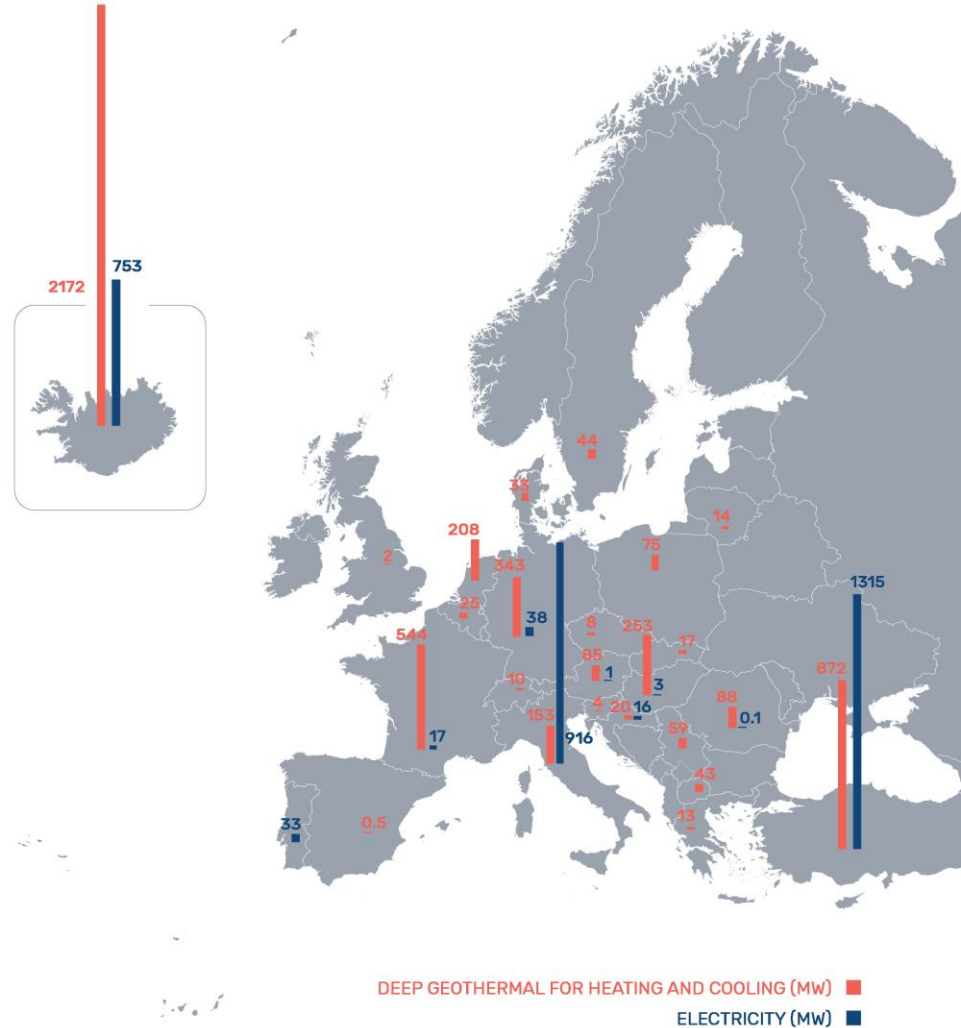


# EGEC Geothermal Market Report 2018

IEA GIA, Gran Canaria, 8 April 2019  
Thomas Garabetian, EGEC Policy Officer

# Deep geothermal in Europe: market overview



## Two important milestones:

- 1) More than 3 GWe installed
- 2) More than 300 Geothermal DH in operation

...and soon 2 millions geothermal HPs !

## Geothermal electricity in Europe:

- 3.1 GWe capacity
- 10% average annual growth rate over the last 5 years

## Geothermal district heating in Europe:

- 5.1 GWth capacity



# Electricity // Summary of key conclusions

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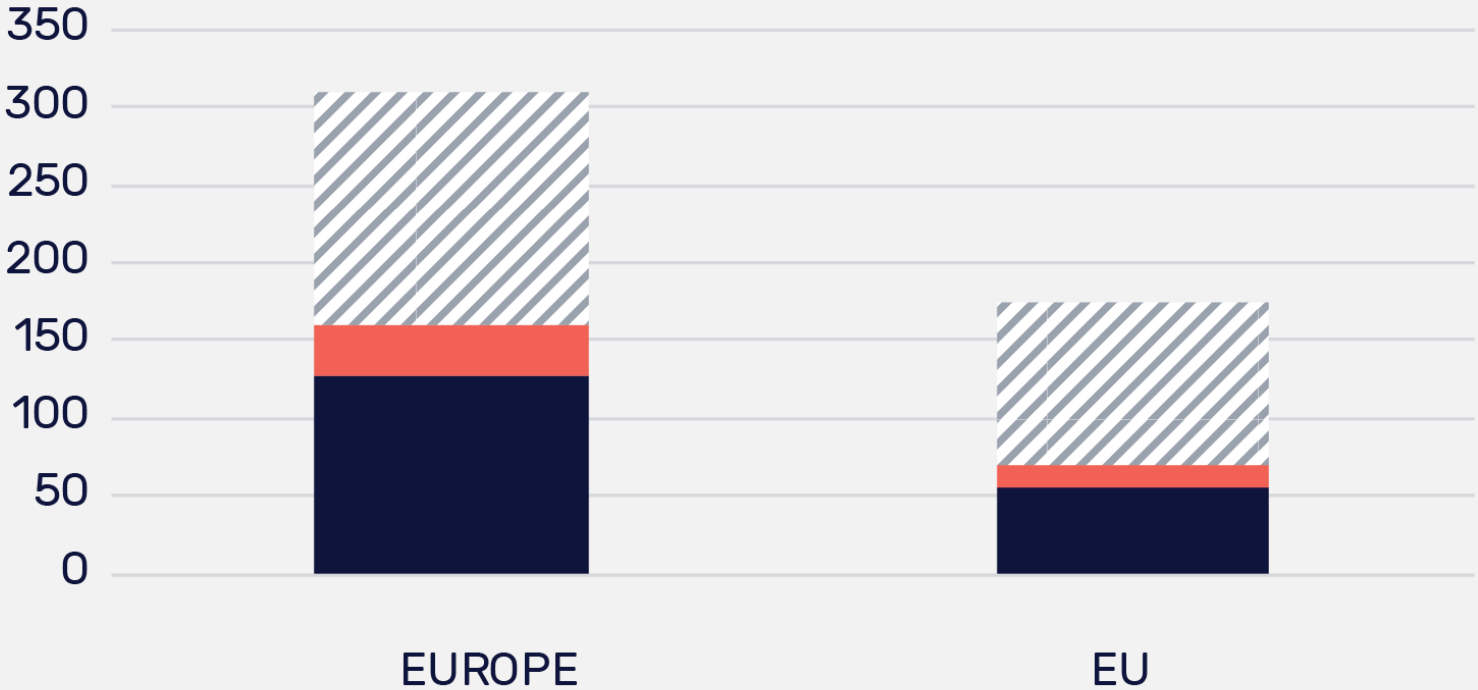
## State of Play in 2018

- Europe passes the 3 GWe threshold for installed capacity
- Sustained growth rate of 10%/year
- 2018: 352 MWe added

## 127 Geothermal Power Plants

- 13 new power plants in 2018 in Turkey, 1 new in Iceland
- Croatia becomes a geothermal electricity producer

