Community-based development schemes for geothermal energy

Dr Isabel Fernández Fuentes

European Federation of Geologists

Project Coordinator

ETIP DG AGM **:** Session 2: R&I to decrease costs and improve efficiency**,** 27-11-2020

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 857830.

Project facts

- Call: H2020-LC-SC3-2019-RES-IA-CSA
- Topic: Market Uptake support
- Focus area: Building a low-carbon, climate resilient future (LC)
- Project ID: 857830
- Duration: 36 months
- Budget: 2 305 801.25 €
- Partnership: 10 European organistions + 17 Linked Third Parties (LTPs)
- Coordinator: European Federation of Geologists, Brussels
- Start date: 01 September 2019

CROWDTHERMAL

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 857830.

Objectives

CROWDTHERMAL aims to empower the European public to directly participate in the development of geothermal projects with the help of alternative financing schemes (crowdfunding) and social engagement tools.

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Consortium

Participant organisation name	Country
European Federation of Geologists (EFG)	Belgium
Institute for Future Energy Systems (IZES)	Germany
University of Glasgow (UoG)	UK
GeoThermal Engineering GmbH (GeoT)	Germany
La Palma Research Centre (LPRC)	Spain
CrowdfundingHub (CFH)	Netherlands
Szeged District Heating Co (SZDH)	Hungary
Spanish Geothermal Technology Platform (GEOPLAT)	Spain
Geothermal Research Cluster (GEORG)	Iceland
Eimur (EIMUR)	Iceland

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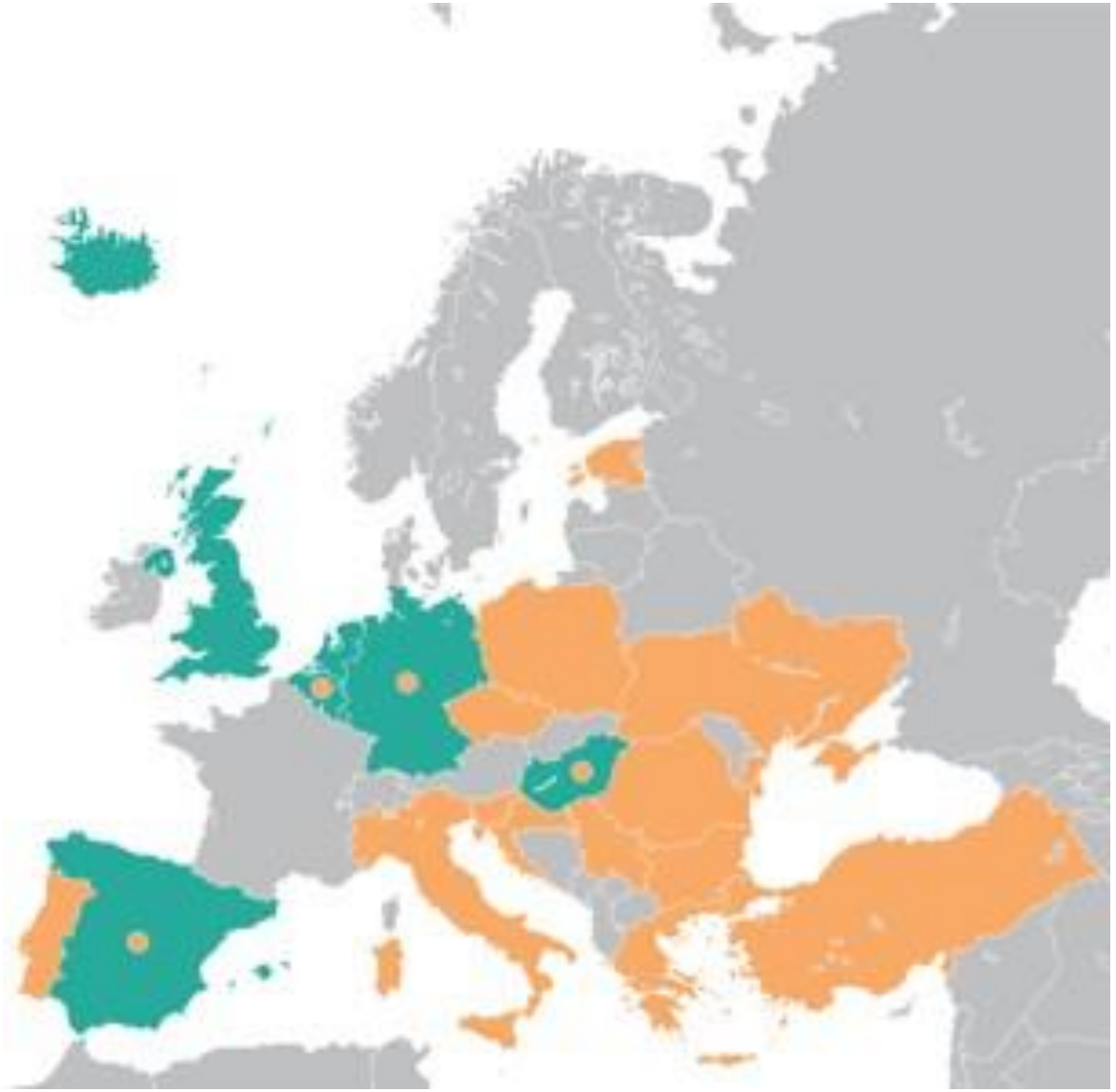
Countries

