal  
sector



# Our Role

**Mission:** Uniting efforts towards a sustainable world with geothermal energy

**Vision:** Public collaboration for stronger geothermal energy progress in a net-zero world

**...Accelerating Geothermal  
& Geothermal Storage**

# History



GEO THERMICA  
INITIATIVE



2012

2017

2023

*Foundation*

*Co-funding  
Knowledge, Strategy & Support*

*Co-funding  
**Knowledge, Strategy & Support***

# GEOHERMICA Calls

30 projects funded in total

Total project cost: 121M€

Total funding: 75M€

3 Rounds of funding

- 1<sup>st</sup>: 11 countries
- 2<sup>nd</sup>: 7 countries
- 3<sup>rd</sup>: 12 countries (w. JPP Smart Energy Systems)



# GEOTHERMICA Joint Activities

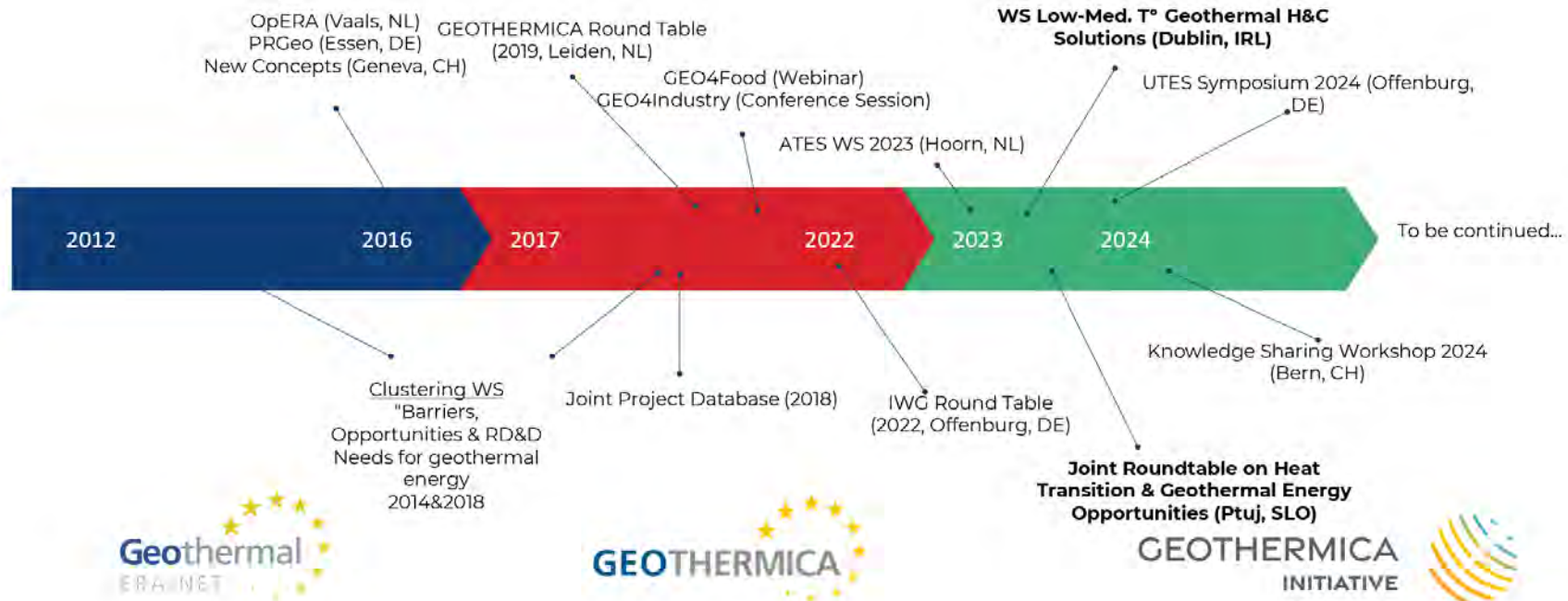
## 1. **Activities focused on GEOTHERMICA member states**

- Exchange on policy instruments and best practices
- Open exchange between peers – Build Trust !
- Joint strategy/vision

## 2. **Activities for the community**

- Knowledge Exchange & Strategic Agenda Setting Events to advance Geothermal Innovation & Deployment

# GEOHERMICA Joint Activities





# Focus Areas

- Risk Mitigation & Policy Instruments
- Cities & Regions - district heating
- Storage
- Superhot & EGS

**Based on members' wishes and needs!**



# Heating & Cooling

- **Vision for 2050: Geothermal heat supplies more than:**
  - 25% of Europe's demand for space heating & cooling;
  - 25% in the agricultural sector (greenhouses);
  - 5% in industrial sectors
- **Local dispatchable source,** main use of geothermal in West & Central Europe
- **25% of European cities** are located in regions suitable for direct use



GEO THERMAL IWG

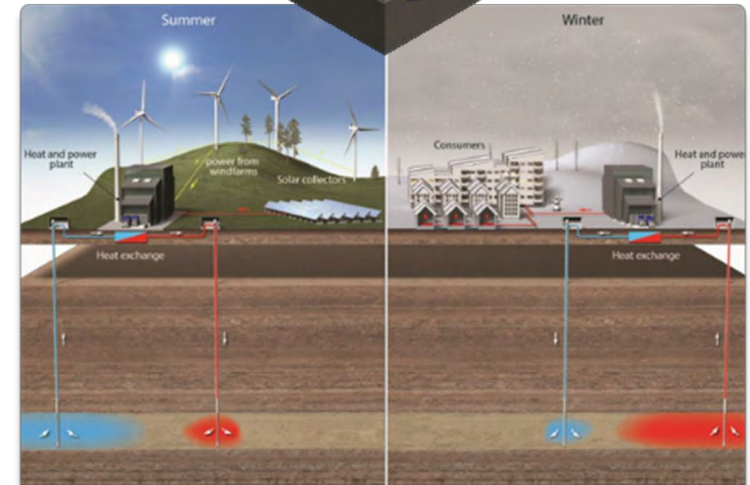


# UTES

## Underground Thermal Energy Storage

Vision 2050

- **Vision for 2050:** UTES supplies more than 10% of Europe's demand for space heating , mainly for district heating
- **50% of the European energy demand** is for heating
- **Bridging the winter peak** is essential
- **Scale of subsurface** needed



GEOHERMAL IWG

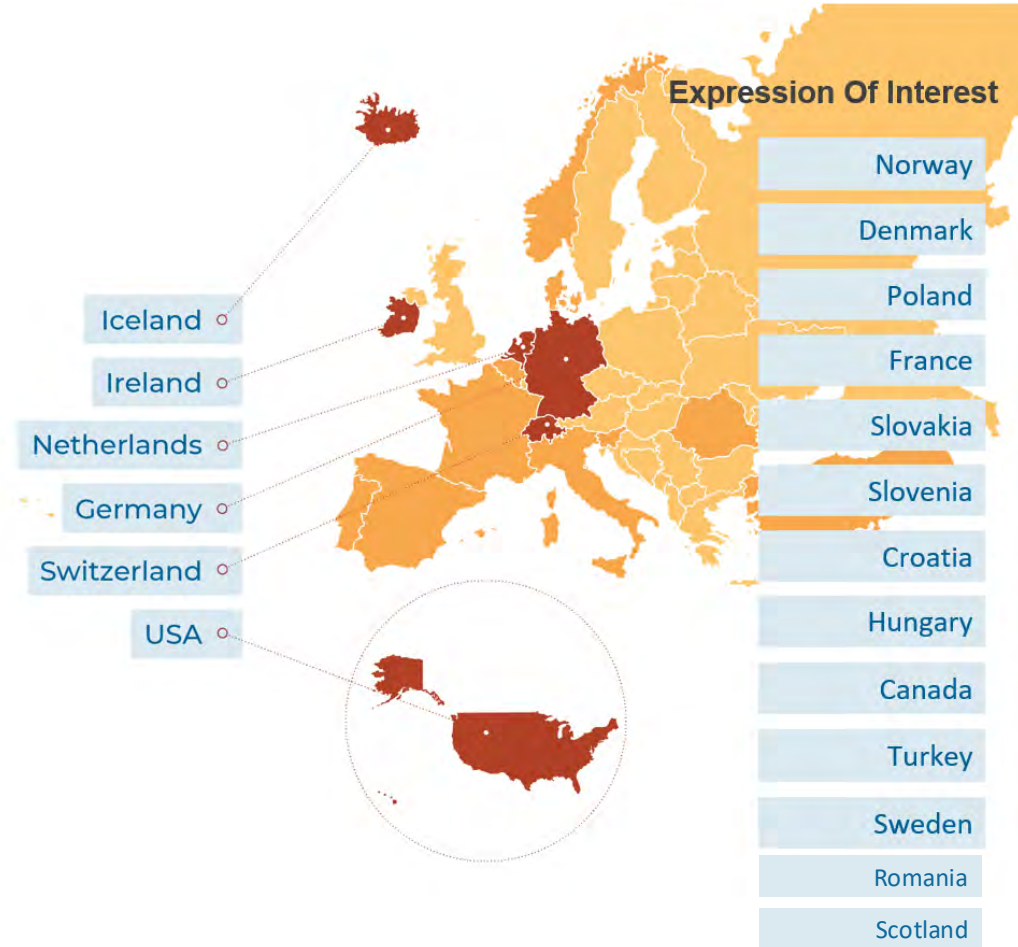
# Why Join?

