



# **GEO THERMAL ENERGY**

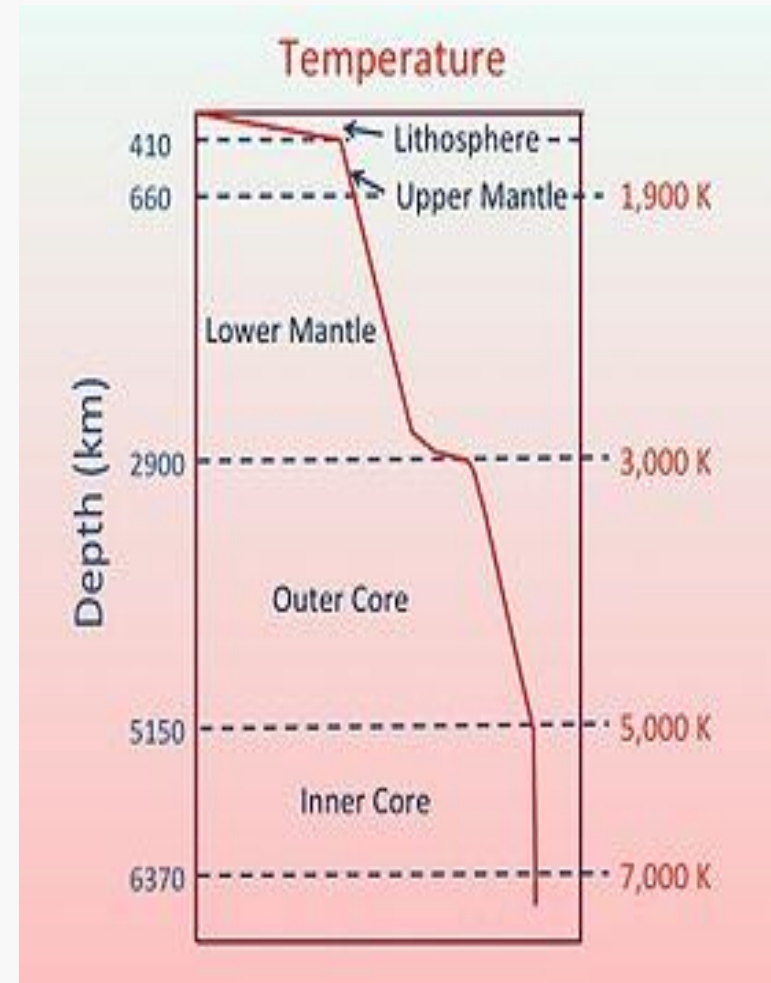
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# Structure