- 7 Partners‘ Countries
- 18 LTPs Countries



Advisory Board

10 Members from Social, Financial and Geothermal expertise areas

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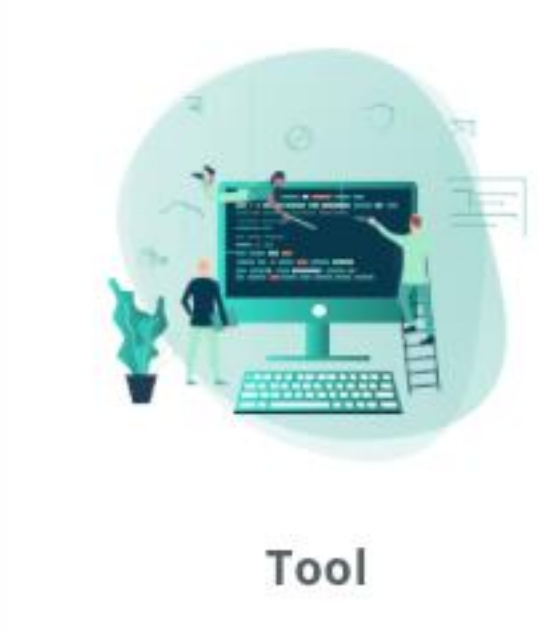
Our vision: *Empower citizens and local communities for local clean energy solutions, contributing to the European Green Deal*

alternative finance for geothermal



core services

social-media campaign

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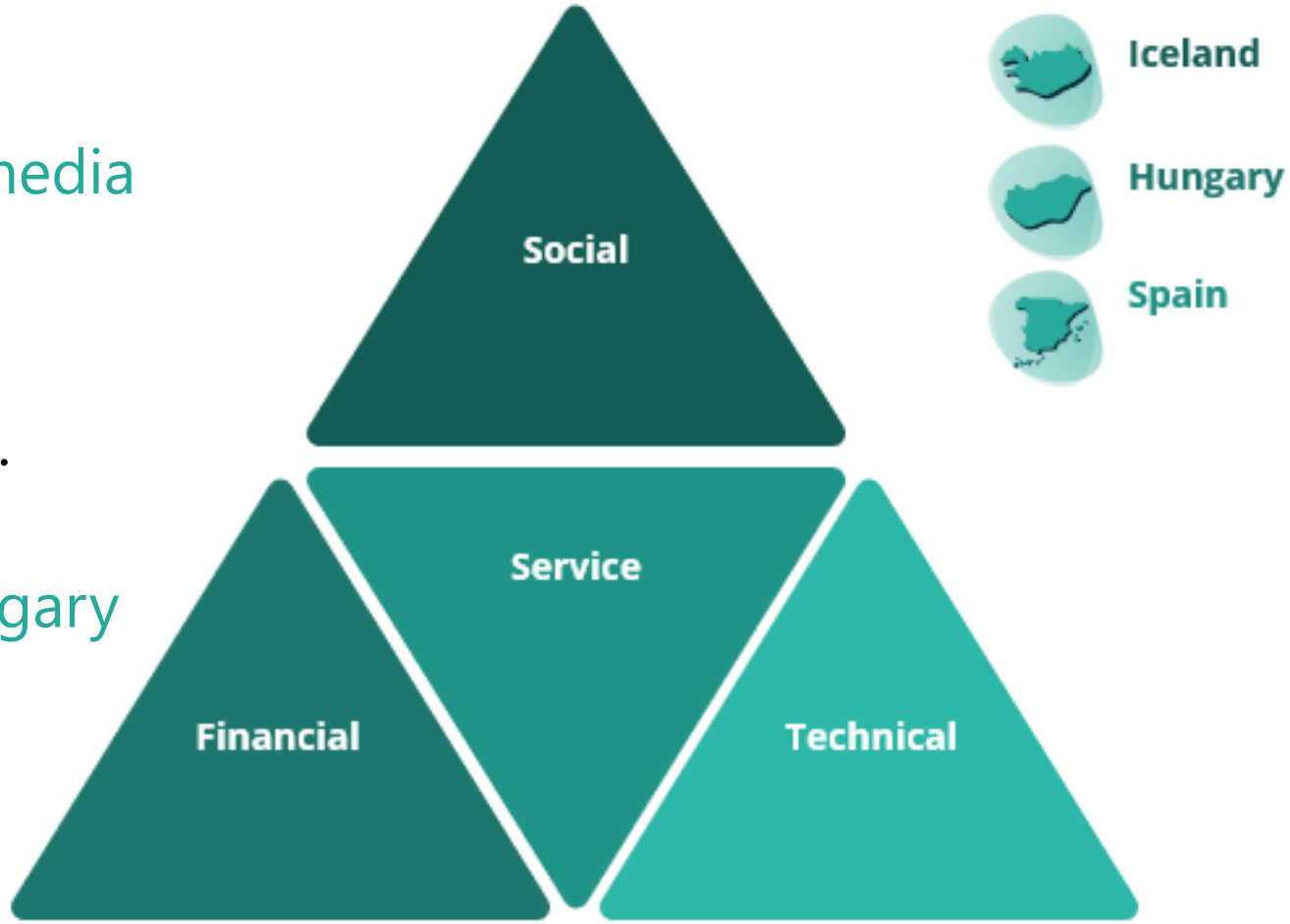
Concept