- **Untapped potential for geothermal** in many countries
- Need for **national deployment** and to modernise existing heating systems
- Call for increased **collaboration & knowledge exchange** among member states
- Importance of collaborative efforts to **unlock the full potential** of geothermal resources
- **Learn from peers** & share experiences
- **Jointly build & Influence policies**

**Together we're smarter...**

# Members

- **Six** countries are active members
- **Thirteen** countries have expressed interest in joining
- **Iceland** - Orkustofnun leads the Initiative with the assistance of three co-chairs:
  - **Germany**-PtJ
  - **Netherlands**-RVO
  - **United States**-DoE



# Benefits for Poland as a Member

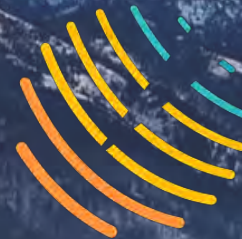


- **Exchange on policy instruments & developments:**
  - Build a common understanding and provide support for the creation of effective policy frameworks.
- **Sharing national risk mitigation strategies:**
  - exchange of best practices and approaches to risk mitigation among public authorities.
- **Raise the visibility** of national needs & barriers
- **Peer-to-peer knowledge exchange** between public authorities
- **Focus Areas – e.g. cities and regions** – geothermal cooperation for municipalities
- **Joint innovation calls:**
  - Influencing joint calls with national and regional needs
  - Accelerate innovation

Be part of the Team – together we're stronger !



# GEOTHERMICA INITIATIVE



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# Geothermal Synergy: Iceland – Poland Knowledge Exchange



Geothermal  
Synergy

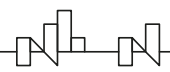
## PROJECT CLOSING CONFERENCE

*Panel Discussions*  
*Lessons from the past – for the future*



Orkustofnun is a Donor Program Partner (DPP) for Renewable energy in several countries

Successful and ongoing geothermal projects under the EEA grants 2014 - 2021

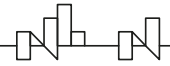


# Presidents and ministers participated in the presentation of a new EEA Grants programme on Climate, Environment and Energy 2014-2021 in Poland in March 2020



# Constructive cooperation in 2009-2014, on projects and several meetings in Poland and Iceland – was a base for the program 2014-2021

Successful outcome



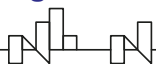
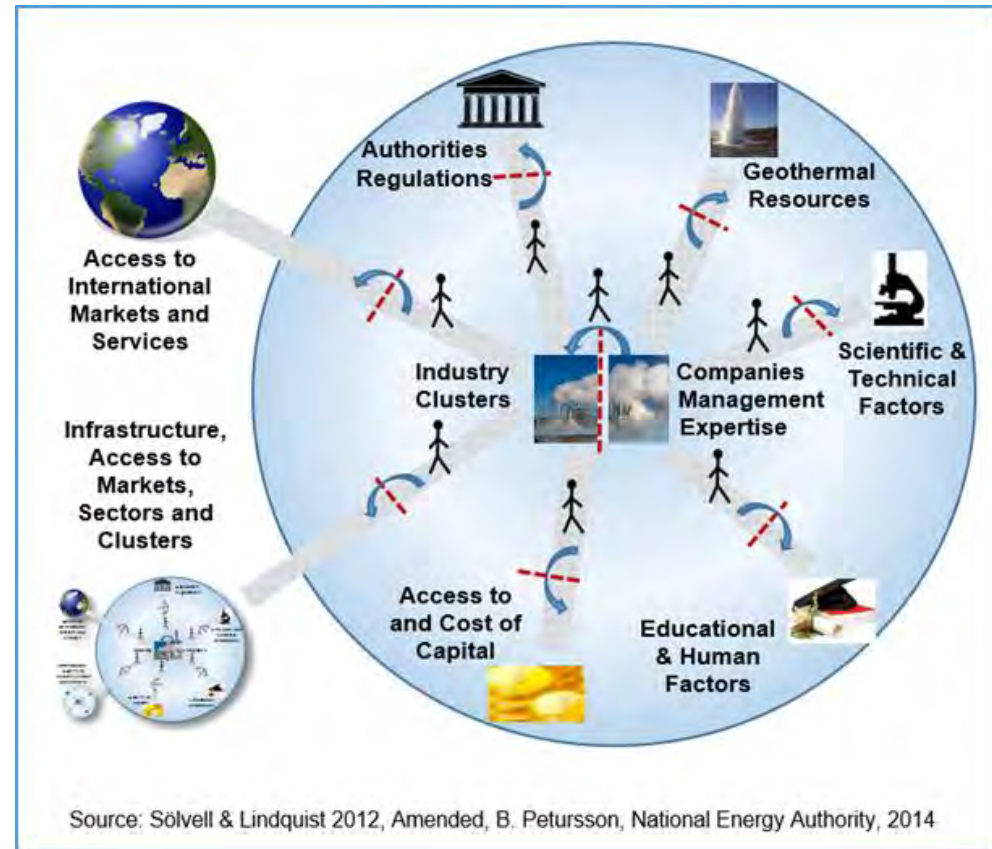
# Competitiveness of the Geothermal Sector

## Success of Geothermal District Heating is based on 8 Key Factors

### 8 Key Elements of Success in the Geothermal Sector and District Heating

1. Authorities and regulation,
2. Geothermal resources,
3. Scientific & technical factors,
4. Education & human factors,
5. Access to capital,
6. Infrastructure and access to markets, sectors and other clusters,
7. Access to international markets and services,
8. The company, management, expertise & industry, clusters assessment

In cooperation with international and domestic experts, on geothermal resources, finance, legal, management and other expertise.



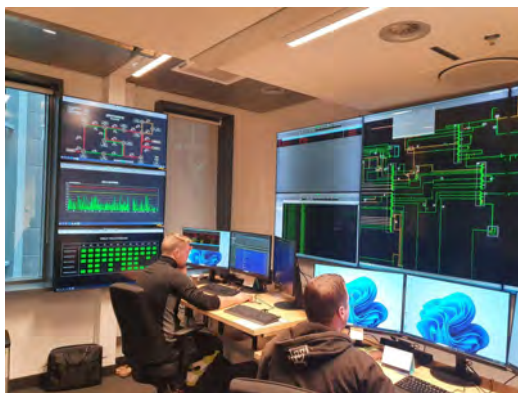
## Training activities in Poland, 2022 & 2023

- 127 regular participants
- 2 workshop days in each round
- 1 day technical study visit in each round
- 20 lecturers, 5 guest presentations
- 6 geothermal facilities visited
- 14 specialists, representatives of local governments involved in technical visits in 2022 and 2023
- Manual, Information materials



## Study visits in Iceland, 2022 & 2023

- 51 participants from Poland
- 1 day of seminars, workshops and match-making
- 2 days of site visits to geothermal facilities
- over 120 participants in workshops and match-making
- 6 presentations by the representatives of Icelandic ministries and the Embassy of Poland to Iceland
- 15 geothermal installations and facilities visited



Chochołów, 2022



## Expert study visits in selected localities prospective for geothermal development in Poland 2022

### Konin, Chochołów

- 4 towns
- 20 days of visits
- 30 participants from different localities
- 10 geothermal systems and facilities visited
- 8 other municipal systems and facilities visited

Konin,  
2022



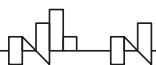
Koluszki,  
2023



## Expert study visits in selected localities prospective for geothermal development in Poland 2023, Koluszki, Koło

- **4 towns**
- 20 days of visits
- 30 participants from different localities
- 10 geothermal systems and facilities visited
- 8 other municipal systems and facilities visited

Koło, 2023



# Some Geothermal Priorities and lessons learned

Poland and Iceland have been actively collaborating to harness geothermal energy, leveraging Iceland's extensive experience to develop Poland's geothermal potential. To further enhance this partnership, the following priorities are recommended:

- 1. Knowledge Transfer and Capacity Building:** Continue and expand initiatives like the Key Geothermal Project, which focus on training Polish stakeholders through workshops, study visits, and expert consultations. This approach equips Polish professionals with the necessary skills to implement geothermal technologies effectively.
- 2. Policy and Regulatory Framework Development:** Utilize Iceland's insights to assist Poland in creating supportive policies and regulations that facilitate geothermal project development. This includes streamlining permitting processes, offering incentives, and engaging the public to foster a conducive environment for geothermal energy. Also cutting down bureaucracy and paperwork including in accounting in domestic and international funds.
- 3. Joint Research and Innovation Projects:** Encourage collaborative research to address technical challenges and innovate in geothermal energy utilization. Participation in international initiatives like the GEOTHERMICA Initiative can provide a platform for such cooperation.
- 4. Development of Geothermal District Heating Systems:** Focus on designing and implementing more geothermal district heating projects in Poland, drawing from Iceland's successful models. This can significantly reduce Poland's reliance on coal for heating, thereby improving, energy security, air quality and reducing carbon emissions.

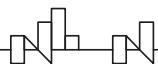


# Some Geothermal Priorities and lessons learned

Poland and Iceland have been actively collaborating to harness geothermal energy, leveraging Iceland's extensive experience to develop Poland's geothermal potential. To further enhance this partnership, the following priorities are recommended:

- 5. Public Awareness and Community Engagement:** Implement educational campaigns to inform the Polish public about the benefits of geothermal energy. Engaging communities can build support for geothermal projects and encourage local participation.
- 6. Financial Mechanisms and Investment Facilitation:** Develop funding programs and attract investments to support geothermal projects. This includes utilizing mechanisms like the EEA Grants and exploring public-private partnerships to finance geothermal initiatives.
- 7. Support Geothermal Clusters and Resources Parks** that foster innovation and job creation
- 8. Financial Support**
  - Provide risk loans - for exploration drilling to lower the risk barriers for GeoDH operation
  - Assist homeowners in transitioning to geothermal heating systems.
  - Offer funding for the development of geothermal heating infrastructure.