# Number of power plants in Europe in 2018

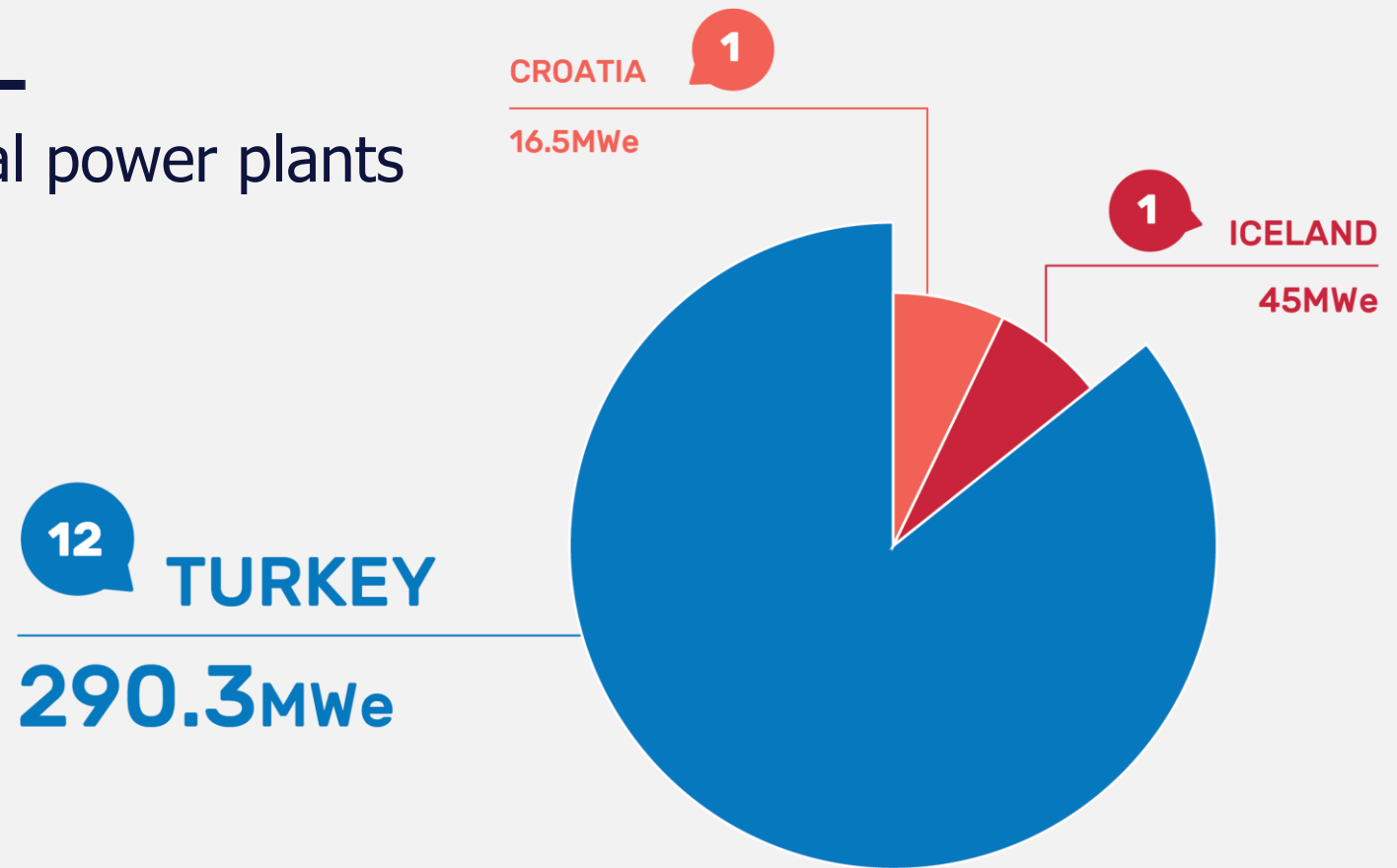


■ In operation    ■ Under development    ▨ Under investigation

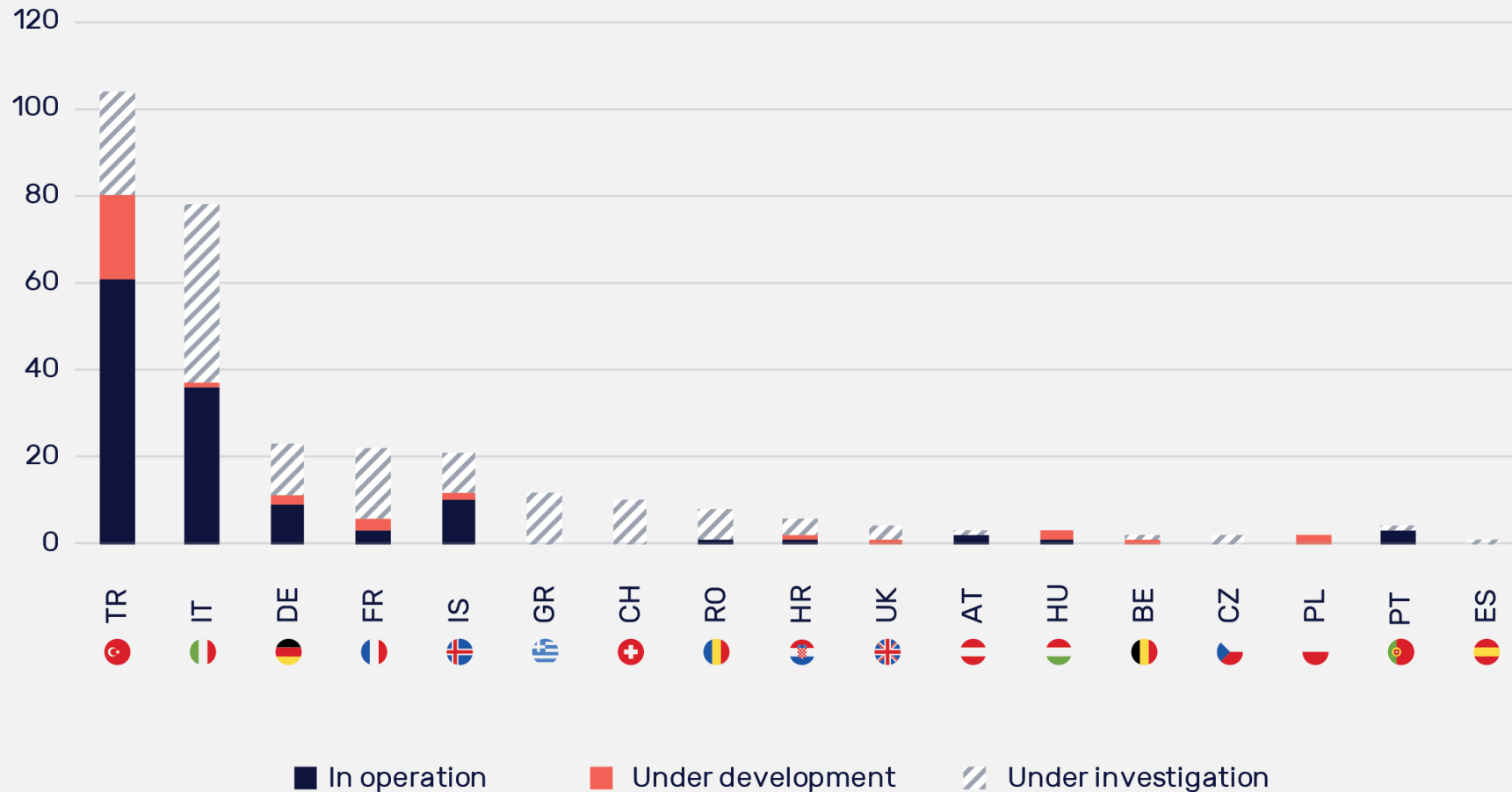


# New installed capacity in 2018 by country

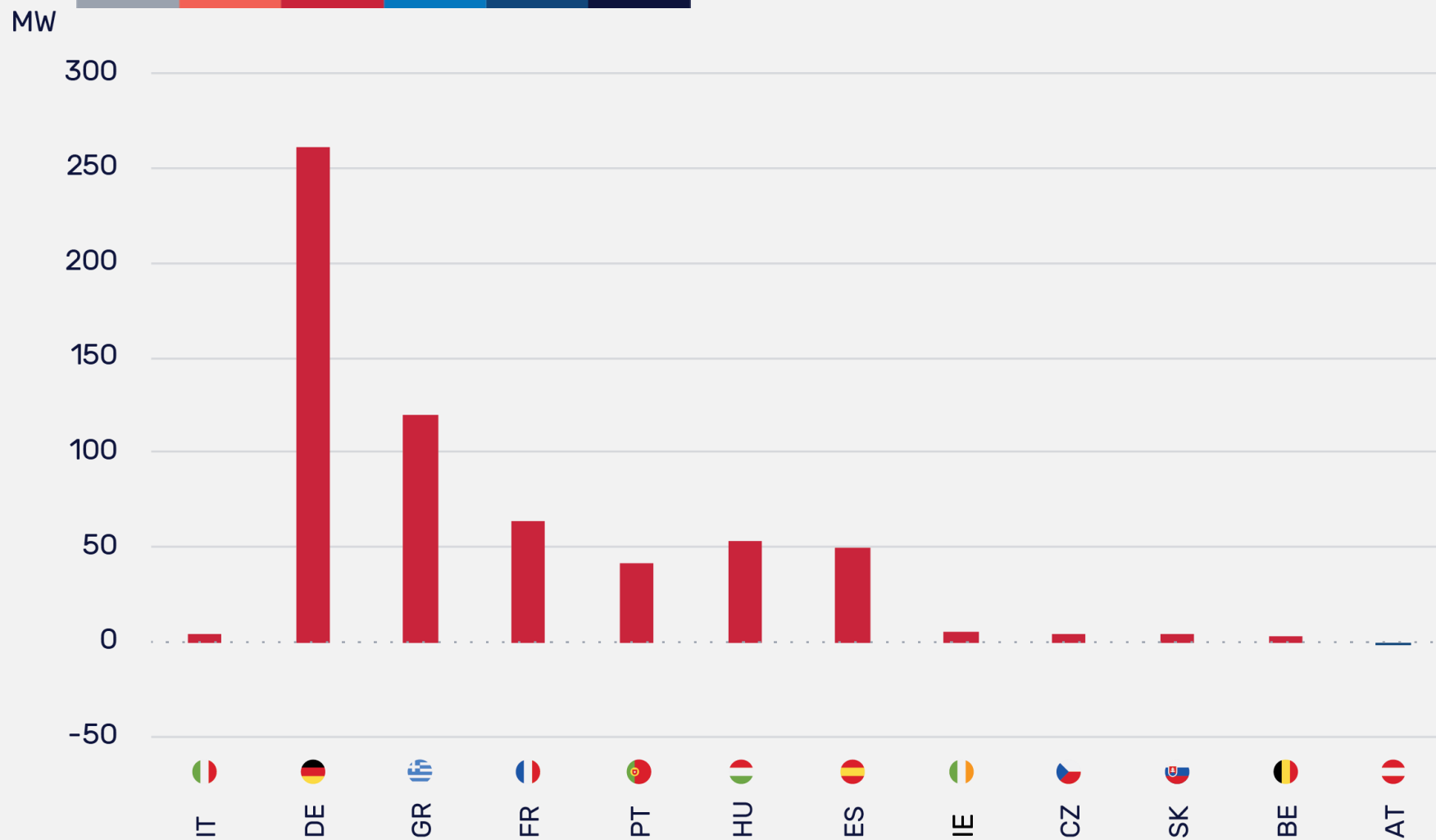
And number of geothermal power plants



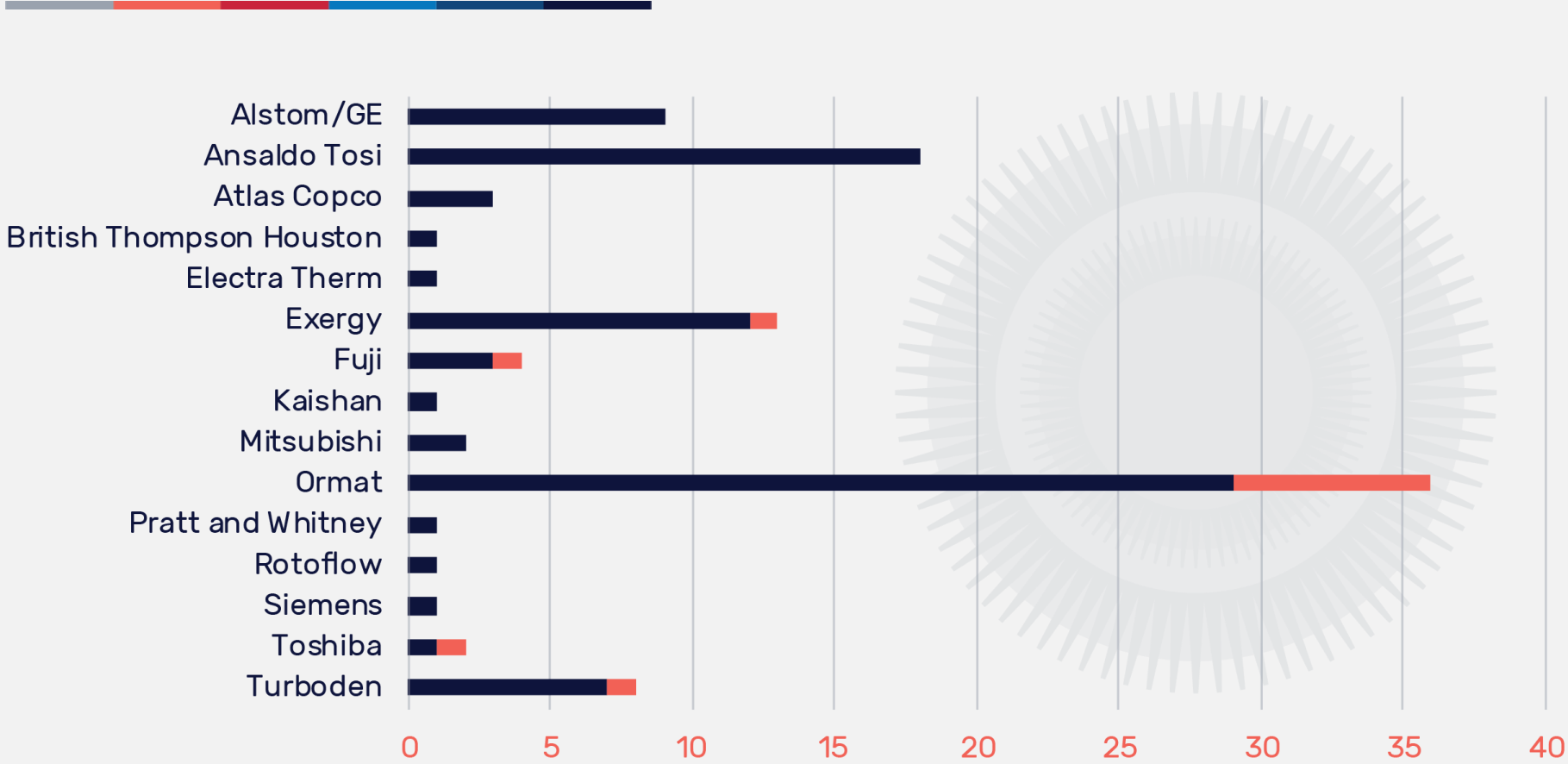
# Number of geothermal power plants per country