- Develop core services for social-media based promotion and alternative financing of geothermal projects, working closely with existing structures & conventional players.
- Validate findings with the help of three case studies in Iceland, Hungary and Spain.



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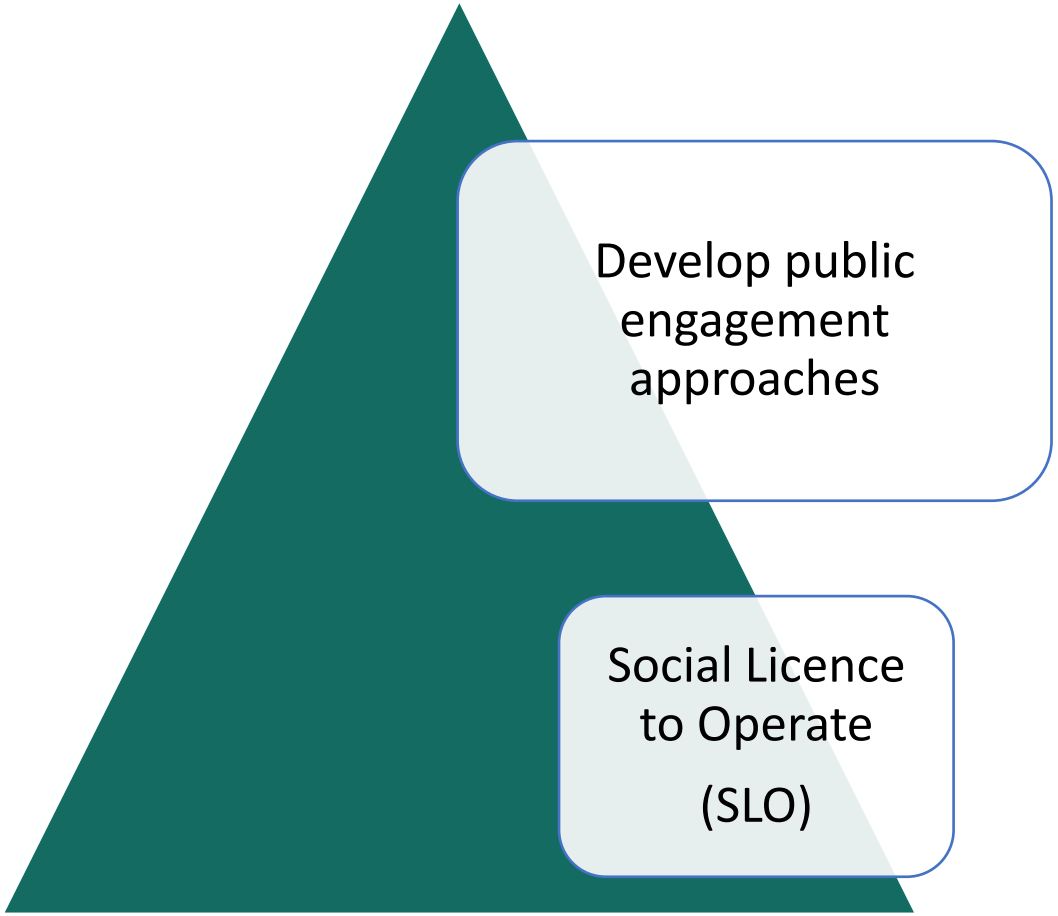