**By concentrating on these priorities,** Poland and Iceland can strengthen their geothermal cooperation, promoting sustainable energy development and contributing to climate change mitigation.

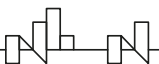




**Thank you for your attention!**

Baldur Petursson  
Environment and Energy Agency, Iceland  
[Baldur.Petursson@uos.is](mailto:Baldur.Petursson@uos.is)

Together we work for **green**, **competitive** and **inclusive** Europe



# Geothermal Synergy: Iceland – Poland Knowledge Exchange



Geothermal  
Synergy

## Closing Conference

*Poland's energy policies and strategies  
in the context of geothermal energy*

*Geotermia w Politykach Energetycznych Polski*

# Geotermia - kluczowe dokumenty w Polsce

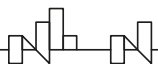
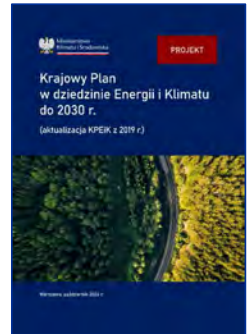
## Geothermal Energy – Key Documents in Poland



# Geotermia - kluczowe dokumenty w Polsce

## Geothermal Energy – key documents in Poland

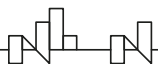
- Krajowy Plan na rzecz Energii i Klimatu (KPEiK) – 2021-2030
- Polityka Energetyczna Polski do 2040 r. (PEP2040)
- Wieloletni Program Rozwoju Wykorzystania Zasobów Geotermalnych w Polsce (2022-2040)
- Strategia dla ciepłownictwa do 2030 r. z perspektywą do 2040
- National Energy and Climate Plan (NECP) – 2021-2030
- Poland's Energy Policy Until 2040 (PEP2040)
- Long-term Program for the Development of Geothermal Resource Utilization in Poland (2022-2040)
- Heating sector strategy until 2030 with a perspective Until 2040



# Przemiany w ciepłownictwie

## Transformations in the district heating sector

- Przepisy prawne i strategie związane z polityką klimatyczną
  - Ceny paliw i bezpieczeństwo energetyczne
  - Postęp technologiczny
  - Opinia publiczna
- 
- Legal regulations and climate policy strategies
  - Fuel prices and energy security
  - Technological progress
  - Public opinion



# Krajowy Planu w dziedzinie Energii i Klimatu do 2030 (aKPEIK)

## National Energy and Climate Plan by 2030 (NECP)



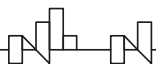
- **Strategiczny dokument opracowywany przez państwa UE,** zawiera założenia do osiągnięcia unijnych celów klimatyczno-energetycznych
- **Krajowy plan na rzecz energii i klimatu na lata 2021–2030** przekazano do UE w 2019 roku, aktualizację przekazano do konsultacji publicznych w październiku 2024 r. a prognozę oddziaływania na środowisko w lutym 2025 r.
- **A strategic document developed by EU member states,** includes assumptions for achieving the EU's climate and energy goals.
- **The National Energy and Climate Plan for 2021–2030** was submitted to the EU in 2019, its update was submitted for public consultation in October 2024, and the environmental impact assessment in February 2025

# Krajowy Planu w dziedzinie Energii i Klimatu do 2030 (aKPEIK)

## National Energy and Climate Plan by 2030 (NECP)



- **Obniżenie emisyjności, dekarbonizacja systemów ciepłowniczych** Geotermia w modernizacji i transformacji systemów ciepłowniczych -> udział OZE w ciepłownictwie 2040: 62,6%
- **Poprawa efektywności energetycznej** (dyrektywa EED) Geotermia wkładem w efektywność energetyczną i przykładem definicji energii pierwotnej
- **Badania naukowe, innowacje i konkurencyjność**, rozwój technologii wytwarzania energii ze źródeł geotermalnych, zwiększenie miejsc pracy
  
- **Reducing emissions and Decarbonizing Heating Systems**, Geothermal energy in the modernization and transformation of district heating systems -> Share of RES in D.H. by 2040: 62.6%
- **Improving Energy Efficiency (EED Directive)** Geothermal energy as a contribution to energy efficiency and an example of primary energy definition
- **Scientific research, innovation, and competitiveness** Development of technologies for energy production from geothermal sources, job creation and economic growth



# Krajowy Planu w dziedzinie Energii i Klimatu do 2030 (aKPEIK)

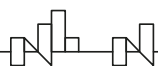
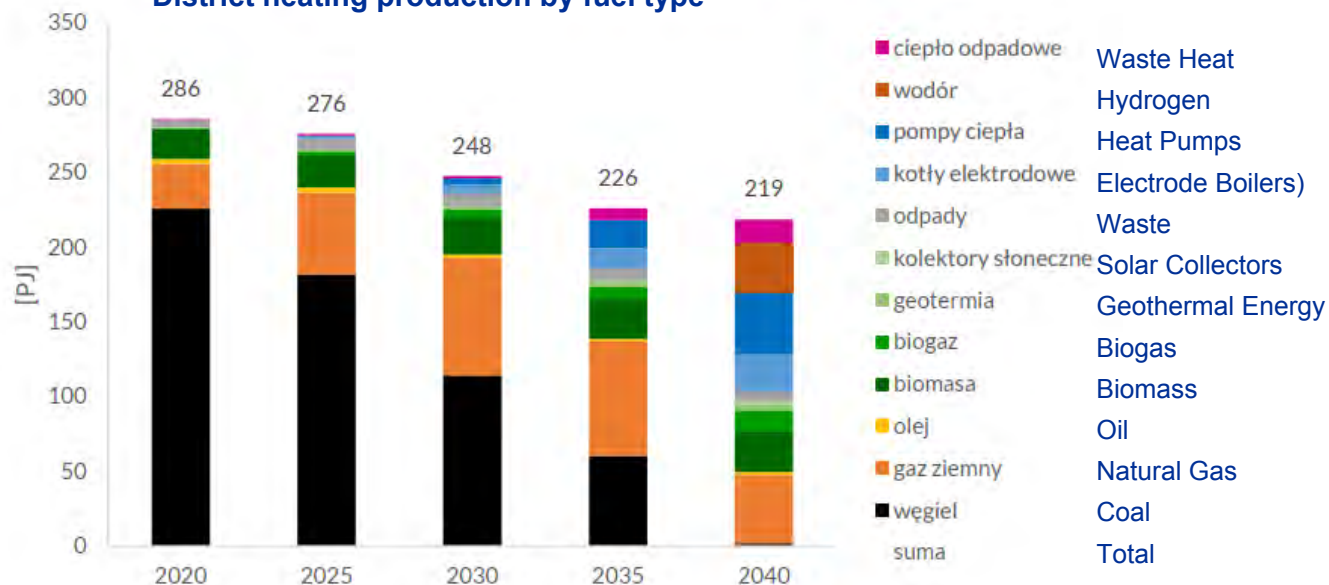
## National Energy and Climate Plan by 2030 (NECP)



Na rysunku poniżej przedstawiono strukturę produkcji ciepła systemowego w perspektywie 2040 r.

### Produkcja ciepła systemowego w podziale na paliwa

#### District heating production by fuel type



# Prognoza oddziaływania na środowisko projektu KPEiK

## Environmental Impact Assessment of the NECP Project



### Korzyści wynikające z rozwoju geotermii

- Redukcja emisji gazów cieplarnianych
- Poprawa jakości powietrza
- Wzrost bezpieczeństwa energetycznego
- Wsparcie dla lokalnych społeczności – nowe miejsca pracy w sektorze OZE

### Benefits of Geothermal Development

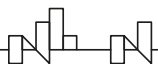
- Reduction of Greenhouse Gas Emissions
- Improvement of Air Quality
- Increase in Energy Security
- Support for Local Communities – New Jobs in the Renewable Energy Sector

### Potencjalne zagrożenia środowiskowe

- Ryzyko zanieczyszczenia wód gruntowych
- Degradacja środowiska wodnego - wody geotermalne o wysokiej mineralizacji
- Zjawiska mikrosejsmiczne
- Wpływ na lokalne ekosystemy

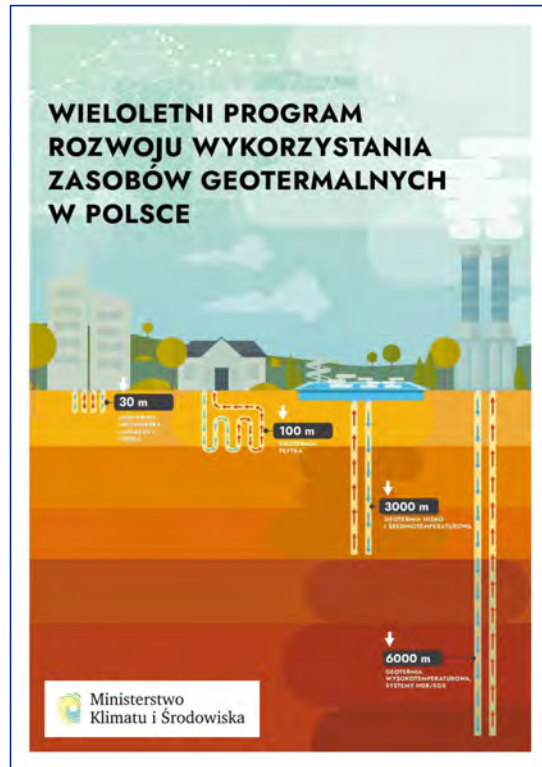
### Risk of groundwater contamination

- Degradation of the aquatic environment – highly mineralized geothermal waters
- Microseismic phenomena
- Impact on local ecosystems