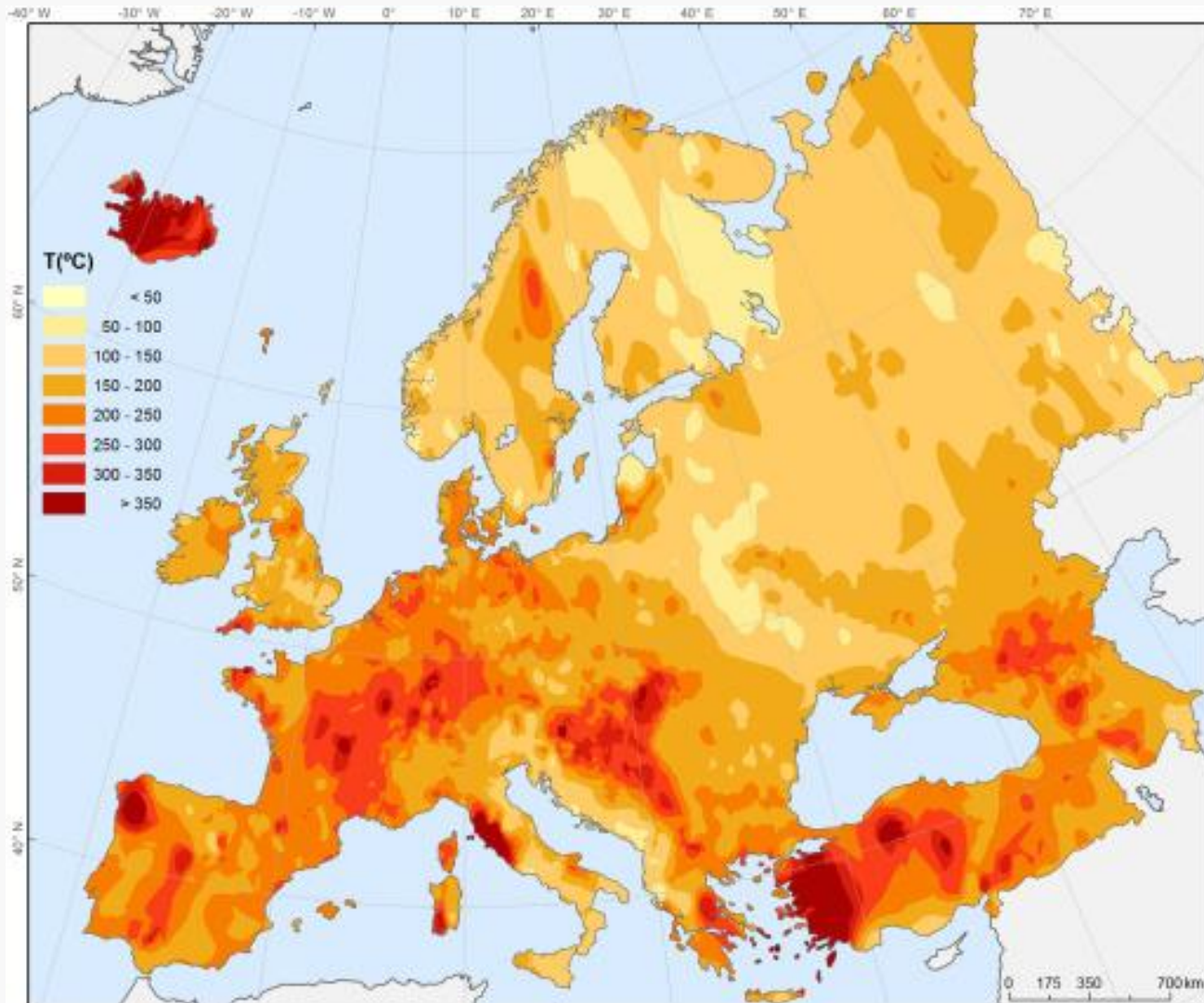
- Definition
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# Definition