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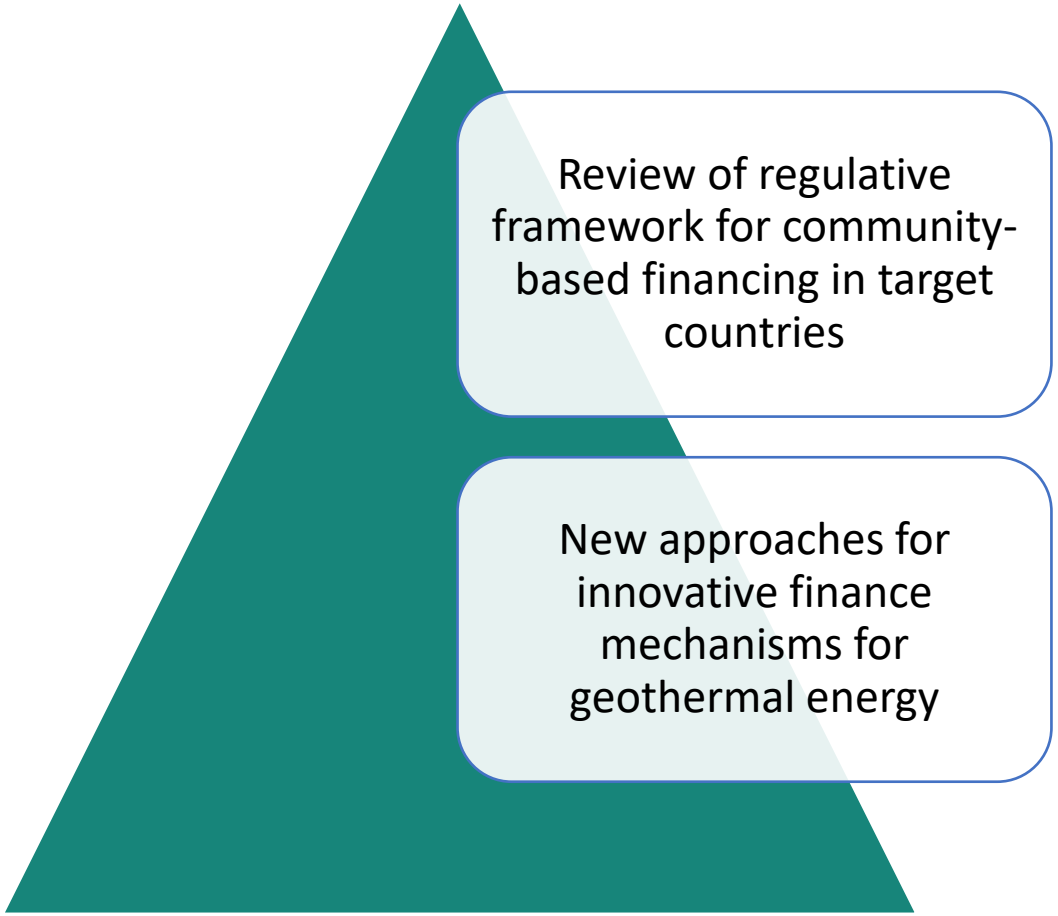