# Wieloletni Program Rozwoju Wykorzystania Zasobów Geotermalnych w Polsce

## Multi-year Program for the Development of the use of Geothermal Resources in Poland

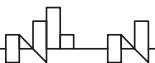


### Cele

- Wykorzystanie zasobów geotermii w przedziałach do 45°C, powyżej 45°C
- Wykorzystanie wysokotemperaturowych zasobów energii geotermalnej powyżej 100°C (systemy binarne, HDR, EGS)
- Wykorzystanie wód podziemnych, odpadowych
- Rozwój technologii Głębokich Otworowych Wymienników Ciepła.
- Innowacyjne technologie magazynowania ciepła w górotworze
- Program ubezpieczenia od ryzyka w projektach geotermalnych
- Wsparcie legislacyjne

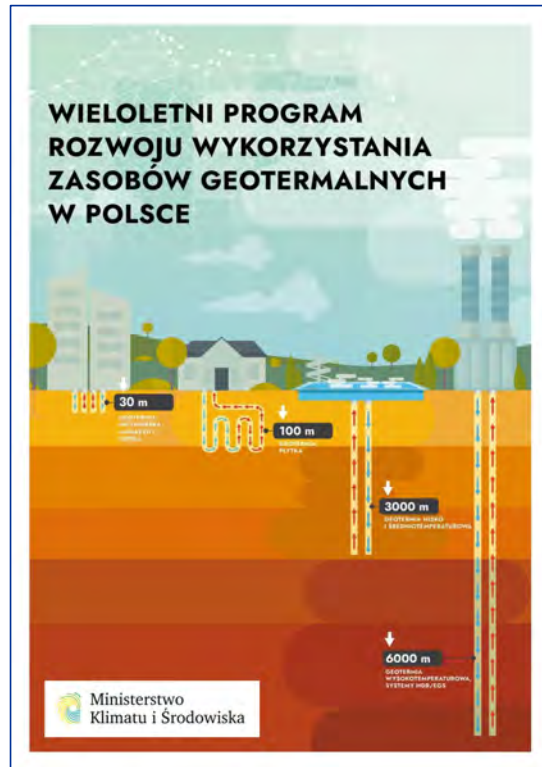
### Goals

- Utilization of geothermal resources in ranges up to 45°C, above 45°C
- Utilization of high-temperature geothermal resources above 100°C (binary systems, HDR, EGS)
- Use of groundwater and wastewater
- Development of deep borehole heat exchanger technology
- Innovative heat storage technologies in rock formations
- Insurance program for risk mitigation in geothermal projects
- Legislative support



# Wieloletni Program Rozwoju Wykorzystania Zasobów Geotermalnych w Polsce

## Multi-year Program for the Development of the use of Geothermal Resources in Poland

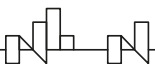


### Wytyczne dotyczące wykorzystania wód geotermalnych

- systematyczne/coroczne gromadzenie danych
- wykonanie 78 otworów badawczych do 2040 roku (34 do do 2027)
- docelowo 78 instalacji geotermalnych o mocy 290MW (9 949,6 TJ)
- limit 4 letni wykonania inwestycji (po etapie badawczym)
- podział: JST badania, przedsiębiorca inwestycje
- system ubezpieczeń odwiertów i 0 stawka eksploatacyjna

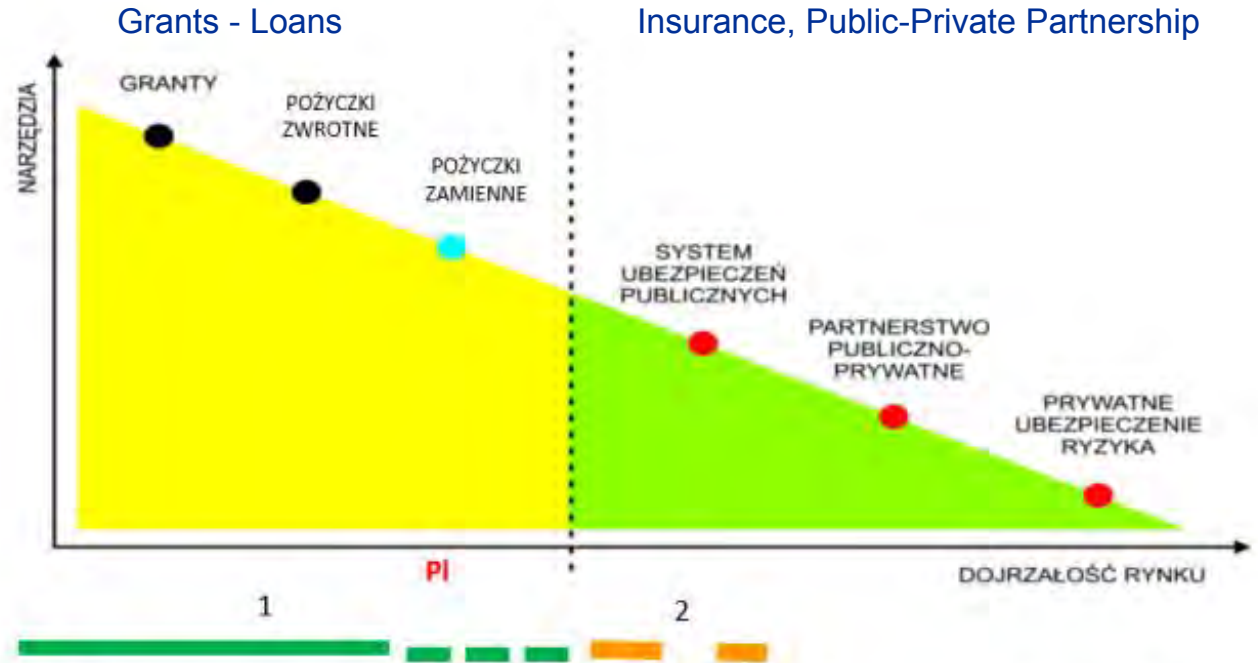
### Goals

- systematic/annual data collection
- drilling of 78 exploratory wells by 2040 (34 by 2027)
- target of 78 geothermal installations with a capacity of 290 MW (9,949.6 TJ)
- 4-year investment completion limit (after the exploratory stage)
- division: local government for research, businesses for investments
- well insurance system and zero exploitation fee

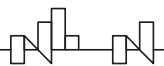


# Wieloletni Program Rozwoju Wykorzystania Zasobów Geotermalnych w Polsce

## Multi-year Program for the Development of the use of Geothermal Resources in Poland



Rys. 10. Kolejność wprowadzania poszczególnych narzędzi wsparcia finansowego projektów geotermalnych.  
 Financial Support for Geothermal Projects Based on Market Maturity

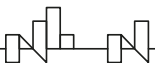


# Polityka energetyczna Polski do 2040 roku

## Poland's Energy Policy until 2040



- Polityka energetyczna Polski do 2040 r. (PEP2040) wyznacza ramy transformacji energetycznej w Polsce
  - Stanowi o doborze technologii służących budowie niskoemisyjnego systemu energetycznego
  - Dotyczy zwiększenia wykorzystania technologii OZE w wytwarzaniu ciepła
  - Dokument przyjęty 2 lutego 2021
- 
- Poland's Energy Policy Until 2040 (PEP2040) sets the framework for Poland's energy transition
  - Defines the selection of technologies for building a low-emission energy system
  - Focuses on increasing the use of renewable energy technologies in heat production
  - Document adopted on February 2, 2021

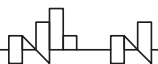


# Polityka energetyczna Polski do 2040 roku

## Poland's Energy Policy until 2040



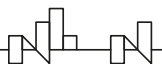
- **Geotermia w kontekście ciepłownictwa systemowego**  
Rozwój ciepłownictwa opartego na OZE, w tym geotermii, integracja sieci z geotermią, wdrażanie inteligentnych sieci ciepłowniczych
- **Geotermia w kontekście systemów hybrydowych**  
Hybrydowe systemy grzewcze łączące geotermię z innymi OZE
- **Geotermia w kontekście bezpieczeństwa energetycznego**  
Geotermia jako element dywersyfikacji źródeł energii
  
- **Geothermal energy in the context of district heating**  
Development of RES-based district heating, including geothermal energy, integration with geothermal energy, implementation of smart district heating networks
- **Geothermal energy in the context of hybrid systems**  
Hybrid heating systems combining geothermal energy with other RES
- **Geothermal energy in the context of energy security**  
Diversification of energy sources and utilization of local resources



## **W oczekiwaniu na strategię dla ciepłownictwa do 2030r.**

### **Waiting for the heating sector strategy until 2030**

- Strategia 2030 ma na celu wyznaczenie kierunków transformacji polskiego sektora ciepłowniczego w kierunku niskoemisyjnym i zrównoważonym.
  - Prace nad dokumentem trwają – strategia nie została jeszcze zatwierdzona.
  - Konsultacje publiczne objęły szerokie grono interesariuszy.
- 
- The 2030 strategy aims to set the directions for the transformation of the Polish heating sector towards low-emission and sustainable development.
  - Work on the document is ongoing – the strategy has not yet been approved.
  - Public consultations included a wide range of stakeholders.