# Gap to achieving the geothermal electricity 2020 target in NREAPs (MWe)



# Trends in Geothermal turbines: Installed turbines per manufacturer

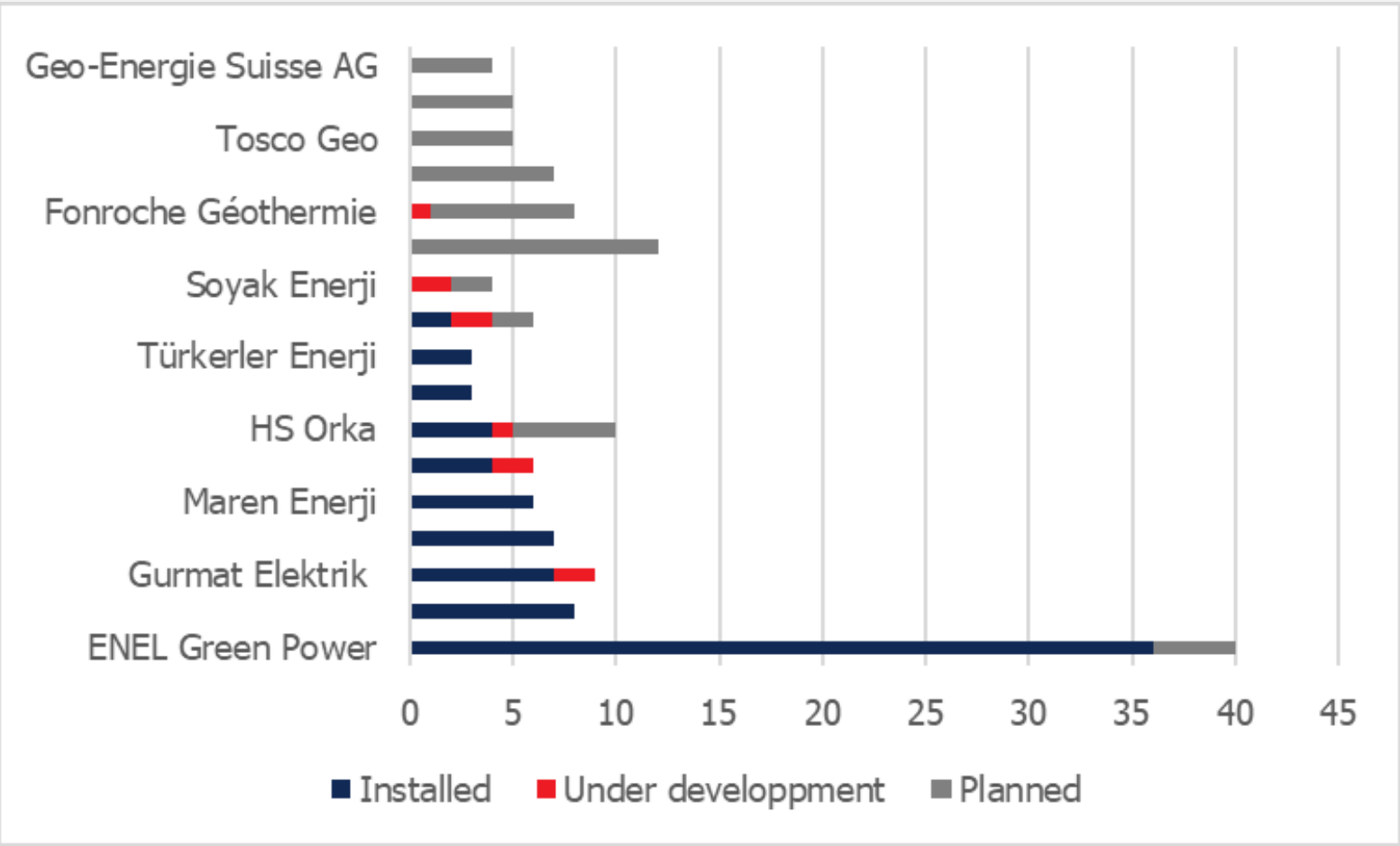


■ NEW IN 2018





# Main operators geothermal power plants in Europe



# District heating // Summary of key conclusions

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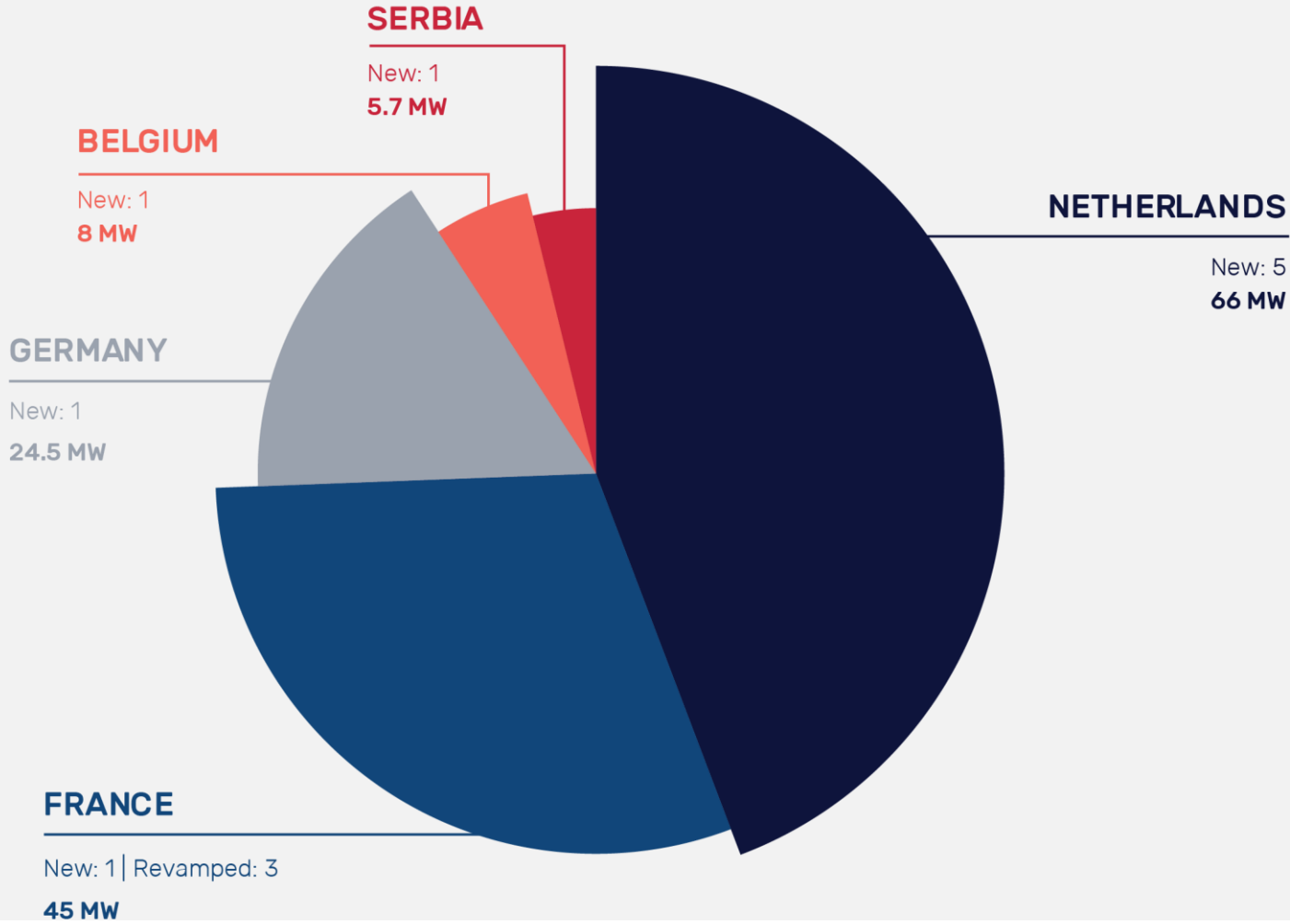
## State of Play in 2018

- Over 5 GWth of geothermal DH
- 12 new or renovated plants over the last year, 150MWth

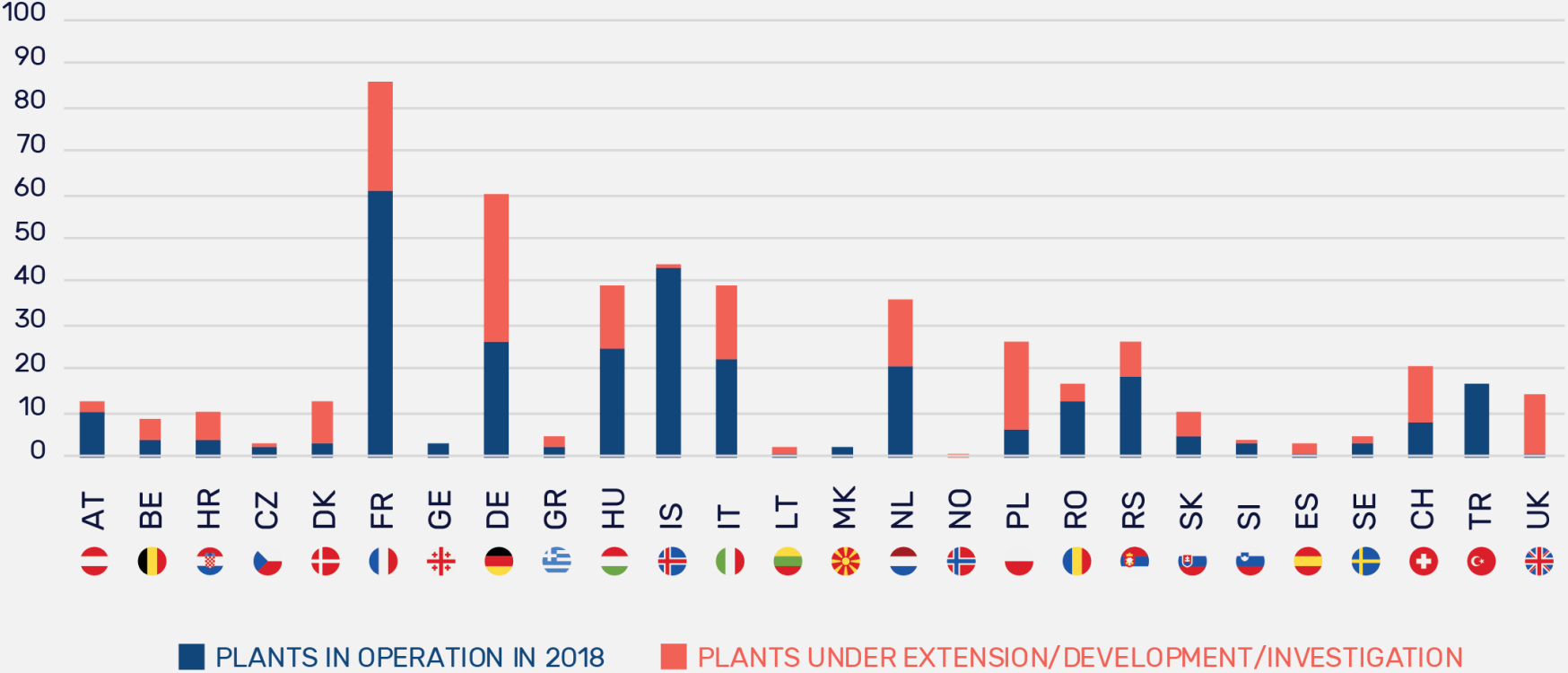
## 300 Geothermal DH Plants

- 5 new project commissioned in the Netherlands
- 1 new and 3 renovated plants in France
- 1 new project in Serbia
- 1 new project in Belgium
- 1 new project in Germany