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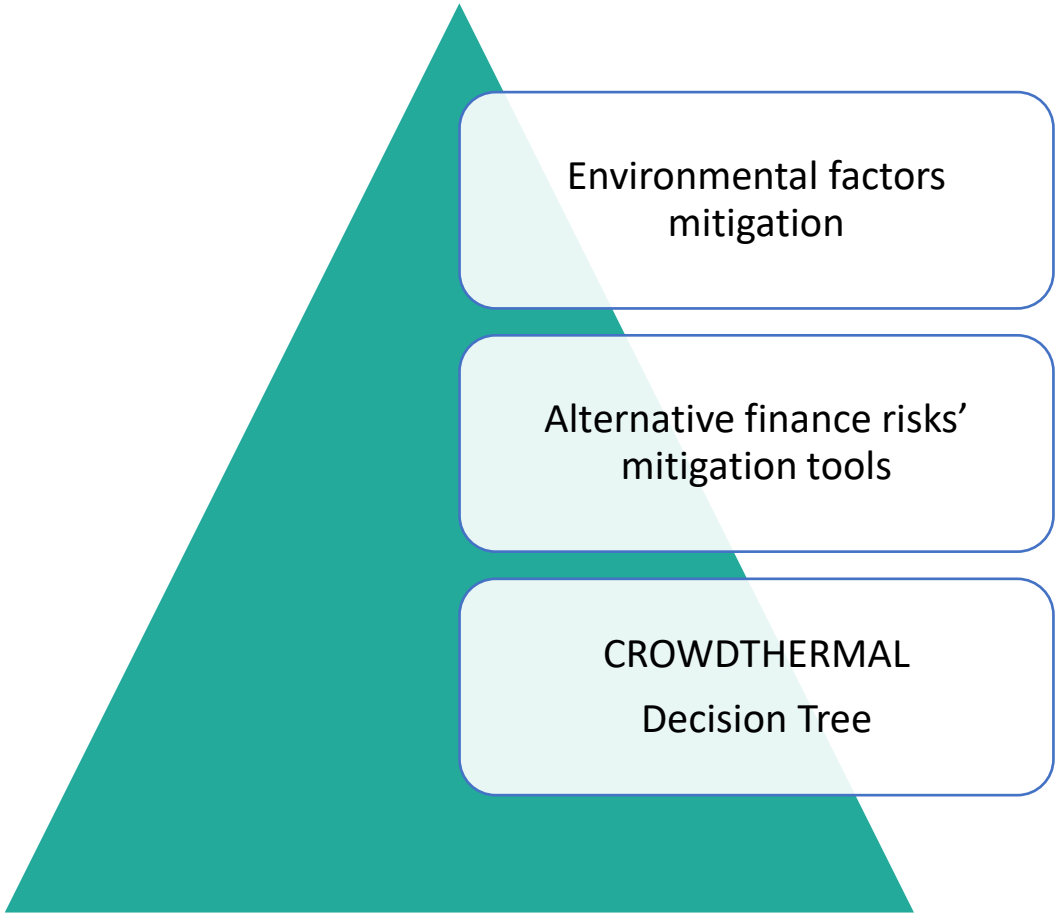

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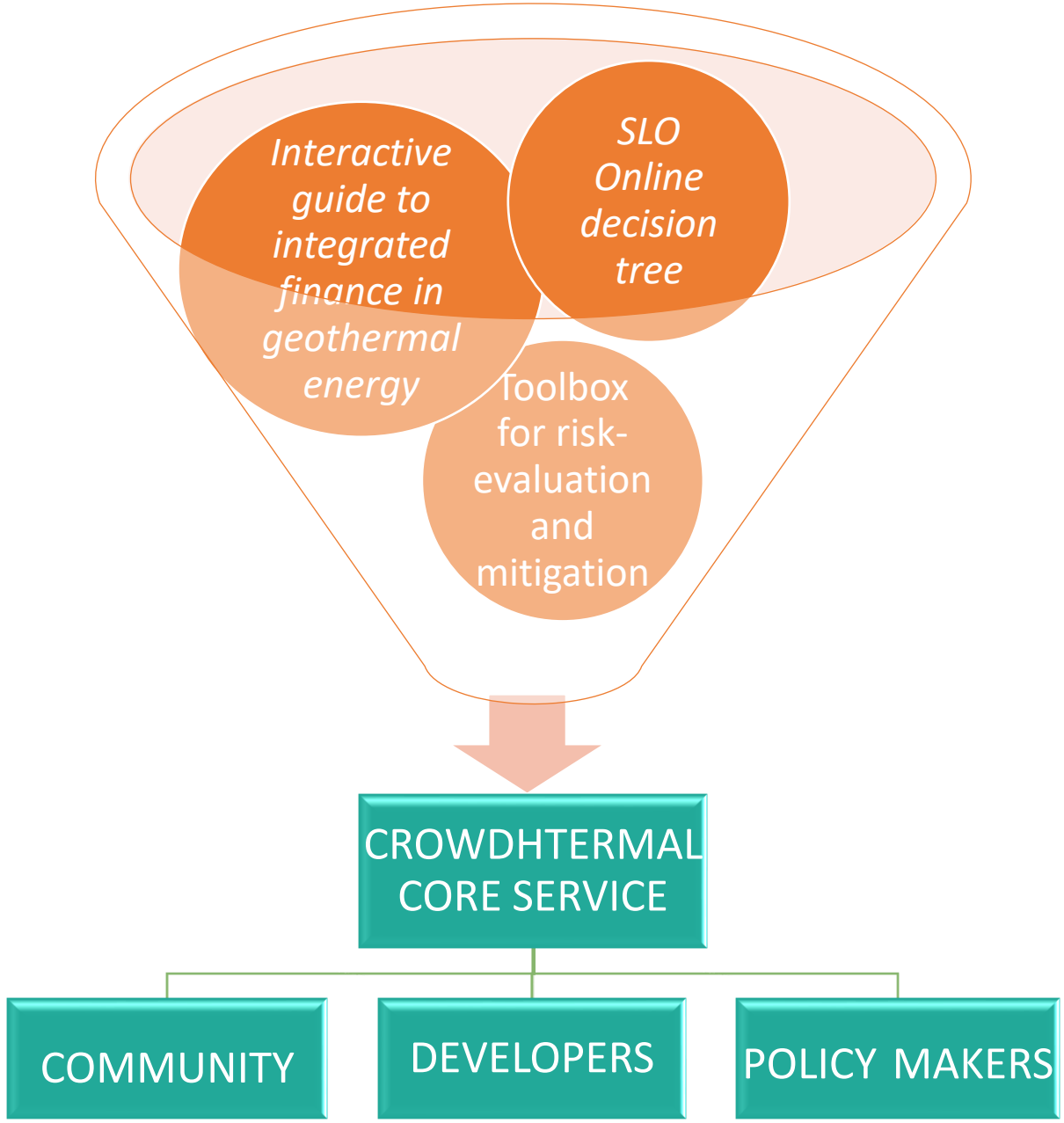