# Geotermia - kluczowe dokumenty w Polsce

## Geothermal Energy – Key Documents in Poland



# Geothermal Synergy: Iceland – Poland Knowledge Exchange



Geothermal  
Synergy

## Closing Conference

**Dziękuję za uwagę! Thank you for your attention!**

**Grzegorz Burek**

redaktor naczelny, editor-in-chief

Globenergia

[g.burek@globenergia.pl](mailto:g.burek@globenergia.pl)

[www.globenergia.pl](http://www.globenergia.pl)



# Elements

BY BBA // FJELDCO

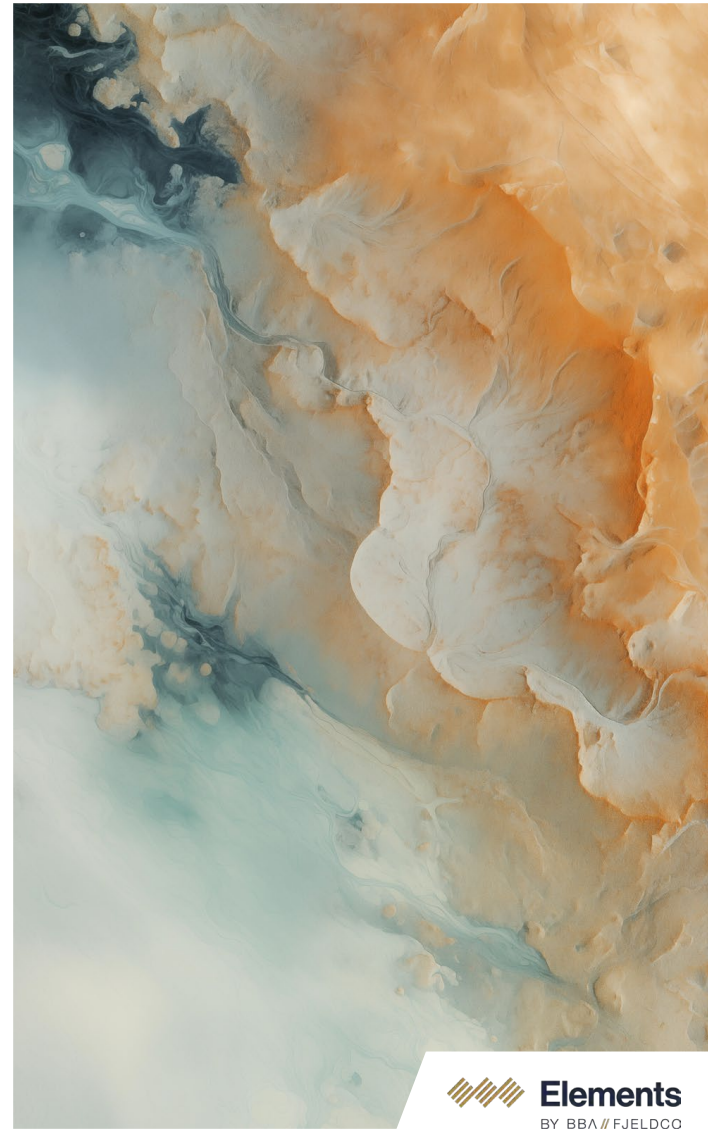
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# Geothermal Policies, Legislation and Regulations

## Iceland

Geothermal Synergy: Iceland Poland Knowledge  
Exchange Initiative

Final Online Meeting



## Our Services

### *Gap Analysis*

International  
Development  
Banks  
Governments  
Free Trade Area

### *Regulatory Framework*

International  
Development  
Banks  
Governments  
Free Trade Area

### *Risk Mitigation Schemes*

International  
Development  
Banks  
Governments  
Free Trade Area  
Underwriters  
Developers

### *Corporate, Finance*

Developers  
Banks  
Underwriters  
Corporates

### *Training Capacity Building*

International  
Development  
Banks  
Governments  
Free Trade Areas  
Underwriters  
Developers  
Corporates

# Our Network – Geothermal Projects

## / *Technical experts*

Engineering  
firms

Geoscience  
firms

Economists

## / *Developers:*

Power  
generation

District  
heating

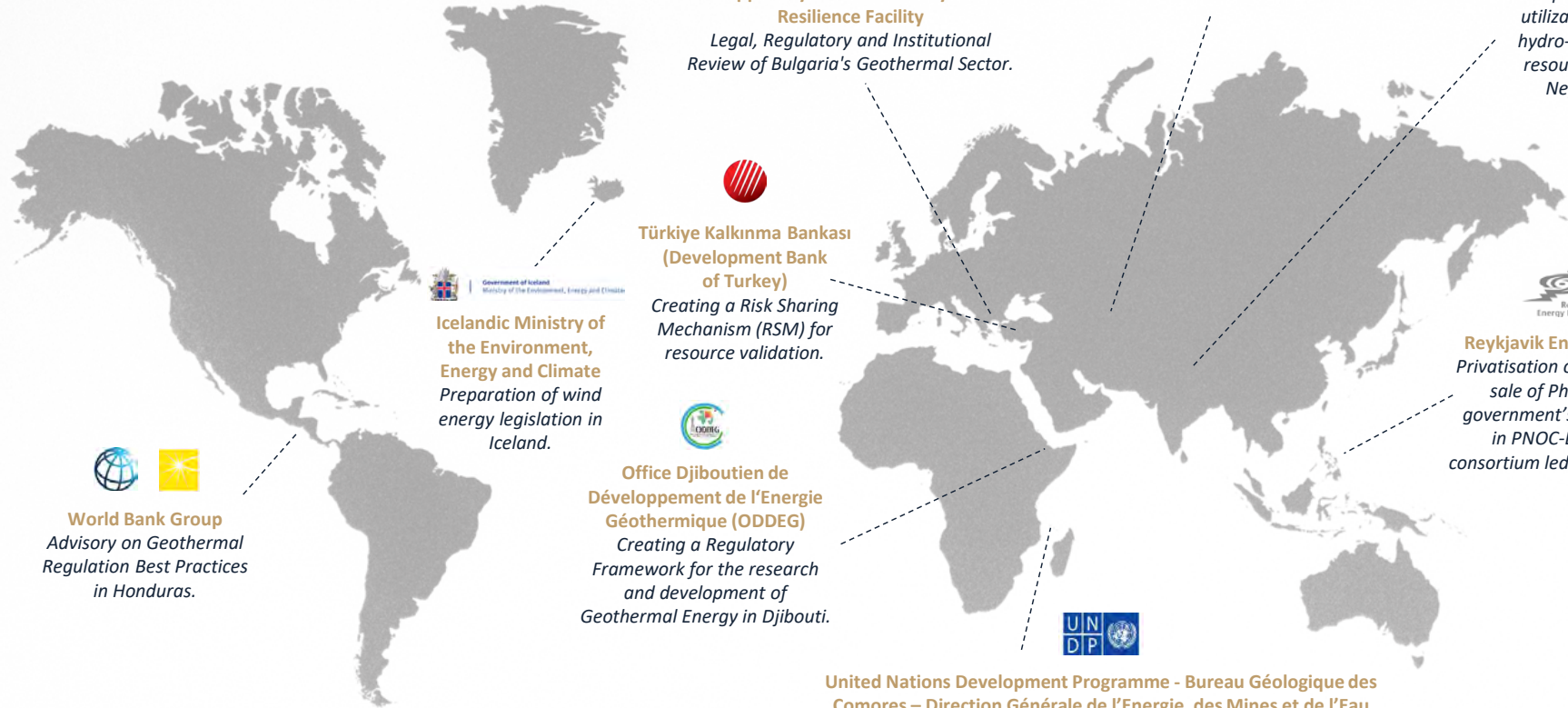
Other  
direct uses

## / *Law firms:*

First tier  
local law firms

Access to specific  
expertise in areas  
such as  
Investment  
Arbitration and  
Commercial  
Arbitration

# Infrastructure Projects



  
**World Bank Group**  
Advisory on Geothermal  
Regulation Best Practices  
in Honduras.

  
Government of Iceland  
Ministry of the Environment, Energy and Climate  
**Icelandic Ministry of  
the Environment,  
Energy and Climate**  
Preparation of wind  
energy legislation in  
Iceland.

  
**Office Djiboutien de  
Développement de l'Énergie  
Géothermique (ODDEG)**  
Creating a Regulatory  
Framework for the research  
and development of  
Geothermal Energy in Djibouti.

  
**World Bank Group, in association with  
the Ministry of Energy in Bulgaria and  
Council of the European Union for  
support by the EU Recovery and  
Resilience Facility**  
Legal, Regulatory and Institutional  
Review of Bulgaria's Geothermal Sector.

  
**Türkiye Kalkınma Bankası  
(Development Bank  
of Turkey)**  
Creating a Risk Sharing  
Mechanism (RSM) for  
resource validation.