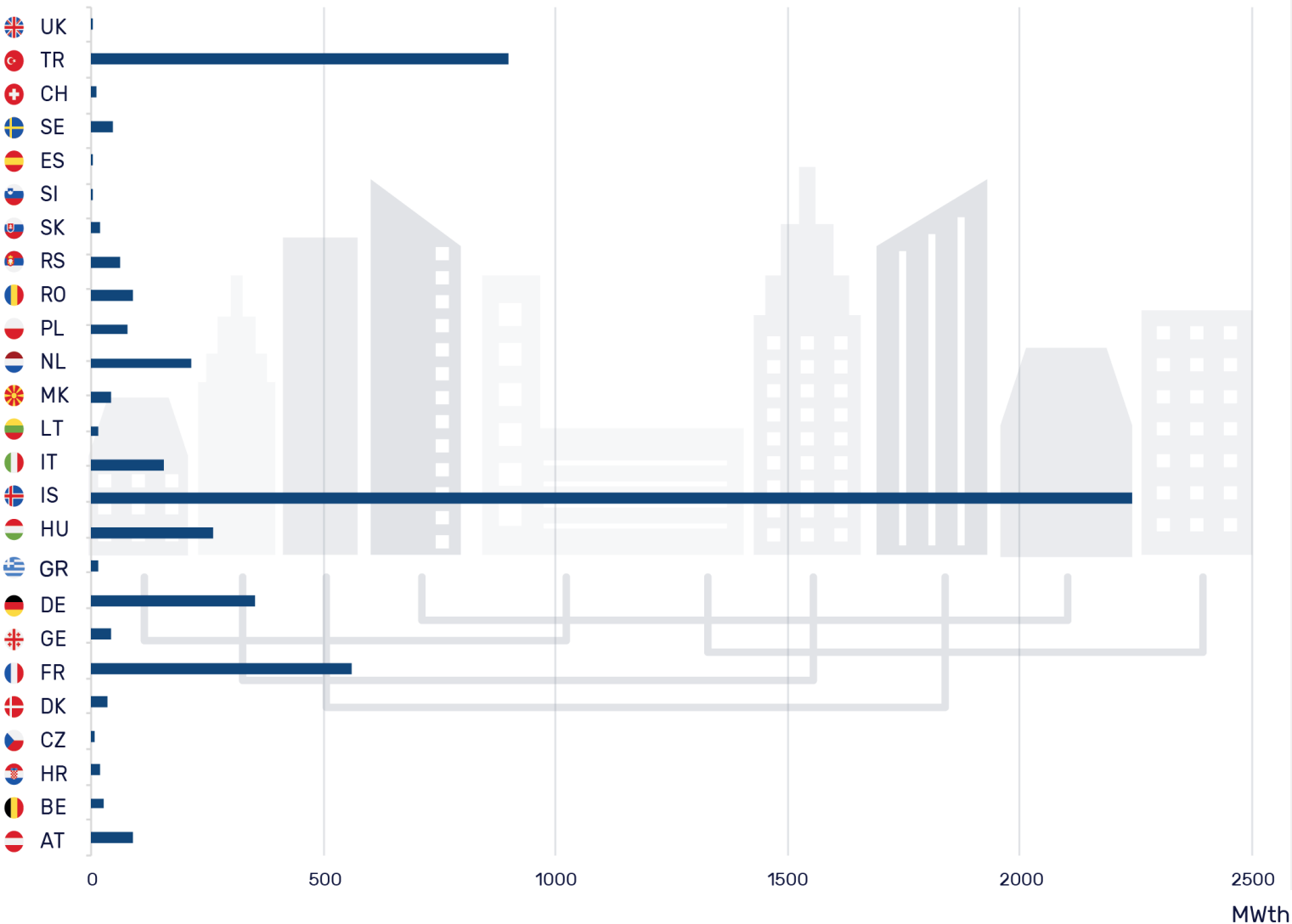
# New plants for deep geothermal for heating and cooling in 2018 (capacity and number)



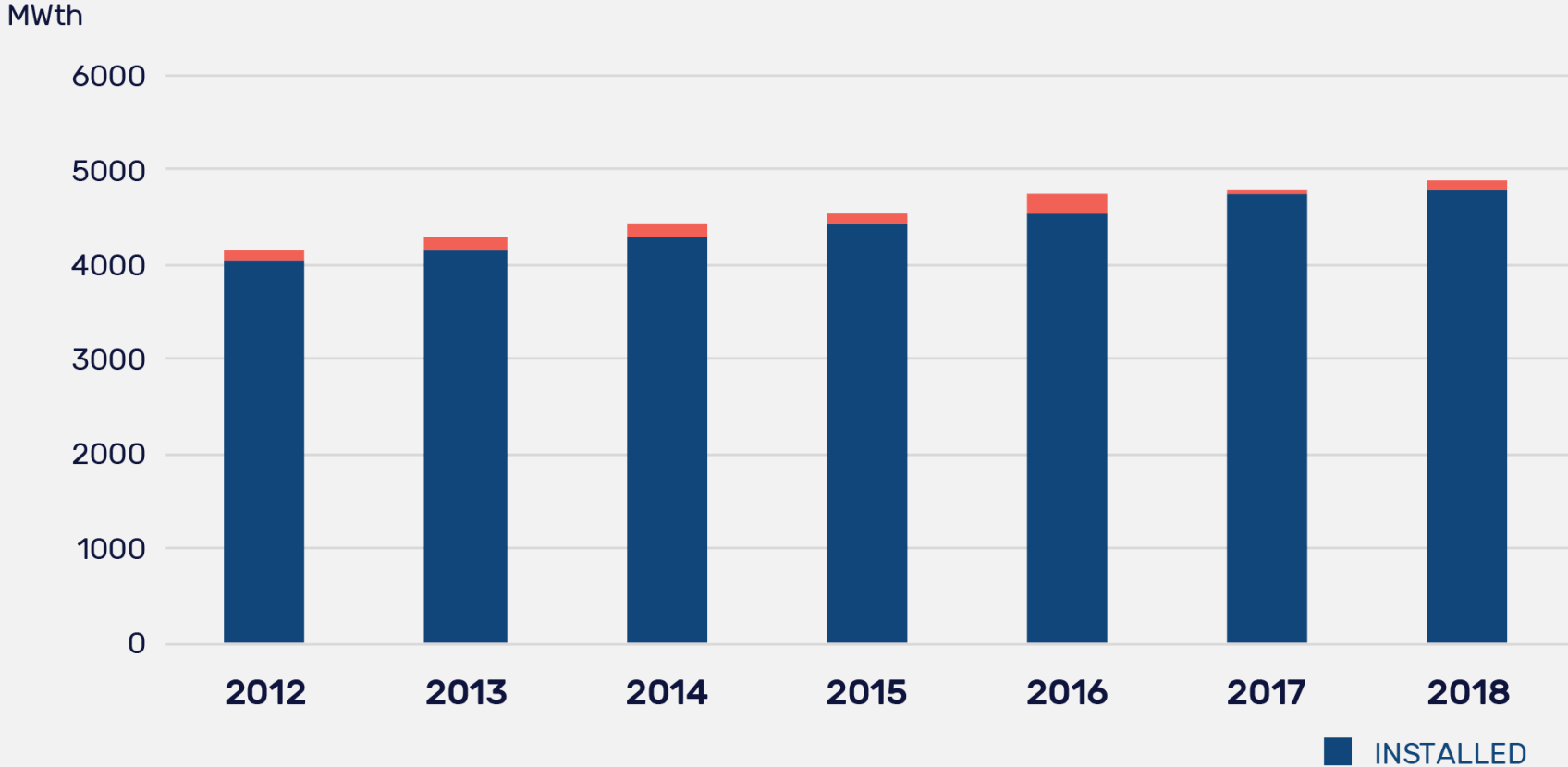
# Number of GeoDH plants in operation and under development-investigation per country



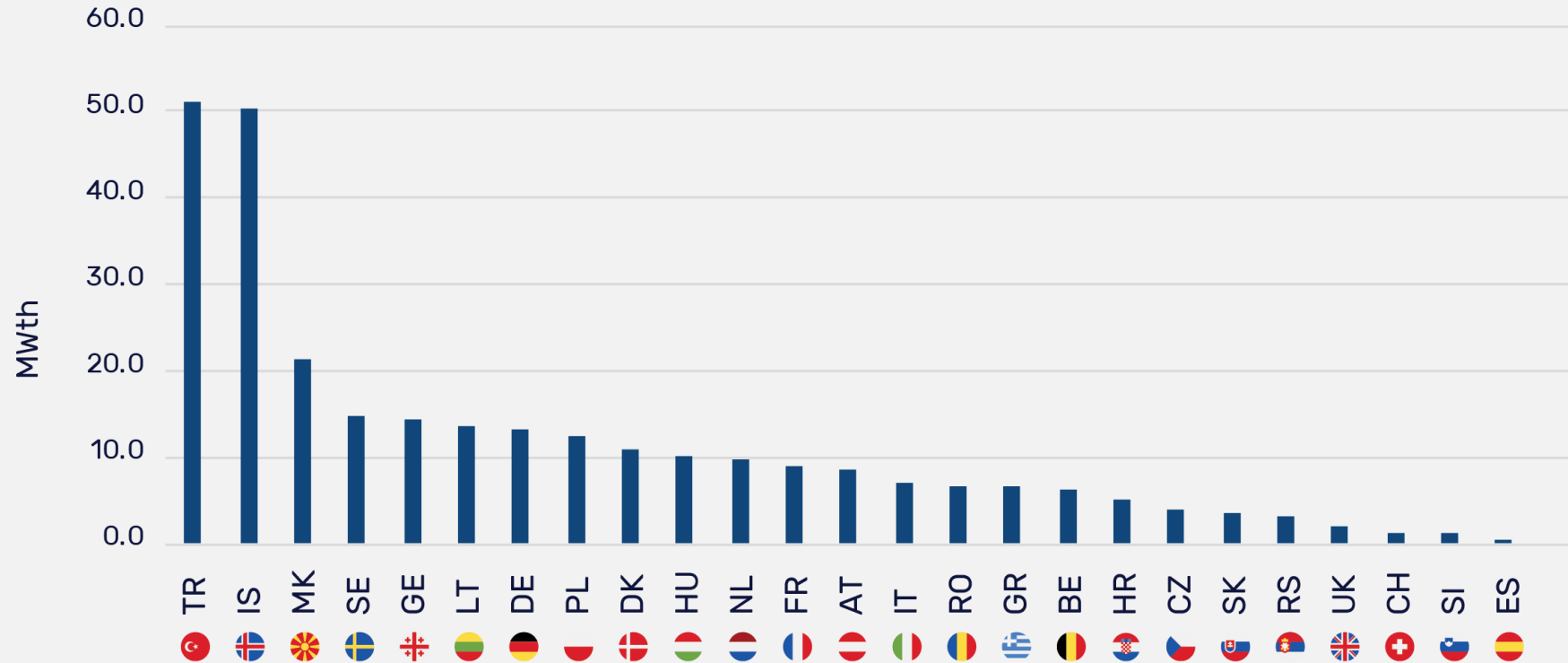
# Deep geothermal for heating and cooling capacity per country (MWth)