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Technical Level

GeoThermal ENGINEERING

1) Project Definition	2) Exploration	3) Drilling		4) Construction	5) Operation	6) Decommissioning & Post-Closure
		First Well	Resource Development			
• Economic (e.g. FIT) and legal (e.g. mining law) framework • Data mining • Evaluation of existing geoscientific data • Area of interest identification • Securing exploration license	• Acquiring of new geoscientific data, like 3D seismic survey • Evaluation of newly acquired data • Integration with existing datasets • Identification of potential geothermal targets (e.g. structures, faults, aquifers) • Drill site identification • Well path planning • Securing drilling and testing permits	• Drill pad construction • Drilling and completion of the first well • Logging, testing (production and injection test) and sampling • If applicable: well and/or reservoir enhancement	• Drilling and completion of subsequent well(s) • Logging, testing, sampling and if applicable: enhancement • Circulation test • Securing construction permits	• Construction of the plant (power/heating) • If applicable: construction or extension of district heating network • Connection to the grid or district heating network • Securing operation permits	• Power and/or heat production • Maintenance • Monitoring	• Plug and abandon of wells • Decommissioning of the plant • Monitoring of the abandoned wells

Financial Level

Type of capital:						
• Risk-absorbing • Risk-sharing	• Risk-absorbing • Risk-sharing	• Risk-sharing	• Debt	• Debt	• Debt	• Reserves • Risk-absorbing (Government)
Financial risk						
• high	• high	• high	• medium to high	• low	• low	• medium
Capital required						
• low	• medium	• high	• high	• high	• medium	• low

Social Level

• Announcement of the project to the public and relevant stakeholders • Asking for need of information and communication • Asking for interest in financial participation	• Offering regional information markets, topical tables (risks, financing, environmental impacts etc.) • Offering dialogue groups • Offering financial participation opportunities	• Offering site visits of existing projects / video / VR / 3-D presentations • Keeping dialogue groups		• Establishing local office with sufficient consultation times • Keeping dialogue groups	• Operation starting party • "Local energy festival" on a yearly base • Providing operation diary, website showing produced energy / saved CO_2-emissions • Initiating spin-off to other joint energy projects (RES, efficiency)	

Case studies

Hungary

District heating system of Szeged

Spain

Housing cooperatives in Madrid using shallow geothermal energy for heating and cooling

Iceland

Greenhouse heating for food production in the area of Lake Mývatn

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Lessons learnt from crowdfunding renewable energy projects

- For different phases in the development of a project, different types of funding are suitable.
- Research about legal entities and regulations is very important before you start.
- The community is often very interested to be involved in the development of sustainable energy projects, although the level of involvement wanted may differ.