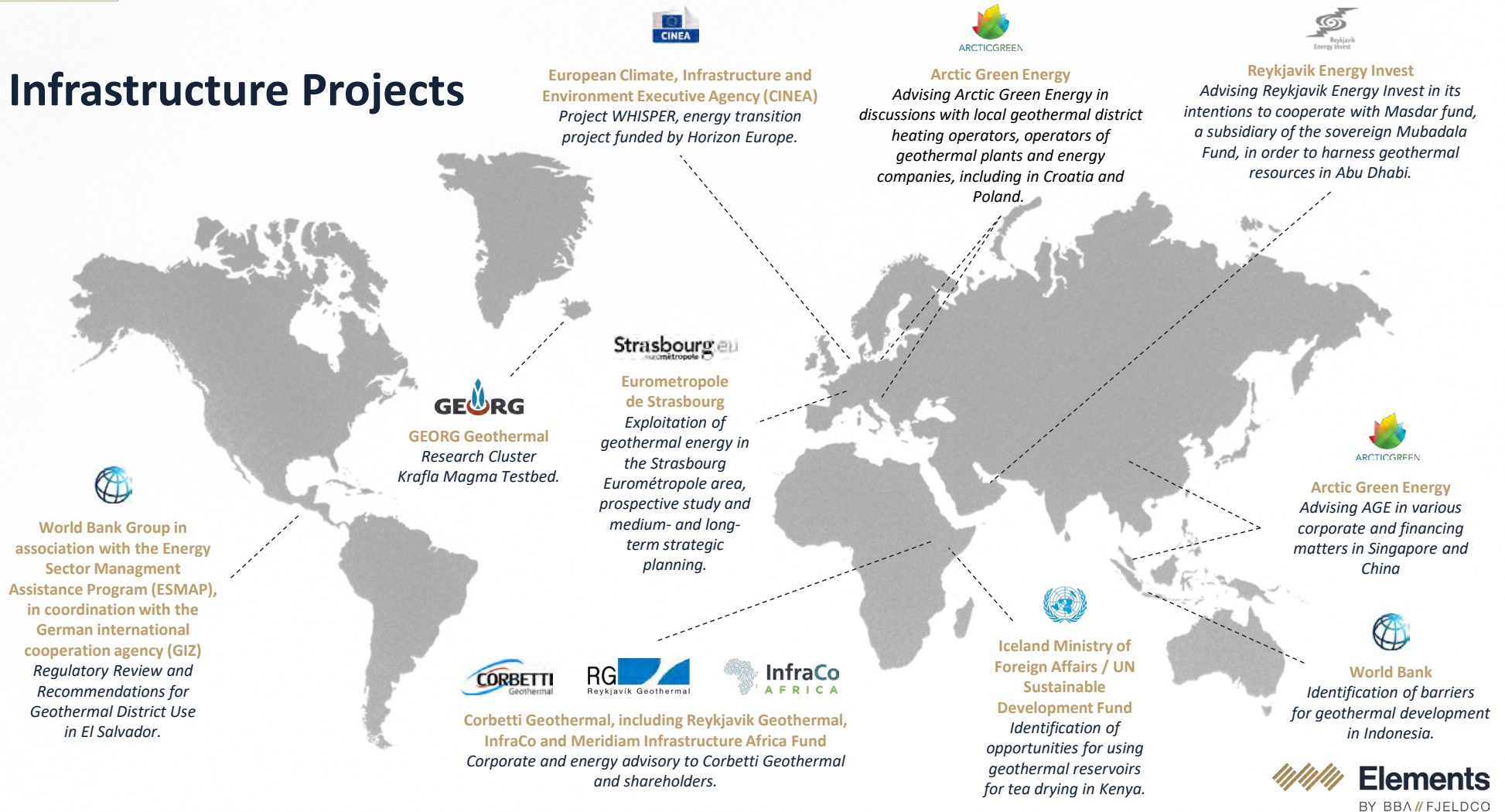
  
**Ministry for Foreign Affairs of Iceland with World  
Bank/ESMAP as Implementing Agency**  
Legal, Regulatory and Institutional Review of  
Kazakhstan's Geothermal Sector.

  
**Reykjavik Energy Invest**  
The potential  
utilization of  
hydro-energy  
resources in  
Nepal.

  
**Reykjavik Energy Invest**  
Privatisation of PNOC EDC  
sale of Philippines  
government's 60% stake  
in PNOC-EDC to a  
consortium led by First Gen.

  
**United Nations Development Programme - Bureau Géologique des  
Comores – Direction Générale de l'Énergie, des Mines et de l'Eau**  
Legal and regulatory framework for research and development  
of renewable energy resources in the Comoros.

# Infrastructure Projects



**World Bank Group in association with the Energy Sector Management Assistance Program (ESMAP), in coordination with the German international cooperation agency (GIZ) Regulatory Review and Recommendations for Geothermal District Use in El Salvador.**



**GEORG Geothermal Research Cluster Krafla Magma Testbed.**



**European Climate, Infrastructure and Environment Executive Agency (CINEA) Project WHISPER, energy transition project funded by Horizon Europe.**



**Eurometropole de Strasbourg Exploitation of geothermal energy in the Strasbourg Eurométropole area, prospective study and medium- and long-term strategic planning.**



**Arctic Green Energy Advising Arctic Green Energy in discussions with local geothermal district heating operators, operators of geothermal plants and energy companies, including in Croatia and Poland.**



**Reykjavik Energy Invest Advising Reykjavik Energy Invest in its intentions to cooperate with Masdar fund, a subsidiary of the sovereign Mubadala Fund, in order to harness geothermal resources in Abu Dhabi.**



**Arctic Green Energy Advising AGE in various corporate and financing matters in Singapore and China**



**Iceland Ministry of Foreign Affairs / UN Sustainable Development Fund Identification of opportunities for using geothermal reservoirs for tea drying in Kenya.**



**World Bank Identification of barriers for geothermal development in Indonesia.**



**Corbetti Geothermal, including Reykjavik Geothermal, InfraCo and Meridiam Infrastructure Africa Fund Corporate and energy advisory to Corbetti Geothermal and shareholders.**



# / Key Issues to be Dealt with in the Regulatory Framework

**National Policy**

**Definition  
Ownership**

**Sustainable  
Use**

**Access to  
Resource**

**Licensing and  
Regulatory  
Authority**

**Permits  
and Licences**

**Fees and  
royalties**

**Access to data**

**Cascaded  
Use**

**Environmental  
Obligations**

**Support  
Mechanism/Risk  
Mitigation**

**De-  
Commissioning**

- / Most countries which are successfully developing their geothermal resources, have established and followed a clear and realistic policy relating to the harnessing of geothermal resources
- / Policies need to consider both **the short-term and long-term goals** of the government in respect of exploration and exploitation of resources
- / Policies should include the **anticipated volume of production** as well and potentially also the **general location** of such production
- / In order to establish meaningful policies, it is critical to **understand the country's potential resources**, as well as the success or failure of existing projects
- / Therefore, the collection of data and the **creation of a „geothermal atlas“** is an important aspect of establishing and maintaining a viable state policy on the use of geothermal reservoirs
- / Policies need to **take into account environmental issues and the potential impact on communities and municipalities**

/ **Act on the survey and utilisation of ground resources, no. 57/1998**

/ **Article 1** *“This Act covers resources in the ground, at the bottom of rivers and lakes and at the bottom of the sea within netting limits. The Act also covers surveys of hydropower for the generation of electricity. The term resource in this Act applies to any element, compound and energy that can be extracted from the earth, whether in solid, liquid or gaseous form, regardless of the temperature at which they may be found.”*

/ **Article 2** *“Geothermal energy in this Act means, on the one hand, **reserves of energy in the bedrock**, and, on the other hand, a **constant flow of heat** from within the earth, which does not constitute groundwater.”*

Act on the survey and utilisation of ground resources, no. 57/1998

**Article 3** *“To private land is attached ownership of resources in the ground, while on public land resources in the ground are the property of the State of Iceland, unless other persons can prove their right of ownership.”*

- / In Iceland, land interests are generally acquired through **agreement with the relevant landowners or, alternatively, an expropriation decision** reflecting a landowner's obligation to grant access to their property and entitlement to fair compensation.
- / The conditions for expropriation are set out in the Constitution of Iceland, which states that expropriation can only be carried out if
  - / (a) the expropriation is required by **public interest**,
  - / (b) there is a **clear legal basis for the expropriation**, and
  - / (c) **the landowner is fully compensated** for the expropriation.
- / According to the Icelandic Act on Natural Resources, the direct terms of the agreements are not regulated and there are no legal obligations for decommissioning at the end of the term.

## / Permitting framework - Survey and prospecting

## / Permitting framework – Utilisation of resources

## / Own use

- **Article 10:** *“Notwithstanding the provisions of Articles 6 and 7, a landowner may, without permission, utilise geothermal energy on his or her **private land for household and agricultural use**, including for greenhouse cultivation, industry and cottage industry, up to **3.5 MW based on the heat extracted from the ground within private land**. [...] Permission to utilise geothermal energy for the generation of electricity is subject to the provisions of the Electricity Act.”*

## / Duration of licenses:

- **Exploration:** Maximum duration not provided in the law. General duration of 1-15 years.
- **Exploitation:** Up to 65 years.
- **Power plant:** The maximum duration of a power plant license is not limited by law. We note however that a power plant license expires 10 years following its date of issue if the license holder has not begun development at that time and 15 years after the date of the issue if a power plant has been constructed but not commenced operating.

- The utilisation of geothermal resources in Iceland is subject to a license from the National Environmental and Energy Authority (NEA), whether it involves utilisation on private land or public land. A utilisation license allows the license holder to extract and use the resource in question during the term of the license to the extent and on the terms laid down in the Natural Resource Act.
- Ministry of the Environment, Energy and Climate.
- The Environmental and Natural Resources Board of Appeal.

- / The Energy Fund allocates yearly grants to energy projects, in accordance with the government's priorities on energy transition. There is an application process, followed by a review of all applications by a committee.
- / The National Energy Fund grants loans to smaller municipalities and individuals for geothermal drilling as well as grants to individuals and companies to switch from subsidised electricity to geothermal heating. The fund generally pays out grants at the end of projects..
- / A grant from the Energy Fund can amount to a maximum of one third of the total cost of a project and are part of the governments action plan in climate matters and energy exchange.