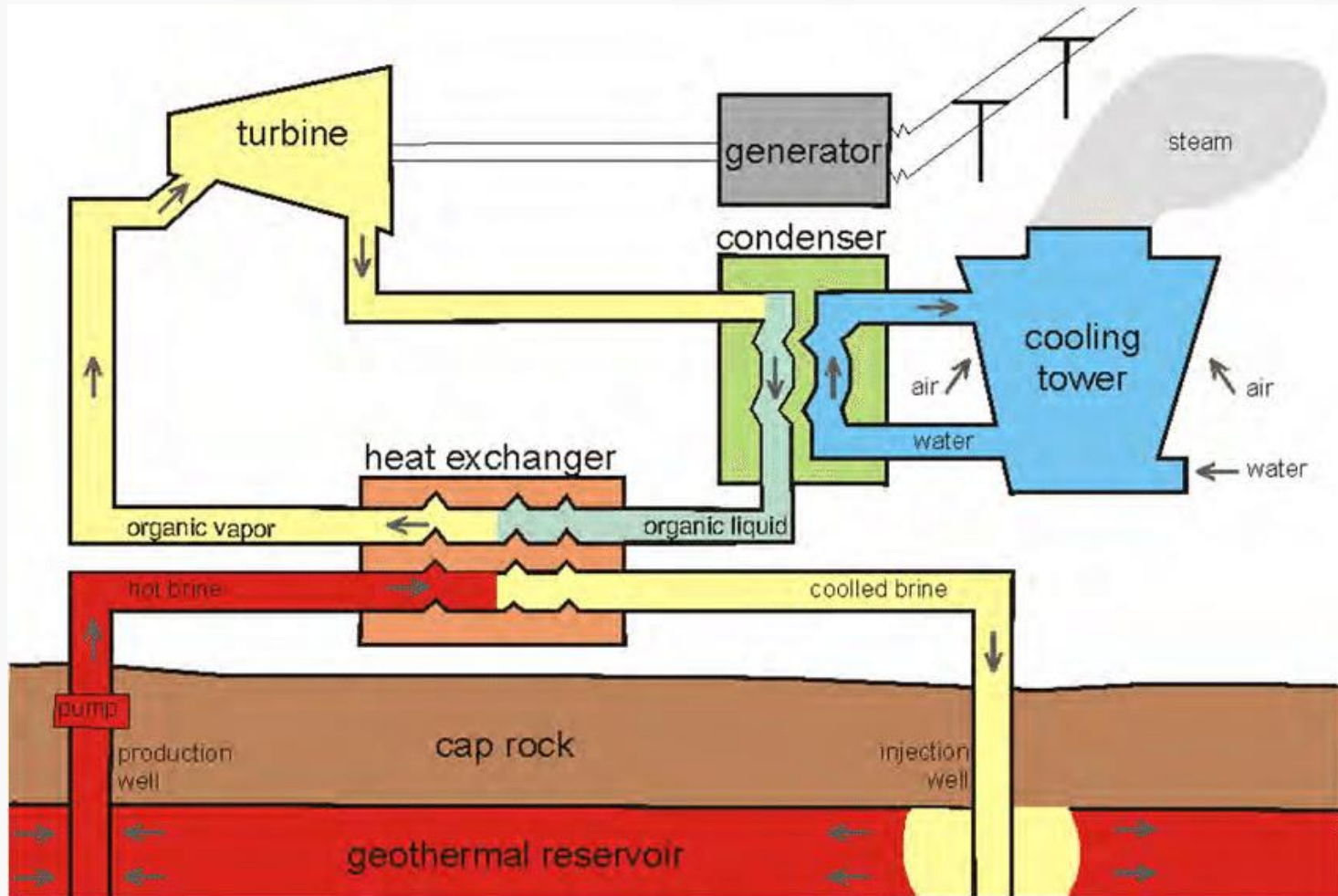
- Power station that uses the interior heat of the earth to create energy
- The Earth's internal heat comes from a combination of residual heat from planetary accretion, heat produced through radioactive decay, latent heat from core crystallization, and possibly heat from other sources.
- **Geothermal gradient** is the rate of increasing temperature with respect to increasing depth (25–30 °C/km)
- Pipes have to be 3km deep