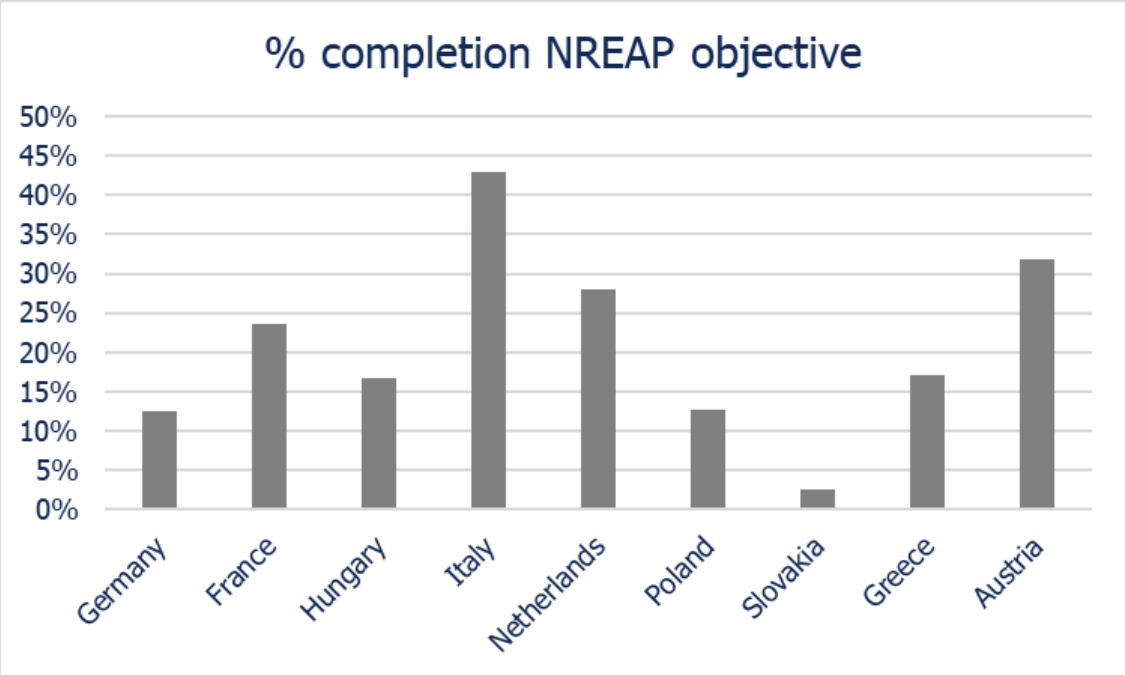
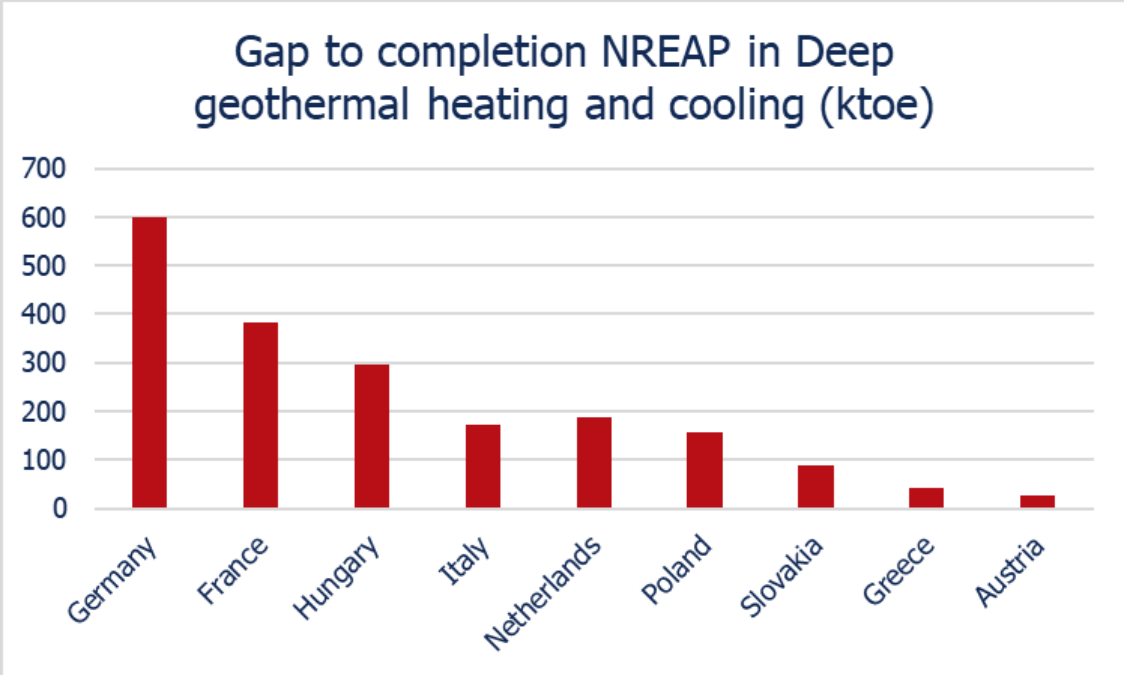
# New capacity of deep geothermal for heating and cooling per year (MWth)