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- CROWDTHERMAL Social Media Platform
  - Best practice campaign
  - Direct uses campaign
  - Alternative funding schemes

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Koekoekspolder

Dutch geothermal best practices case study

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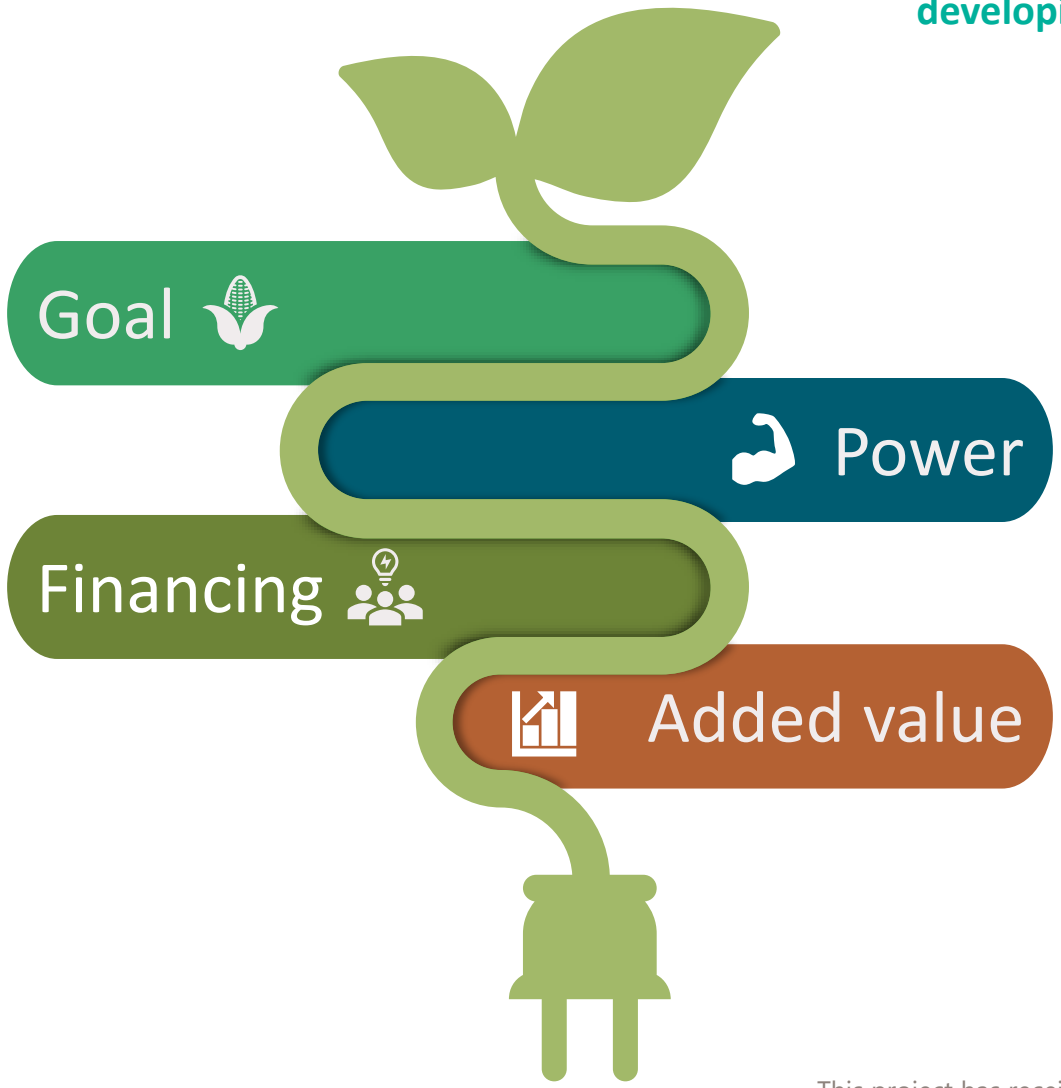
Empowering society into developing geothermal

Grenhouses

In 2010, three professional gardeners expressed the wish to use green energy to heat their greenhouses. Together with local authorities and the province, they kickstarted a geothermal energy system. Nowadays, the local plant produces hot water for the community. Koekoekspolder is an example of best practices for geothermal!

Equity / loans

Phase 1 (2010-2015), around **€10 million** were raised by equity financing from both local community and public authorities. **Phase 2** (currently in development) is being financed by equity ownerships and loans. Both phases 1 and 2 empowered the local community to take actions in geothermal.



Geothermal

In 2012, two wells were completed, producing 7MW (water at 73°C). The system provides hot water to 5 greenhouses and neighbouring households. **Phase 2** of the project will increase the power output enabling to provide even more gardeners with geothermal heat.

