Geothermal heating and cooling

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Trends
Heating and cooling major growth sector

- **COVID rebound** through robust growth in geothermal heat pumps and geothermal district heating projects.
- National and supranational **policy** driving change. For example, France updated its building codes to ban the installation of new fossil fuel boilers, promoting investment in geothermal and other renewable heating and cooling technologies, and introducing criteria for things such as “summer thermal comfort (Réglementation environnementale - RE2020).
- Main **demand** comes from residential and commercial building sector as well as horticulture.
- First of a kind exploration for a **paper & pulp** factory in the Netherlands could open up another lucrative market for geothermal.
- Many new entrant countries for geothermal DHC systems - Finland, Cyprus and Norway.
- GHP and GeoDHC pipeline grew and expected to continue exponential growth as heating and cooling gain greater political attention.
Geothermal heat pumps
Number of GHPs installed in Europe
Growing sales in old and new markets

• **Germany** sold 27,000 units (10% growth compared to 2020).

• **Sweden** added 25,500 new systems (8% growth).

• **Finland** added 9,500 units (6% growth).

• Strong sales growth in **France** (73%), **Austria** (59%) and **Belgium** (35%).
Heat pumps per 1,000 households
Large-scale heat pumps have continually increased their capacity (BHE length in meters)
Geothermal District Heating
District heating and cooling market share

- 5.6 GWth geothermal DHC coming from 364 systems across all Europe in 2021.
- 90% of the heating demand is met by geothermal DHC in Iceland.
- 2.2 GWth of the above located in the EU from 262 DHC systems.
- France largest EU market with 470 MWth installed capacity across 80 systems. Netherlands had 369 MWth from 29 systems. Germany 365 MWth from 34 systems. Hungary (256 MWth), Italy (181 MWth) and Poland (138 MWth).
- Use of DHC systems different between France and Netherlands. France uses geothermal DHC for residential and commercial building heating and cooling needs. In the Netherlands, they are used mainly to supply horticulture demand.
Geothermal DHC project pipeline

- 14 new projects commissioned in 2021 - An additional 154 MWth.
- France and the Netherlands both commissioned 3 new projects.
- The Netherlands also commissioned its first DHC system for buildings.
- Germany, Poland and Switzerland also commissioned new projects.
Resource and flow rates

- Most projects centre on reservoirs with temperatures in the 60-80°C range in the EU.
- Greater effort needed for resource mapping.