# Average size of deep geothermal heating and cooling plant per country

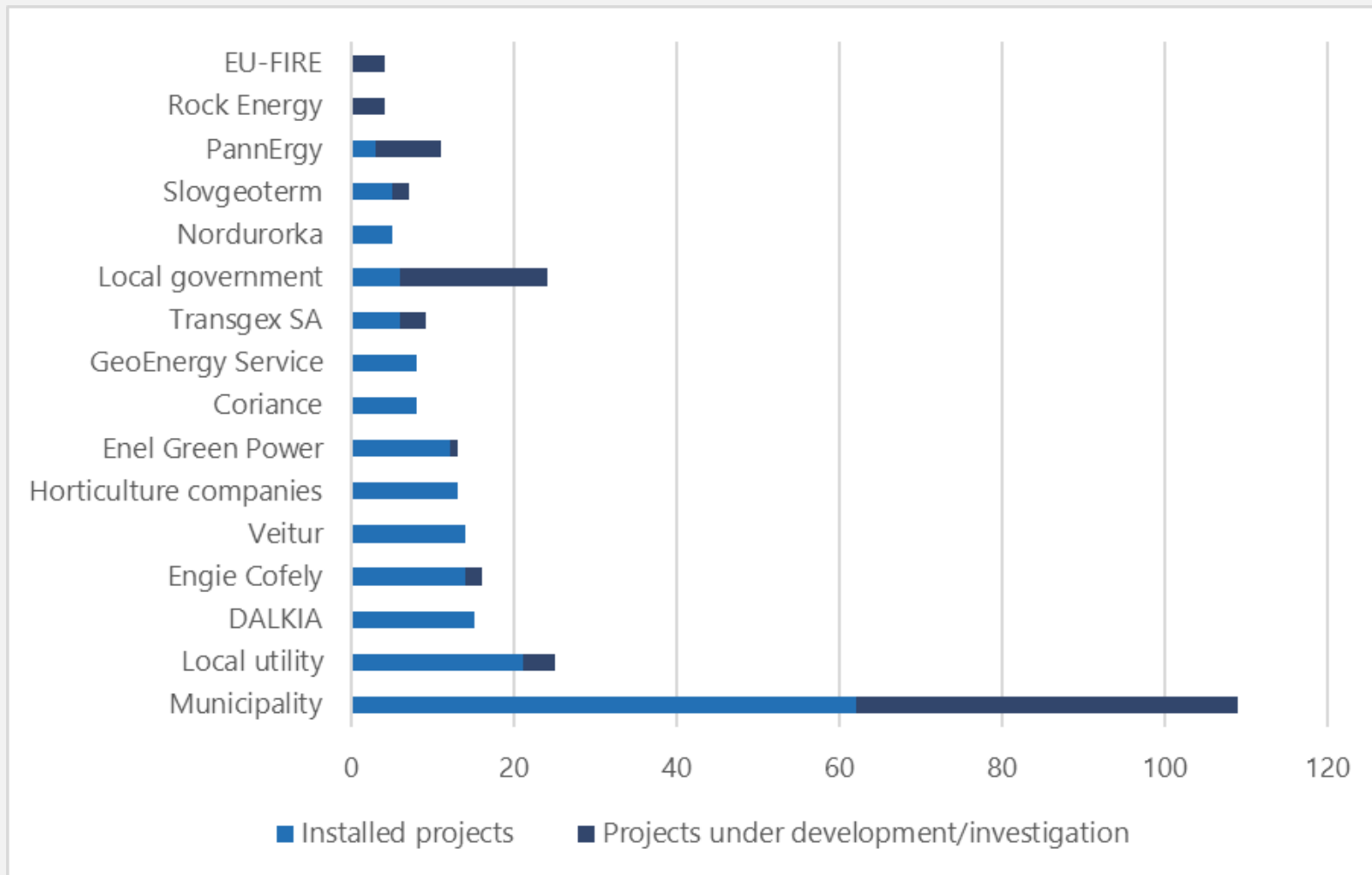


# Progress to NREAPs in Deep geothermal H&C





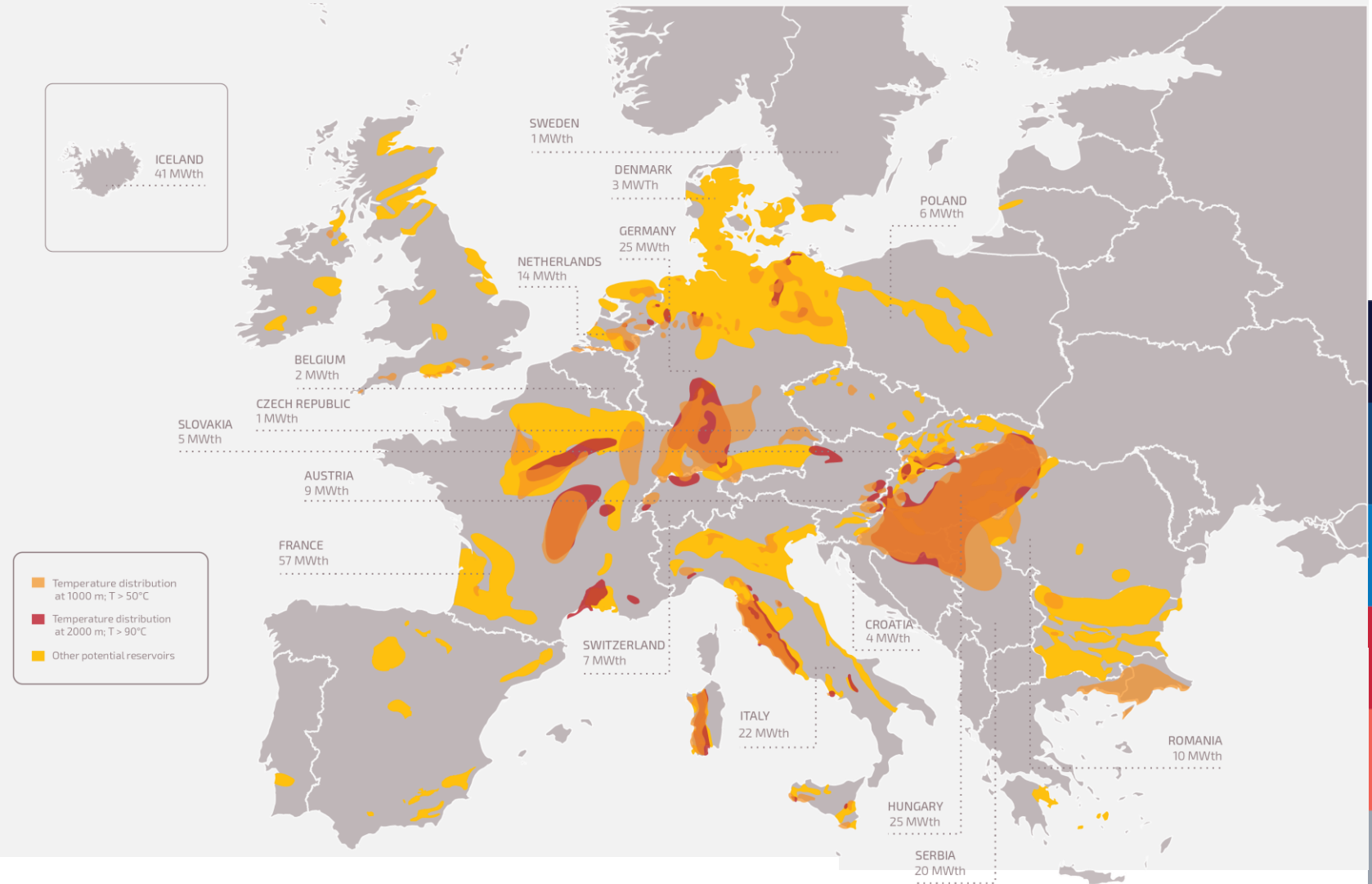
# Main developers/operators of geothermal district heating in Europe



# More than 25% of the EU population lives in areas directly suitable for geothermal district heating

Map of areas suitable for geoDH networks and actual geoDH installed capacity.

Source: ETIP-DG, adapted from GEODH and EGEC market report



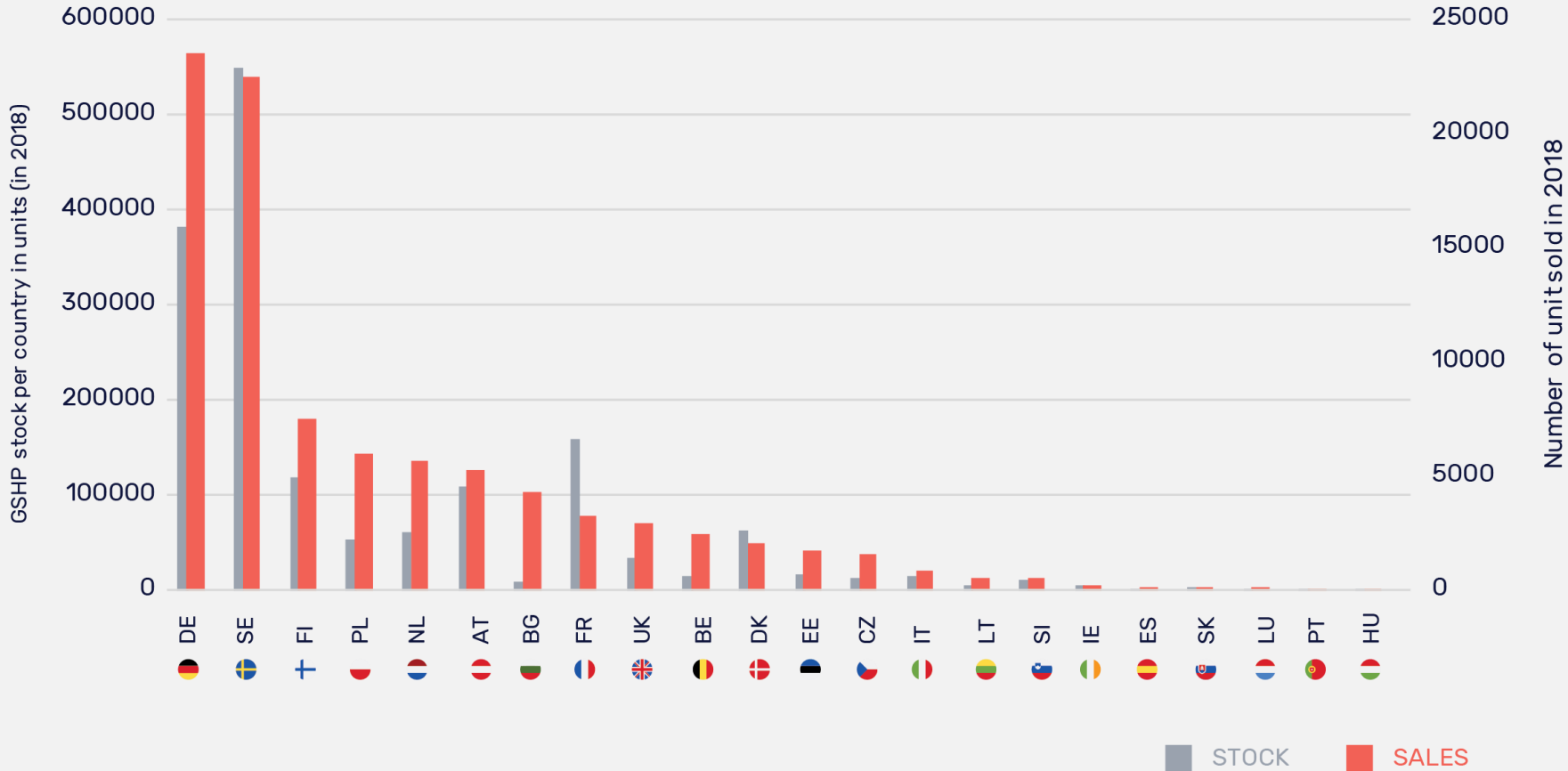
# Shallow geothermal // Summary of key conclusions

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## State of Play in 2018

- Total Installed Capacity in Europe: ca.23.000 MWth
- More than 1.9 million units

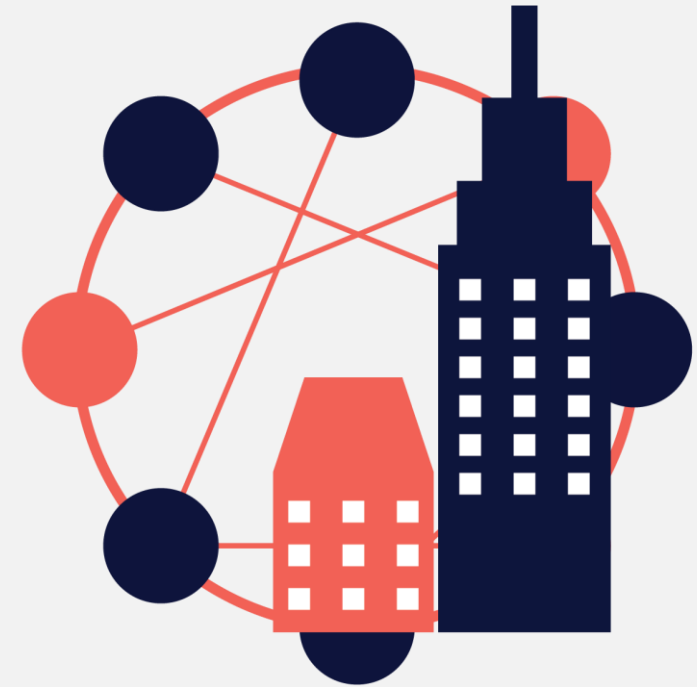
# Stock and sales geothermal heat pumps



# Supplying heat & power to companies

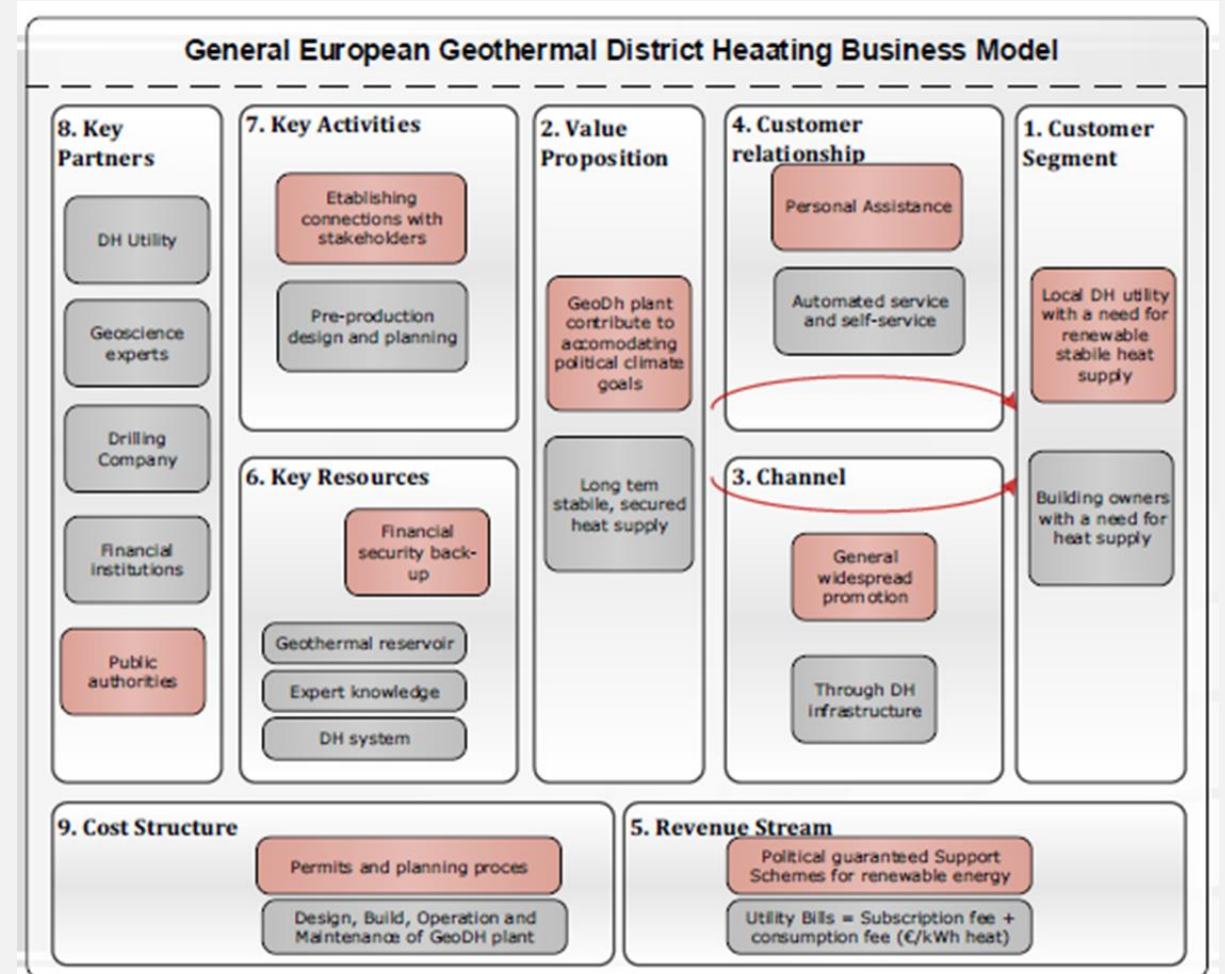
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- **CORPORATE** (physical and virtual) PPA (also to cooperatives and through networks)
- **PPP & JOINT VENTURES**: example of ECOGI (France)
- **PROJECT DEVELOPERS**: example of greenhouses in Netherlands