# Geothermal Energy in Europe



# Function

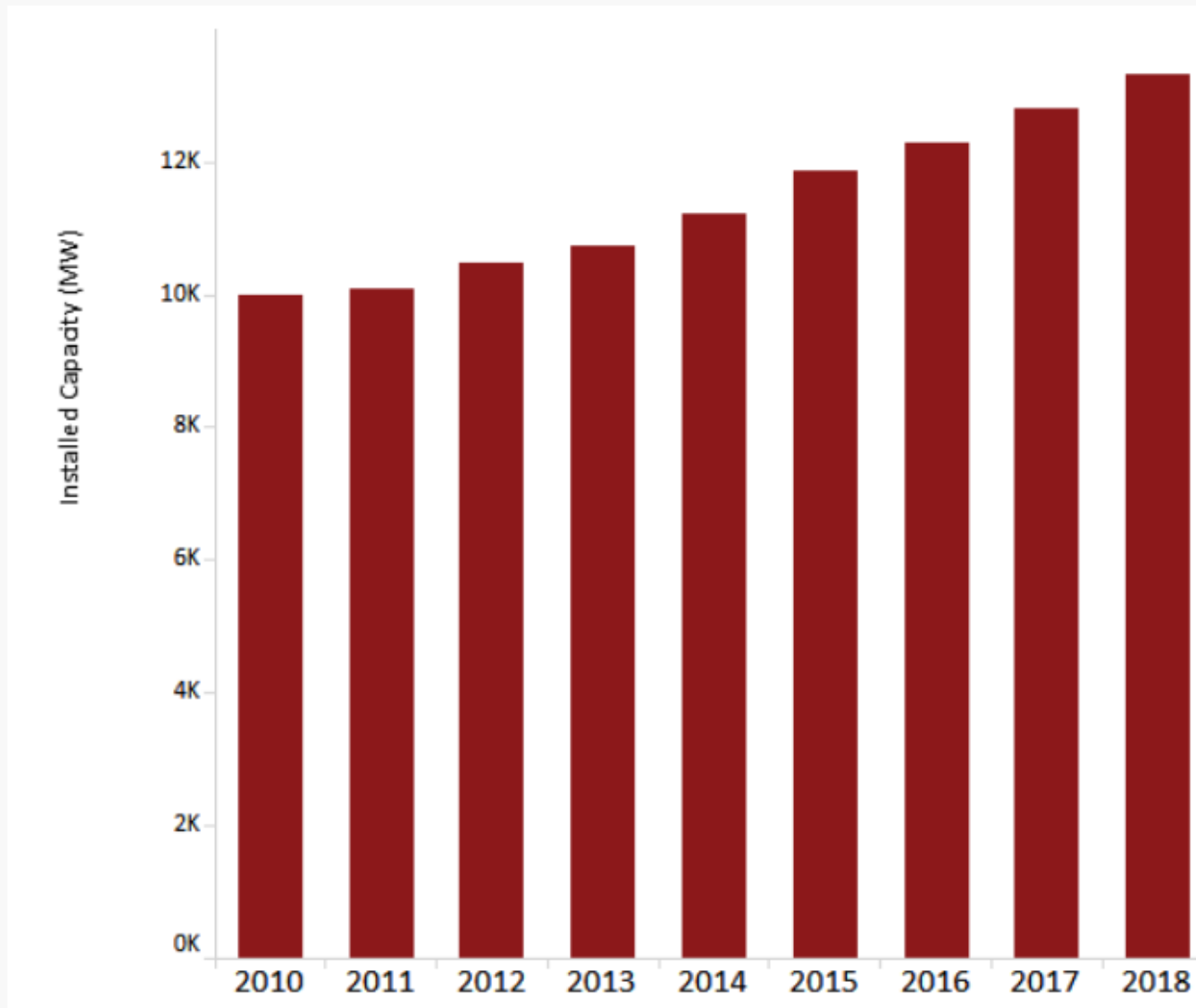


# Examples

Country:	Percentage of energy production:	Percentage heat production:
Iceland:	19,1%	90%
Tibet:	30,0%	30%
New Zealand:	5,5%	7%