## CONTACT US

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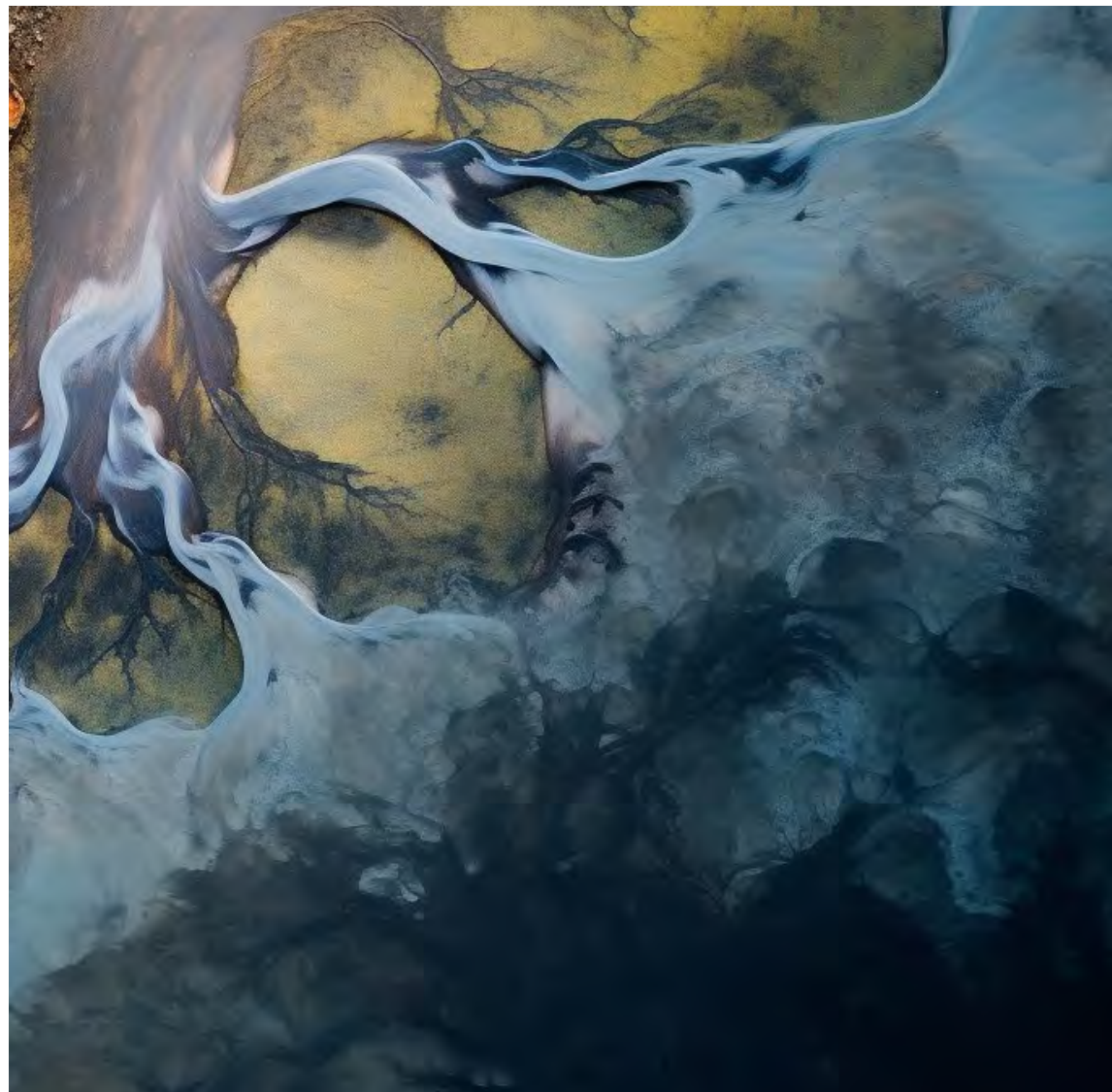
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France

Tel + 33 (0) 76823 0808

E-mail: [antoine@bbafjeldco.is](mailto:antoine@bbafjeldco.is)

Applications: [antoine@bbafjeldco.is](mailto:antoine@bbafjeldco.is)



# Geothermal Synergy: Iceland – Poland Knowledge Exchange



## PROJECT CLOSING CONFERENCE

### *Main activities and results of the GeoSynergy project*

*Magdalena Tyszer*  
MEERI PAS

*Alicja Wiktoria Stokłosa*  
UOS

❖ **Project Partners** Mineral & Energy Economy Research Institute PAS | Umhverfis og Orkustofnun

❖ **Realization period** 18.07.2024 – 28.02.2025

❖ **Budget** ~ 563 000 PLN

❖ **Project Operator**  Ministry of Climate and Environment  
Republic of Poland

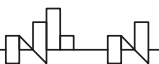


**A pre-defined project, the EEA–NFM Bilateral Cooperation Fund**

## ❖ **Project basis**

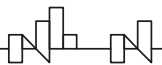
- The so-far cooperation of teams from Poland and Iceland (e.g.,: trainings at UNU GTP, RES School Akureyri; EEA / NFM projects, 2016 – 2025)
- **Recommendations and proposals from former Project teams, stakeholders, as well as GEOTHERMICA Initiative to take the cooperation to a higher level and extend its international scope**

[keygeothermal.pl/geosynergy/](https://keygeothermal.pl/geosynergy/)



## ❖ Project objectives

- **Strengthening** bilateral professional, economic and social ties between institutions and individuals from Iceland and Poland
- **Rapid exchange** of specialist knowledge on geothermal heating between Iceland and Poland
- **Deepening knowledge** on successful policies supporting the development of geothermal energy use in Iceland in order to support Poland in developing such policies and strategies
- **Initiating contacts and cooperation within the GEOTHERMICA Initiative**

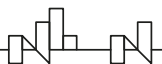


## ❖ Target groups

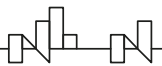
**Representatives of main stakeholders** involved in various ways in the geothermal sector in Poland and Iceland (decision makers, funding entities, local authorities, public support beneficiaries, science–research sector, investors, other)

## ❖ Main activities

1. Online events
2. Study tour to Iceland
3. Policy development and framework enhancement for geothermal energy
4. Strategic cooperation and future planning (next EEA FM/NFM grants, **GEOthermica Initiative**)
5. Project conclusion and reporting
6. Information and communication
7. Project management



# **Main Project activities, 2024 – 2025**



# Geothermal Synergy Webinar, December 10, 2024

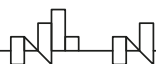
About **100 participants** from Poland, Iceland, and some other European countries to explore the transformative potential of geothermal energy and collaboration opportunities

The event consisted of 3 main parts:

- Project Launch Meeting,
- Webinar on Geothermal basics, Iceland's experience, and Polish examples for stakeholders,
- Panel discussion.

The EEA / NFM "Geothermal Synergy" Project  
Webinar "Enhancing Poland's geothermal future through Icelandic expertise and Geothermica Initiative collaboration", 10 December 2024, 12.00 – 14.30 CET  
*Planned agenda (details may change)*

Project launch meeting	
	Moderators: M. Miecznik, M. Tyszer
12.00-12.05	Welcome, opening remarks – M. Wdowin (MEERI PAS director), Project partners
12.05-12.20	Public support for geothermal development in Poland – B. Kus, M. Zółkowska, S. Makulec-Staszewska (National Fund for Environment Protection & Water Management)
12.20-12.30	The EEA / NFM Geothermal Synergy Project: introduction – A. Kaaztelewicz (MEERI PAS)
12.30-12.40	Importance of Iceland–Poland collaboration in geothermal energy knowledge exchange and framework development – B. Kępińska (MEERI PAS), A.W. Stokłosa (Orkustofnun)
Webinar on geothermal basics, Icelandic experience, and Polish examples	
	Moderators: B. Tomaszewska, K. Pierzchała
12.40-12.55	Knowledge exchange: path to sustainable geothermal energy development – selected lessons learnt and experiences from so far Icelandic–Polish cooperation – B. Petursson (Orkustofnun)
12.55-13.05	Knowledge exchange through EEA KeyGeothermal and other projects – how project has facilitated valuable knowledge exchange between Iceland and Poland, supporting both technical advancements and policy development – S. Lorek (Geotermia Konin Sp. z o.o., CEO), K. Witkowski (Kolo City, Mayor)
13.05-13.20	Keynote address: The national importance of geothermal energy, role in energy transition and sustainable development. EU and Polish policies and strategies – K. Galos, Chief State Geologist, Undersecretary of State (Ministry of Climate & Environment)
13.20-13.30	Break
13.30-13.40	Expanding and upgrading geothermal energy development in Poland by building on Icelandic experiences, especially in district heating and sustainable energy management – L. Pająk, M. Miecznik, B. Bielec (MEERI PAS)
13.40-13.50	Geothermal knowledge exchange – Iceland's experiences and technological developments for benefits of Poland – Ó.P. Einarsson (Verkis hf)
13.50-14.05	Transnational geothermal experience and best practices: case of Geothermica initiative. Why cooperation matters: Iceland, Poland, and Geothermica – Paul Ramsak (Geothermica Initiative Cabinet, co-chair)
Panel discussion: Strengthening cooperation for geothermal energy	
	Moderators: B. Kępińska, A.W. Stokłosa
14.05-14.20	<ul style="list-style-type: none"> <li>• How to strengthen bilateral cooperation between Iceland and Poland – B. Kępińska (MEERI PAS)</li> <li>• How to bring Poland into Geothermica Initiative. Stakeholder collaboration strategies – A.W. Stokłosa (Orkustofnun)</li> <li>• Opportunities for local authorities to engage in geothermal projects – S. Furca (Deputy Mayor, Szafary Municipality)</li> <li>• Opportunities for R+D+I sector – B. Tomaszewska (MEERI PAS)</li> </ul>
14.20-14.25	Q & A
14.25-14.30	Summary, conclusions – Project leaders Next Project steps. Conference closure – Project leaders



# Geothermal Synergy Webinar, December 10, 2024

- Knowledge exchange
- Policy development
- Participants addressed strategies to **strengthen bilateral cooperation between Poland and Iceland**
- The webinar concluded with a forward-looking perspective on the **next steps for collaboration.**

The screenshot shows a Zoom meeting interface. At the top, there is a grid of participant video thumbnails. Below this, the main presentation slide is visible. The slide title is "Geothermal Synergy: Iceland – Poland Knowledge Exchange". It includes logos for "Iceland Liechtenstein Norway grants" and "Norway grants". The subtitle is "Project Launch Meeting Webinar on Geothermal basics, Iceland's experience, and Polish examples" with the Geothermal Synergy logo. The date "10/12/2024" and the URL "keygeothermal.pl/geosynergy/" are also present. Logos for "ORKUSTOFNUN National Energy Authority" and "Mineral and Energy Research Institute" are at the bottom. A slogan "Together we work for green, competitive and inclusive Europe" is displayed.