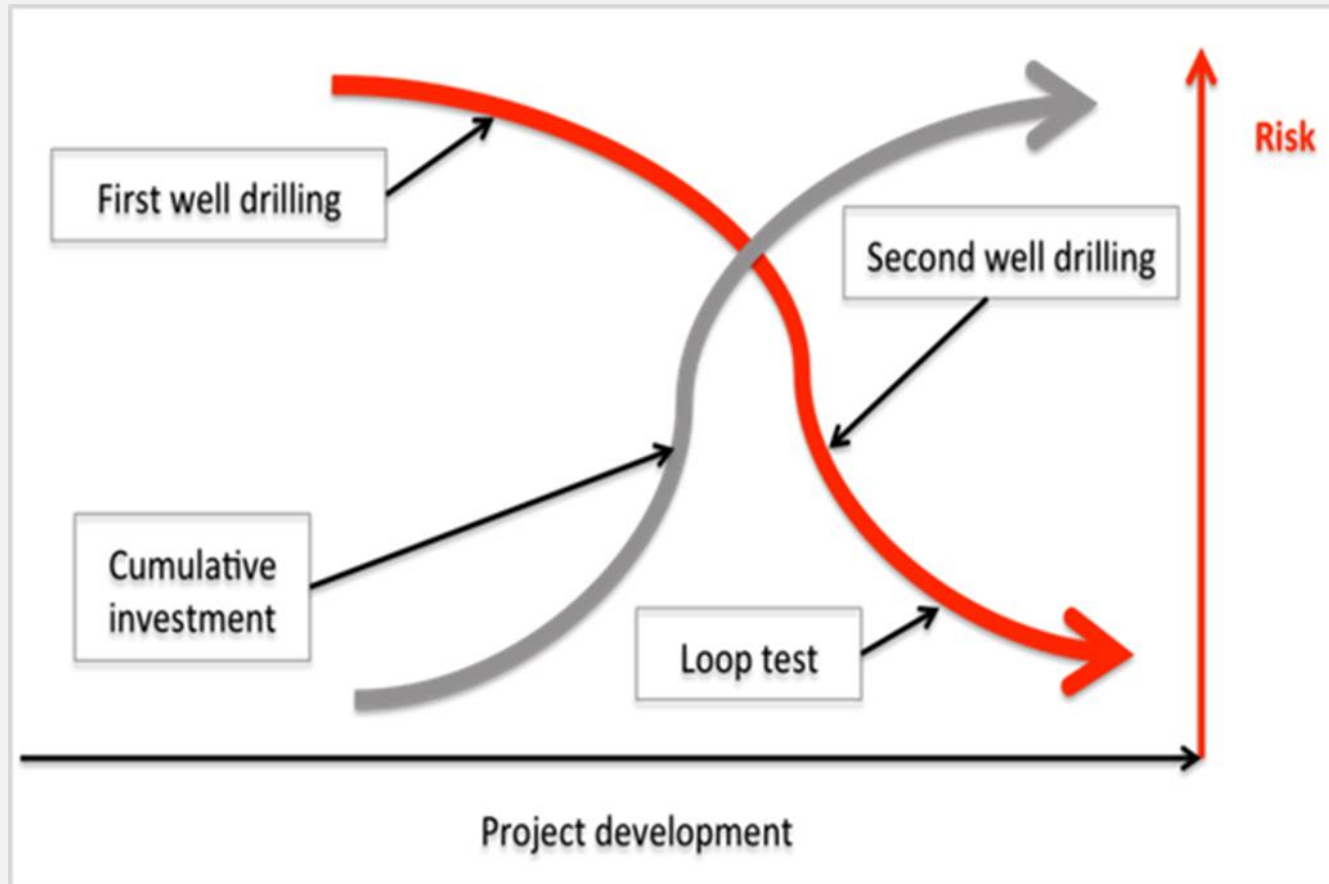


# Challenges

- Demand for Heat supply
- Firmness of electricity supply



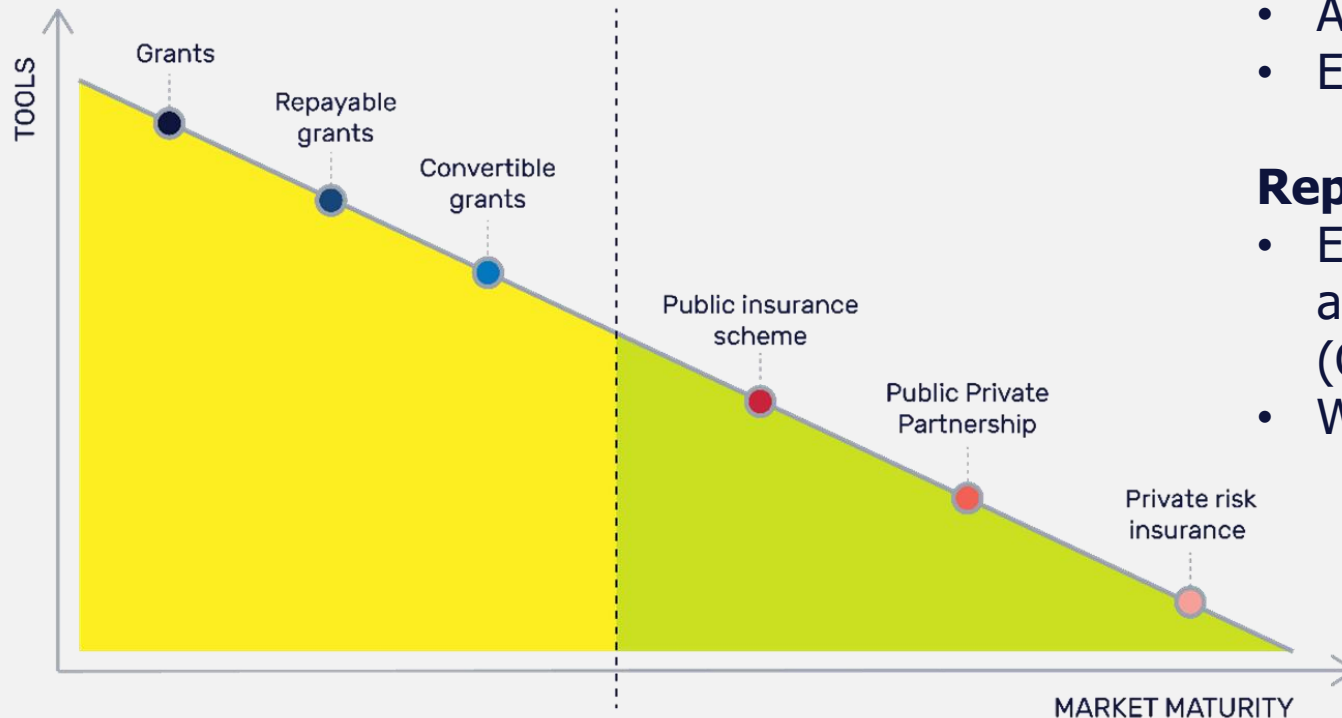
# Risks in investments



## Two important news:

- **New scheme established in 2018 in Denmark and in Flanders (Belgium)**
- **New scheme accounted for 2019 in Walloon region (Belgium)**

# The GEORISK project



## Target countries in Europe

- Assess transition in FR, DE, TR, CH
- Establish new schemes in HU, PL, GR

## Replication in

- Europe: such as transition in Denmark, Belgium and the Netherlands + New in Croatia, Spain (Canaries Islands)
- Worldwide: transition in Chile, Kenya & Mexico

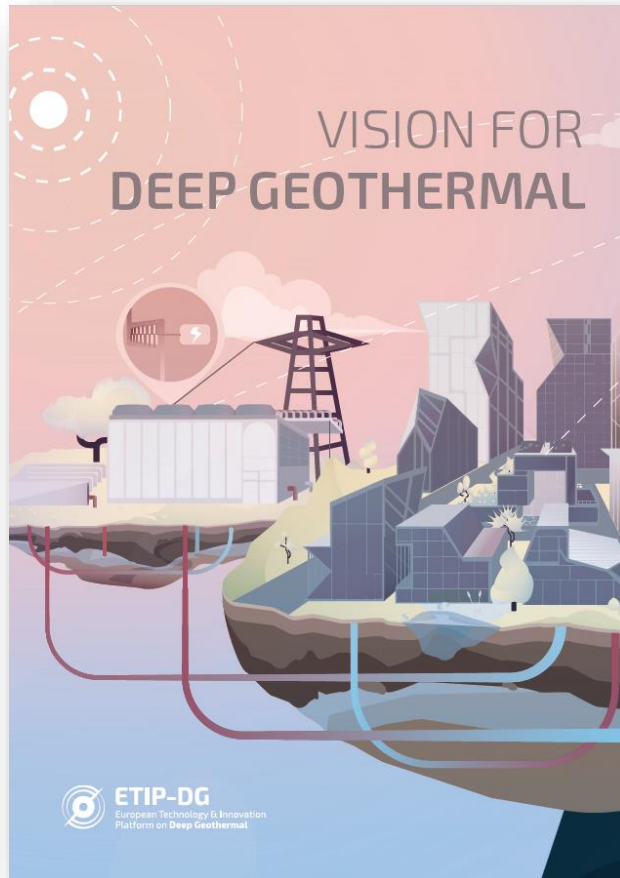


This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No [818232 — GEORISK]





# About the Vision



This VISION looks toward **the future of Deep Geothermal energy development** by 2030, 2040, 2050 and beyond, and highlights the great potential of untapped geothermal resources across Europe. After an **Introduction & Overview** the document briefly describes the **Actual Status of geothermal development** and the VISION's aim for