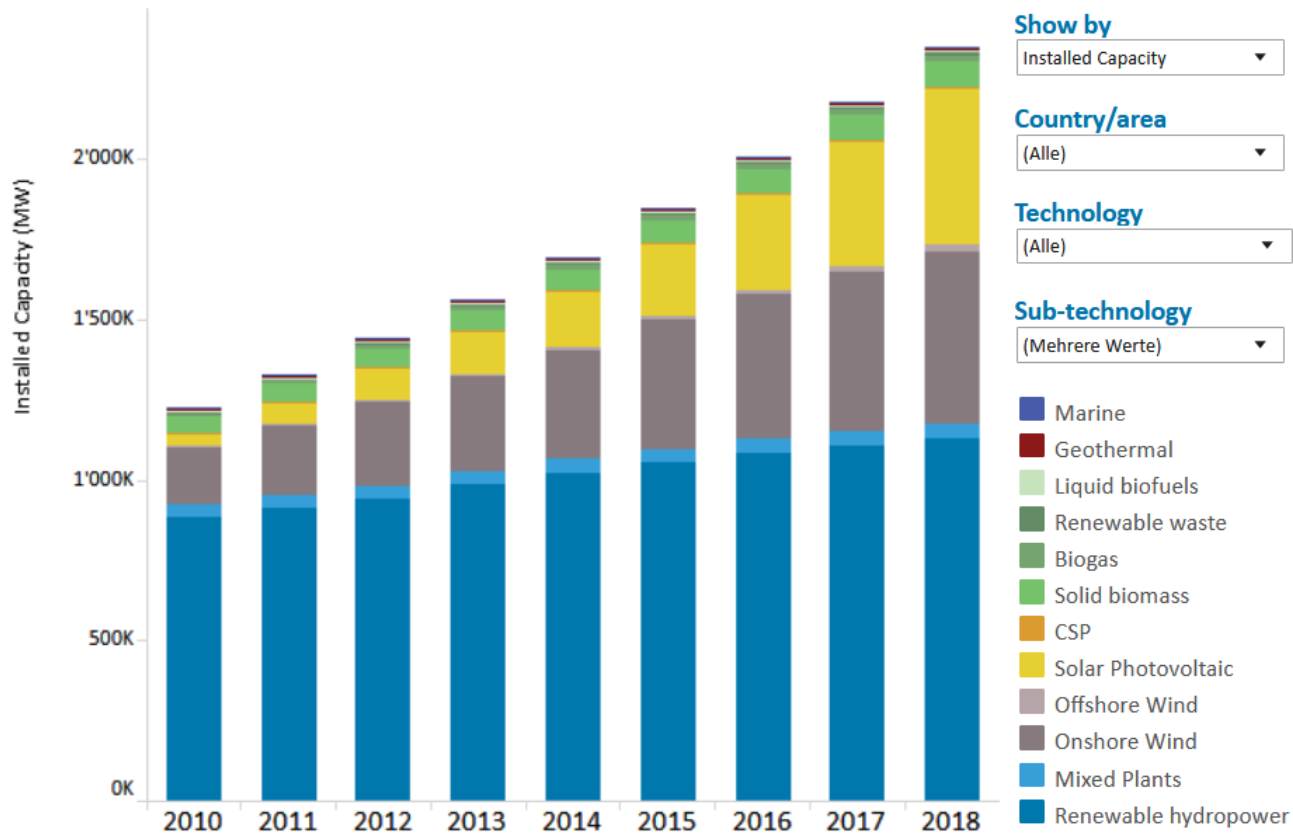


# Global installed capacity



# Global installed capacity

**Installed Capacity Trends**  
Navigate through the filters to explore trends in renewable energy





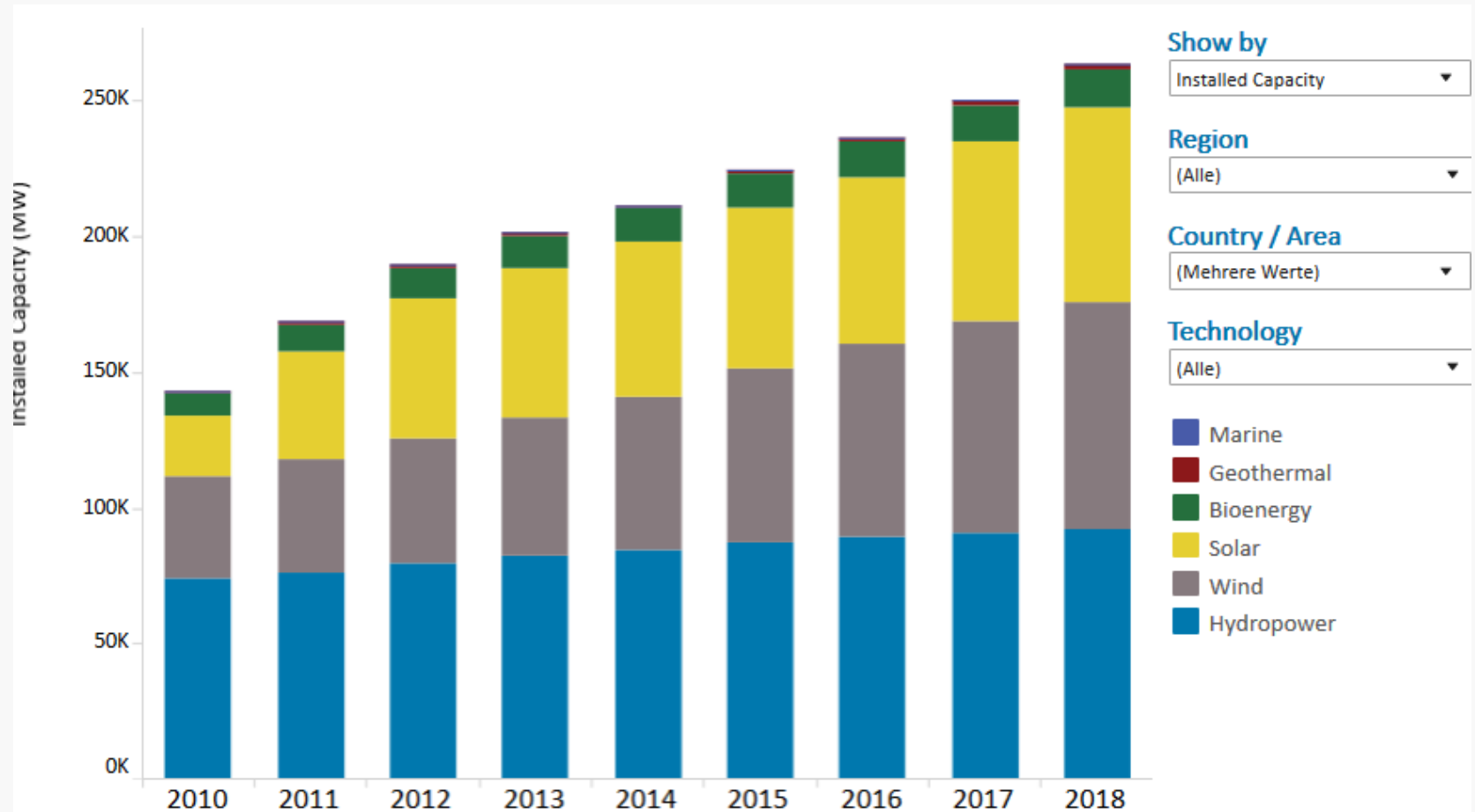
# Pro arguments

- Renewable
- Directly usable for heating (agriculture,home)→ less energy needed
- stable
- Usable on a small scale
- Not much pollution
- Small footprint on land
- Not dependent on plate tectonics
- Stable electricity prices and a stable resource
- potential between 0.035 to 2 TW.

# Contra arguments

- 5-10 years to pay for itself and heavy upfront costs → higher electricity prices (20.000 bto 25.000€)
- Very location specific
- Only sustainable (renewable) if the reservoirs are properly managed
- Could get destroyed by earthquakes
- Can cause earthquake
- Difficult to repair
- Might contaminate ground water and atmosphere (toxic minerals, Greenhouse gas)
- Globally not relevant yet

# Share of the Erasmus Countrys with renewable energy



# Sources

- <https://energyinformative.org/geothermal-energy-pros-and-cons/>
- <https://www.nationalgeographic.com/environment/global-warming/geothermal-energy/>
- <https://www.irena.org/geothermal>

## Pictures

- [https://www.researchgate.net/figure/Binary-power-plant-water-cooled-for-heat-production-from-hot-water-or-low-enthalpy-wet\\_fig40\\_313164879](https://www.researchgate.net/figure/Binary-power-plant-water-cooled-for-heat-production-from-hot-water-or-low-enthalpy-wet_fig40_313164879)
- <https://inside.ista.com/de/perspektiven/die-effizientesten-regenerativen-kraftwerke/>

**Thank you for your attention!**