This screenshot shows a Zoom chat window. On the left, a presentation slide is visible with the title "Geothermal Synergy: Iceland – Poland Knowledge Exchange". The slide content includes "Knowledge exchange – path to sustainable geothermal energy development selected and experiences from so far Icelandic – Polish cooperation" and "Webinar on Geothermal basics, Icelandic experience, and Polish examples" with the Geothermal Synergy logo and contact information for Baldur Pétursson. The date "10/12/2024" is at the bottom. The chat window on the right shows a "Czat spotkania" (Meeting chat) with several messages in Polish, including questions and answers about the presentation and translation.

The screenshot shows a Zoom presentation slide titled "Multiannual Program for the Development of the Use of Geothermal Resources in Poland – road map for development of geothermal energy". The slide lists key points: "Coherent concept for the development and use of geothermal energy in Poland by 2040, with a perspective to 2050, prepared and accepted in 2022", "Strategic goal: Increasing the share of renewable energy sources in the national energy balance", and "Specific goals: support for sustainable development policy, stimulating the country's economic development, improving air quality, increasing the energy efficiency of geothermal systems and supporting their investors and designers, and strengthening public support for 'clean' geothermal energy". A small graphic titled "WIELOLETNI PROGRAM ROZWOJU WYKORZYSTANIA ZASOBÓW GEOTERMALNYCH W POLSCE" is also shown.

# GeoThermal Bridge Initiative – 28-30 January, Oradea (Romania)



GEOthermica  
INITIATIVE 



# GeoThermal Bridge Initiative – 28-30 January, Oradea (Romania)



# Study tour to Iceland | 10-14 February 2025

- Meeting at Gróska Innovation Hub



STUDY VISIT – 10-13 FEBRUARY 2025

Hosted by Umlverfis og Orkustofnun



## MONDAY, FEBRUARY 10

15:30 Arrival at Keflavik airport  
17:00 Reykjavik arrival | Check-in at Central Plaza Hotel  
18:30 Networking Dinner at Kopar - internal dinner

## TUESDAY, FEBRUARY 11 – REYKJAVIK GEOTHERMAL DISTRICT HEATING

08:00 – 10:00 Meeting at Gróska Innovation Hub - separate agenda  
10:00 – 12:00 Visit to Mosfellsbær geothermal greenhouse – Lambhagi  
Ministry of Foreign Affairs – only a chosen group  
12:00 – 13:30 Lunch at Golf Course - BLIK Bistro & Grill  
13:30 Reykir Pumping Station, Dælustöðvarveg Mosfellsbær  
15:00 – 16:00 Orkuveita and Veitur presentation, Bæjarháls HQ  
16:30 Meeting with new Environment and Energy Agency UOS  
19:00 Hotel Borg

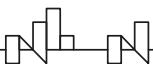
## WEDNESDAY, FEBRUARY 12 – SOUTH COAST EXPLORATION

8:00 Departure from hotel group 1  
8:15 Meeting at the Ministry of Environment and Energy- group 1  
9:00 Departure from the Hotel group 2 and pick up group 1.  
09:45 – 11:30 Geothermal Park ON – Industrial and Innovation Park  
On the way, stop at viewing point over Hvergaredi  
12:00 – 13:30 Lunch in Selfoss at MAR Seafood  
13:30 – 15:00 Selfossveitur – Selfoss District Heating  
15:00 – 16:00 Fridheimar greenhouse system  
16:00 – 16:30 Networking and coffee at Vinstofan in Fluðir  
16:30 – 18:00 Departure & Return to Reykjavik  
19:00 Matarkjallarin



## THURSDAY, FEBRUARY 13

8:00 – 09:00 Meeting with Rannís  
11:30 – 12:30 FlyOver Iceland  
12:30 – 13:30 Lunch  
14:00 Free time  
18:00 Dinner at Duck & Rose



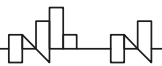
# Study tour to Iceland | 10-14 February 2025

- Visit to Mosfellsbær geothermal greenhouse – Lambhagi



# Study tour to Iceland | 10-14 February 2025

- Veitur District Heating System

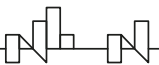


# Study tour to Iceland | 10-14 February 2025

- Meeting with Orkuveita



- Meeting with new Environment and Energy Agency UOS



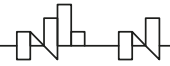
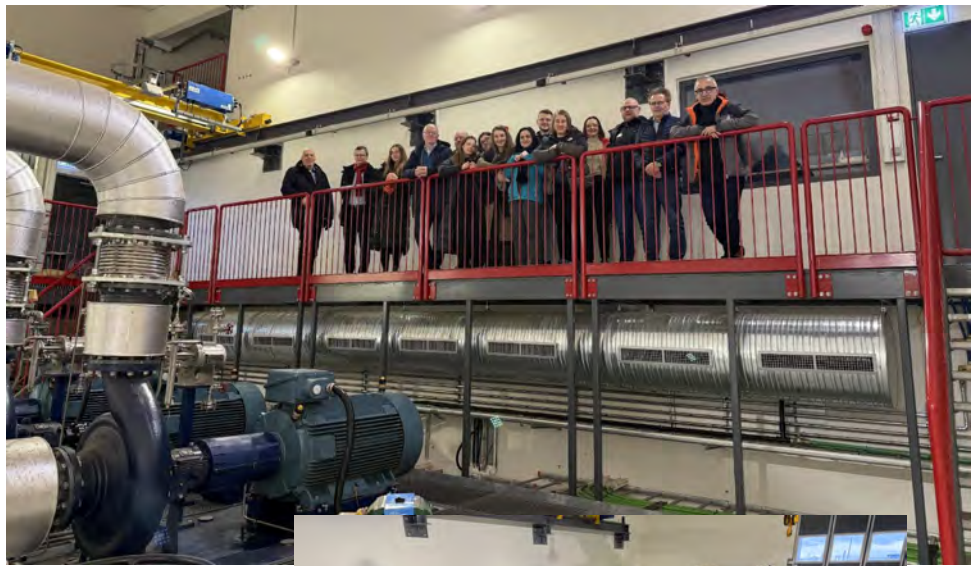
# Study tour to Iceland | 10-14 February 2025

- Geothermal Park ON – Industrial and Innovation Park



# Study tour to Iceland | 10-14 February 2025

- Selfossveitur – Selfoss District Heating

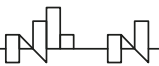
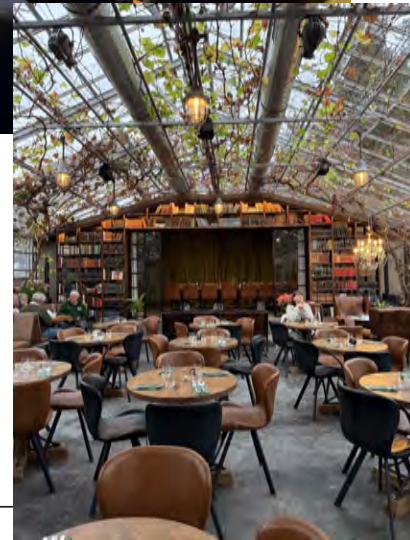


# Study tour to Iceland | 10-14 February 2025

- Fridheimar greenhouse system



- Networking and coffee at Vínstofan in Fluðir



# Summary

**As a result of the project implementation, framework directions and ways of further cooperation were proposed, aimed at deepening the Icelandic-Polish relations and wider international collaboration:**

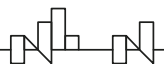
## **1. Joint strategies and policies for cooperation between ministries – Geothermica Initiative**

- Strengthening cooperation and knowledge exchange between Poland and Iceland
- Determining directions for technological development based on the experiences of partners
- Some key topics of common interest for Iceland, Poland, GEOTHERMICA member states (e.g., geothermal district heating systems – cities and regions; strategies and policies, underground energy storage)

## **2. Good practices and innovative ideas in the geothermal sector**

- Analysis of proven solutions in geothermal energy
- Exchange of experiences in the effective management of geothermal resources / space heating, other

## **3. Continuation and deepening of training specialist manpower for geothermal sector (international scope), deepening cooperation and knowledge - new partners and stakeholders („KeyGeothermal 2”)**



# Thank you for your attention!

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