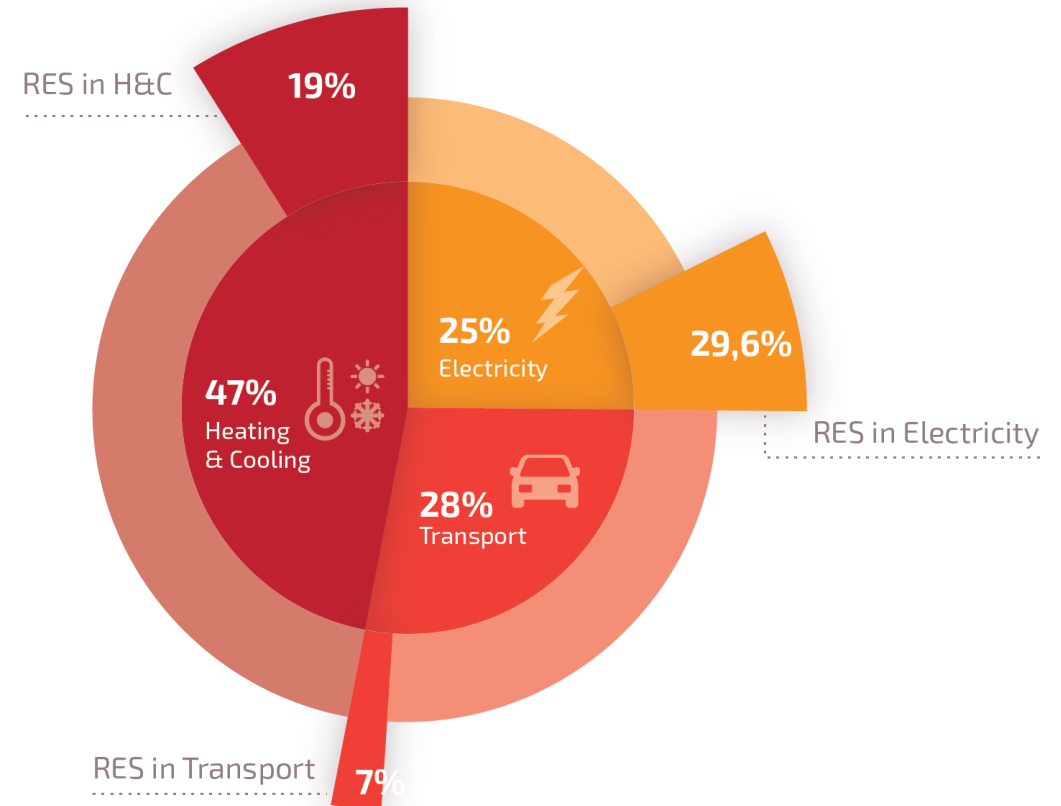
- > **Unlocking geothermal energy**
- > **Increasing the Social welfare in Europe**
- > **Novel technologies for full and responsible deployment of geothermal potential**

# Rising to the Vision

Our VISION is to cover

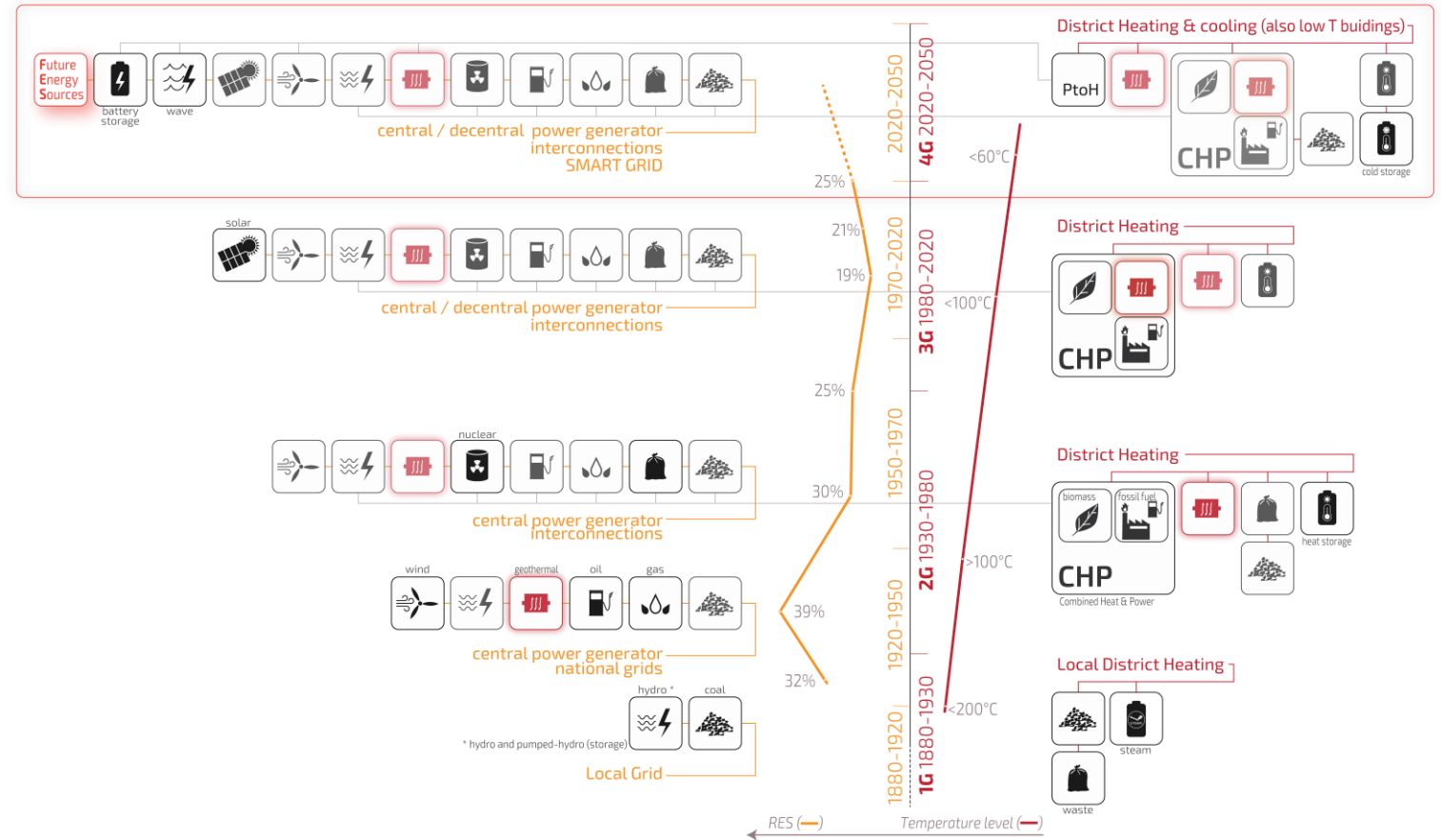
- > A significant part of **domestic heat demand** and
- > a large part of **electrical power demand** in Europe by geothermal energy.

This includes taking the maximum advantage offered by the flexibility of geothermal production, providing large **centralized** as well as domestic and **decentralized** small scale options.



# Unlocking Geothermal Energy: Heat development

- > Operative temperatures of the DHC network can be reduced
- > By demand site management or by thermal energy storage it will be possible to balance heat demand and supply in a DH network.
- > Cascade applications
- > CHP



Evolution of power generation and district heating

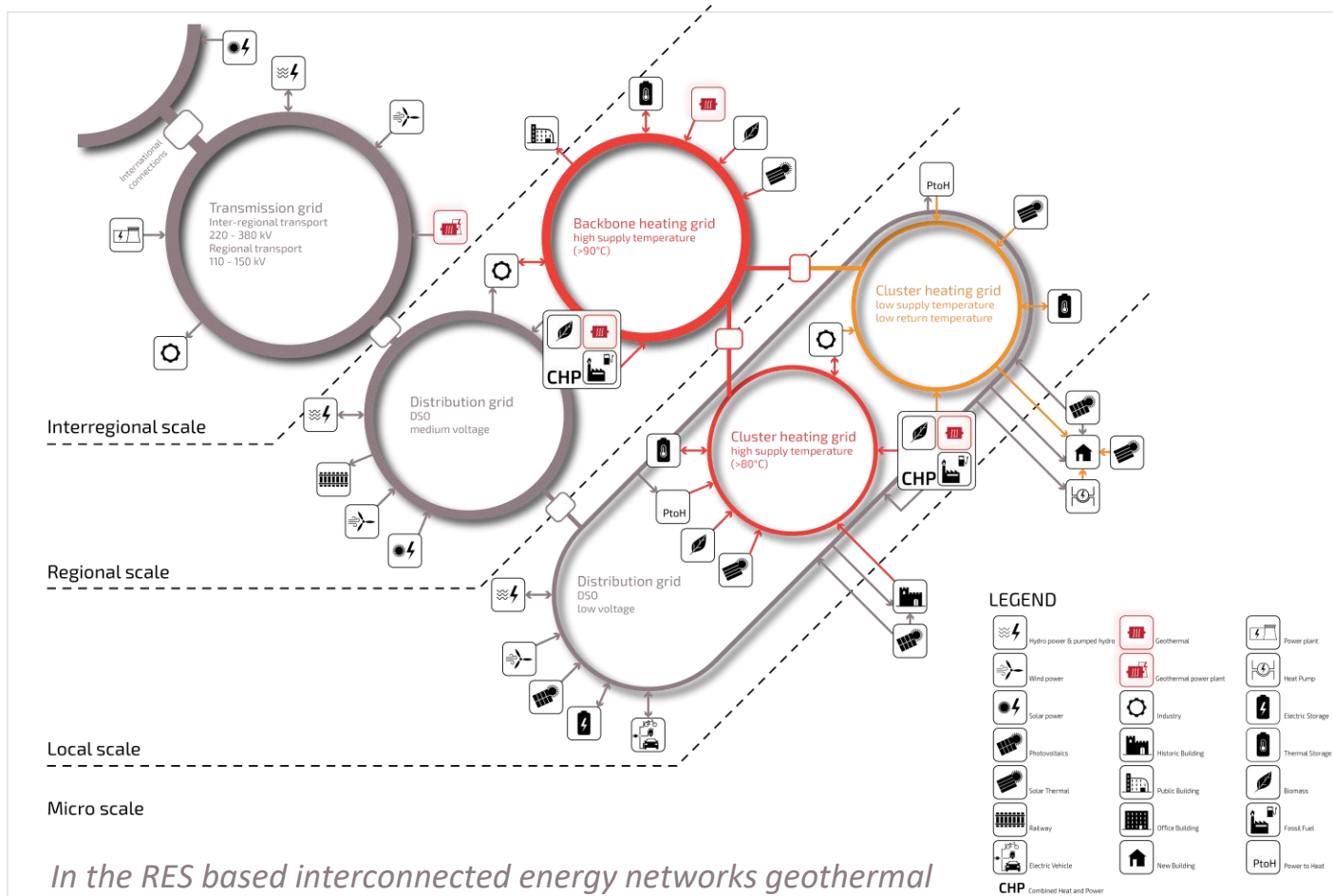
# Unlocking Geothermal Energy: Power development



*Combined biomass and geothermal plant in Cornia, Italy*

- > Improved efficiency, optimization of material, processes, cycle design
- > Hybrid, proper combination
- > Cutting edge technologies for any kind of resource (super-hot, off-shore, geopressurized) and any place (from remote islands to urban areas)

# Unlocking Geothermal Energy: Combined production



> Coupling renewable heat and electricity sectors and markets for an optimal use of geothermal energy

> Consumer-producer-prosumer perspectives

> Thermal storage to help balance and to optimize production

> Cascade, hybrid, synergy (e.g. geothermal-algae-biofuels-transport)

*In the RES based interconnected energy networks geothermal and underground thermal storage play an important role*



Main sponsor



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**Thank you for  
your attention**