Cheap energy

Koekoekspolder phases 1 and 2 not only provide geothermal heating to greenhouses, they also distribute hot water to the local community without emiting CO2.

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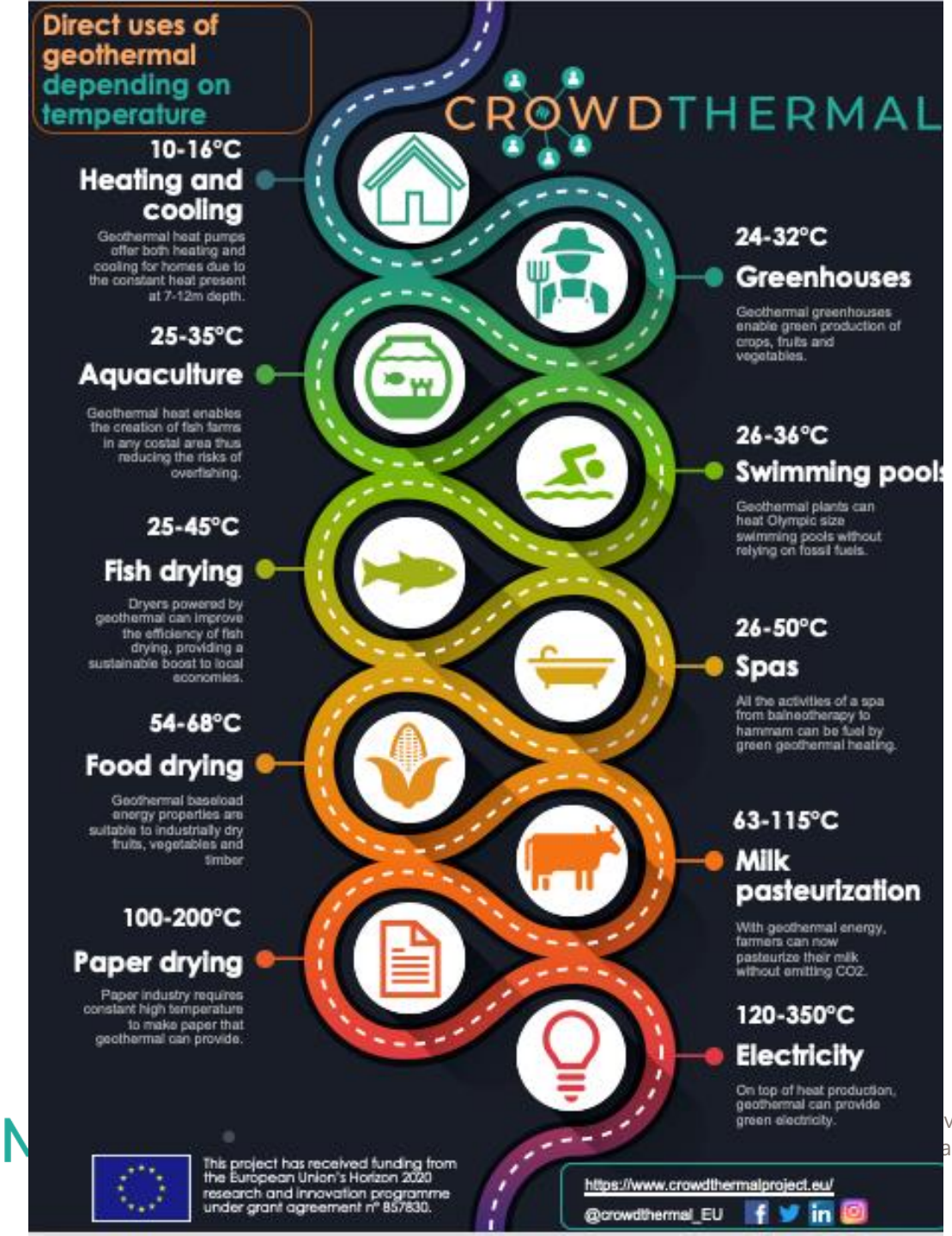

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Conclusions

- GT sources have a huge energy potential in EU
- Sensitising the public would stimulate wider use of the GT source
- Inclusion of SLO increases the transparency of GT projects and linked technologies
- Developing alternative funding schemes would ease the wider application of the GT sources
- Current younger generation needs to be sensitised to the application of the GT sources in the near future (2025-2030)

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Thank you for your attention!

Isabel.Fernandez@eurogeologists.eu

www.crowdthermalproject.eu
@CrowdthermalEU

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