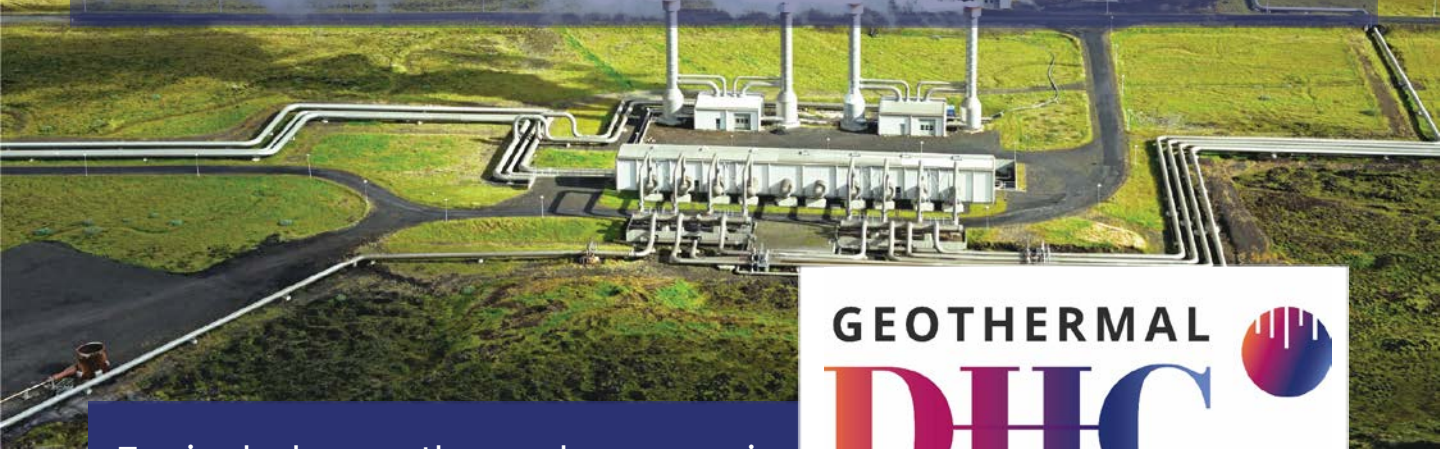


# D14 Summary report on legal and social boundary conditions

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To include geothermal energy in next generation decarbonized heating and cooling grids across Europe requires supportive legislative frameworks with the understanding of social boundary conditions that may either impede or amplify geothermal development.

Legislative frameworks vary widely across European countries but according to experts most do not offer supportive conditions to advance geothermal energy development.

On the other hand, social conditions vary less from country to country. Common important social conditions include energy price, environmental impact and public awareness and access to information.

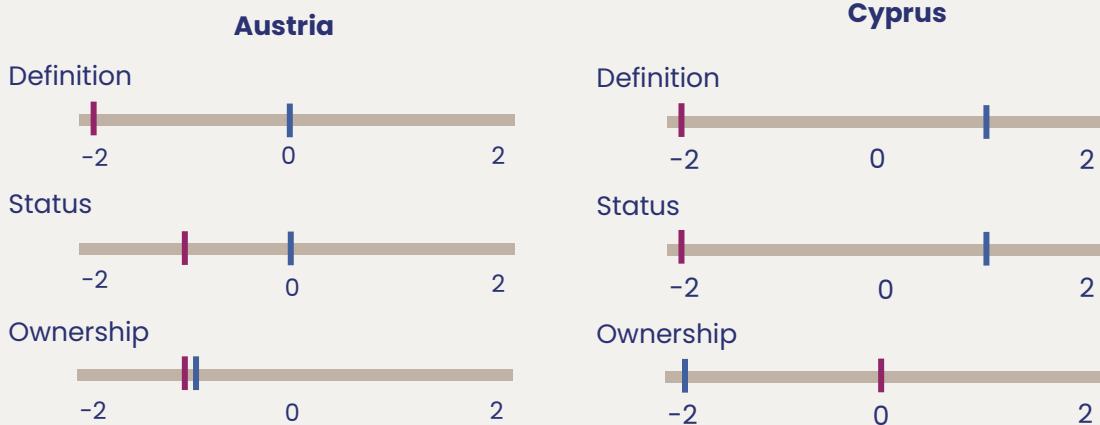


## Legal conditions

Developing geothermal heating and cooling grids requires enabling legislative framework that includes three basic characteristics of geothermal energy:

- **its definition:** how geothermal energy is defined in the law
- **its status:** legislative acts governing geothermal energy and the way it is regulated in the law (e.g. as a mineral or water)
- **its ownership:** legally defined owner of geothermal resource

These three aspects are represented below in terms of their importance and adequacy to support geothermal development in heating and cooling grids in some COST Action countries.



### | Importance

Measures how **relevant** is each existing legislative aspect to the development of geothermal for DHC in a country.

### | Adequacy

Adequacy measures how **sufficient** is each existing legislative aspect to the development of geothermal for DHC in a country.

### | Anchors

-2: very unimportant / insufficient

0: neutral

2: very important / sufficient

**Definition** of geothermal energy is not present in most countries except France, Greece, Poland and Serbia. For Austria we recommend creating a legal definition of geothermal energy that covers the heat carried in water and not the water itself.

In most countries **status** of geothermal energy is regulated either by Water laws (Austria, Cyprus, Estonia) or Mining laws (France, Greece, Poland, Serbia, Spain).

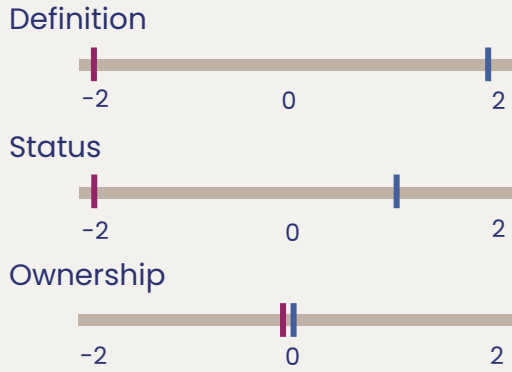
**Owner** of geothermal resource varies from country to country. It can either belong to the state (France, Greece, Poland, Serbia), the landowner (Austria, Cyprus), or the public (Spain).

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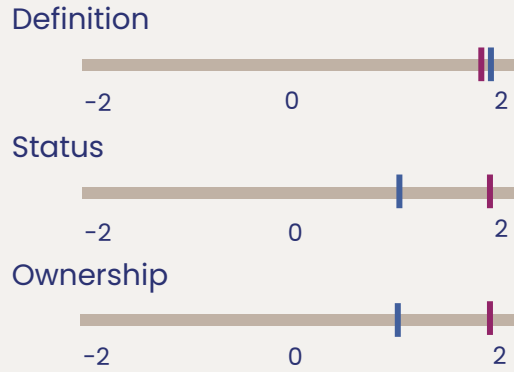
March 2024

## Legal conditions

### Estonia



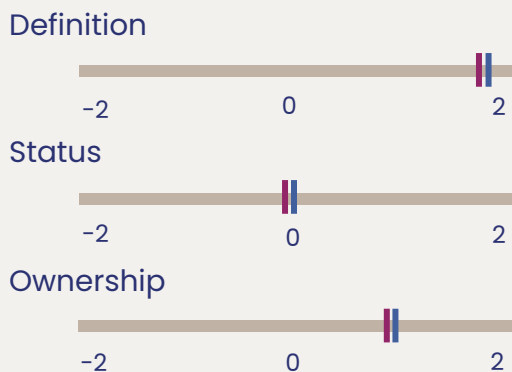
### France



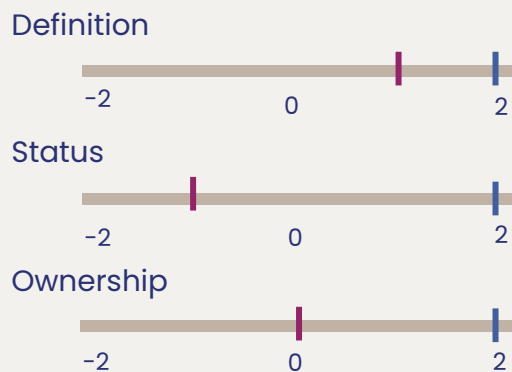
In most countries **definition, status** and **ownership** of geothermal energy are not adequate to support the development of this energy source, although they are deemed important.

As per the findings of the survey, France and Greece are the only two countries where the current legislative frameworks adequately support geothermal energy development in heating and cooling grids.

### Greece



### Poland



## Legal and social conditions

### Serbia

Definition



Status

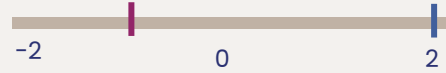


Ownership



### Spain

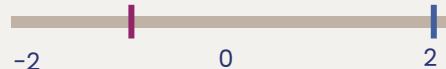
Definition



Status



Ownership



In order to make the existing geothermal legislation more supportive and efficient the following **expert suggestions** are made:

- **create one-stop-shops**
- **introduce a fair concession system**
- **simplify administrative documentation and permitting processes**
- **train and educate DHC designers and authorities**

In general, there are four key stakeholders involved in the inclusions of geothermal energy in decarbonized heating and cooling grids: **policy makers, municipality, service providers, and customers**. Certain social boundary conditions are relevant for each stakeholder group. These conditions could be e.g., of political, economic, environmental or educational nature.

These boundary conditions can also be separated into **social challenges** – conditions that complicate the introduction and development of geothermal energy in heating and cooling grids – and **social promoters** – conditions that help boost the offtake of geothermal energy.

Examples of some social boundary conditions:

- energy and system safety
- system lifespan and sustainability
- energy independence and diversification
- investment and operational costs
- final energy price
- insurance schemes
- tax implications
- private-public partnerships
- public awareness and access to information
- geological and exploration data

## Legal and social conditions

Below are key social **challenges**, promoters, or **both** for each stakeholder group:



Policy maker  
energy  
independence  
climate targets  
final energy price



Municipality  
consensus of political  
parties  
final energy price  
tax implications  
land use  
environmental impact



Service provider  
final energy price  
insurance schemes  
investment costs  
tax implications  
environmental impact  
system sustainability



Customer  
final energy price  
public awareness  
public access to  
information

**Final energy price** represents both the most important challenge and promoter for all stakeholder groups involved in the inclusion of geothermal energy in decarbonized heating and cooling grids.

**Environmental impact**, mainly viewed as a promoter, comes as second most important social boundary condition relevant for both municipalities and service providers.

Other common important conditions include **public awareness and access to information**, and **tax implications**.

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***Oftentimes one condition leads to another and it is hard to differentiate between solutions that will aim only at one social challenge. This speaks to the interconnectedness of social boundary conditions and that they have to be approached in a holistic way.***

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**The following solutions** to overcome social barriers are suggested by experts:

- Reduce taxes and subsidize ESCOs
- Improve subsidy schemes and tax incentives
- Advocate for energy price transparency
- Introduce insurance schemes
- Prohibit heavy lobbying for gas
- Increase capacity building
- Address geological uncertainty
- Promote media attention to geothermal achievements
- Promote energy benefits to civil society and policy makers
- Offer training for and by the municipality



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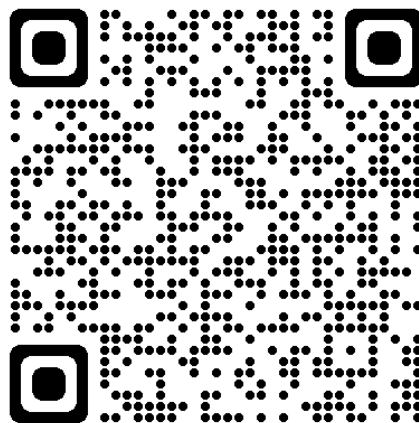


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This report is based on the outcome of interviews with experts from countries participating in the COST Action, which was collected during the COST Action Meeting in Cyprus on 11-12 March, 2024.

Experts participating in the surveys that fed into this deliverable included representatives from Austria, Cyprus, Estonia, France, Italy, Latvia, Lithuania, North Macedonia, Norway, Serbia, and Spain.

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