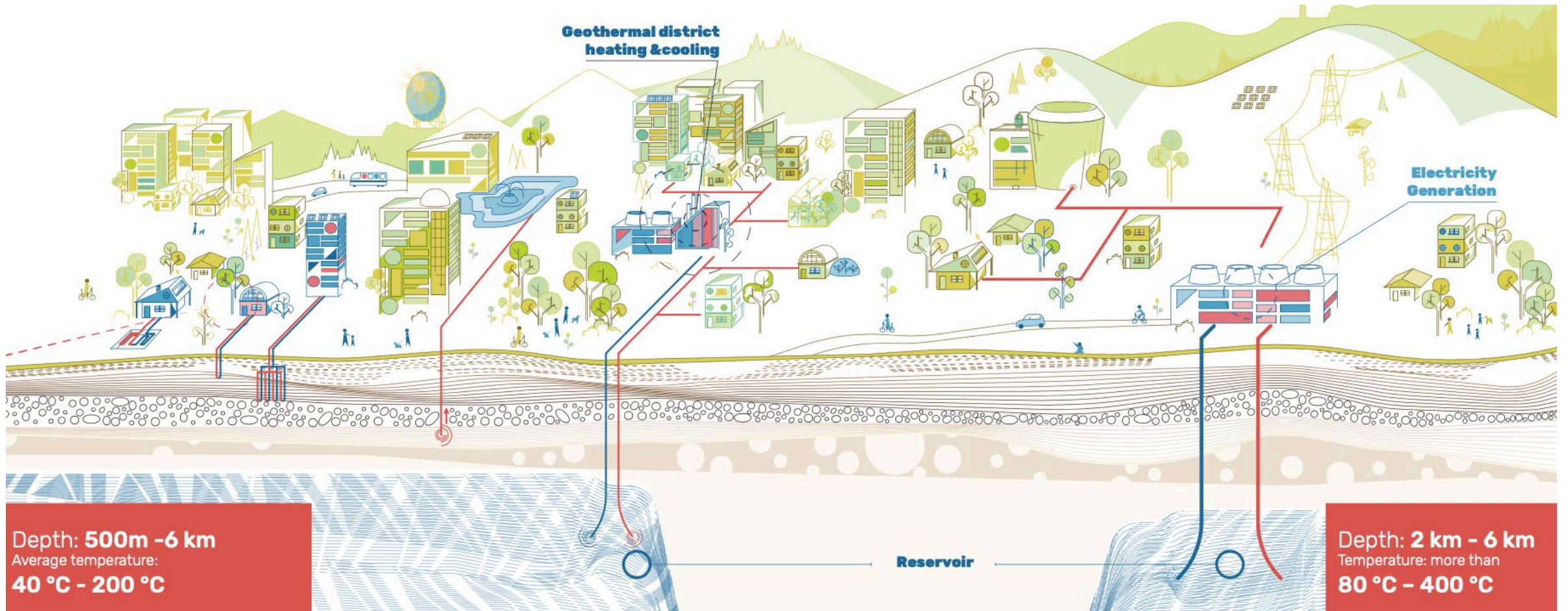
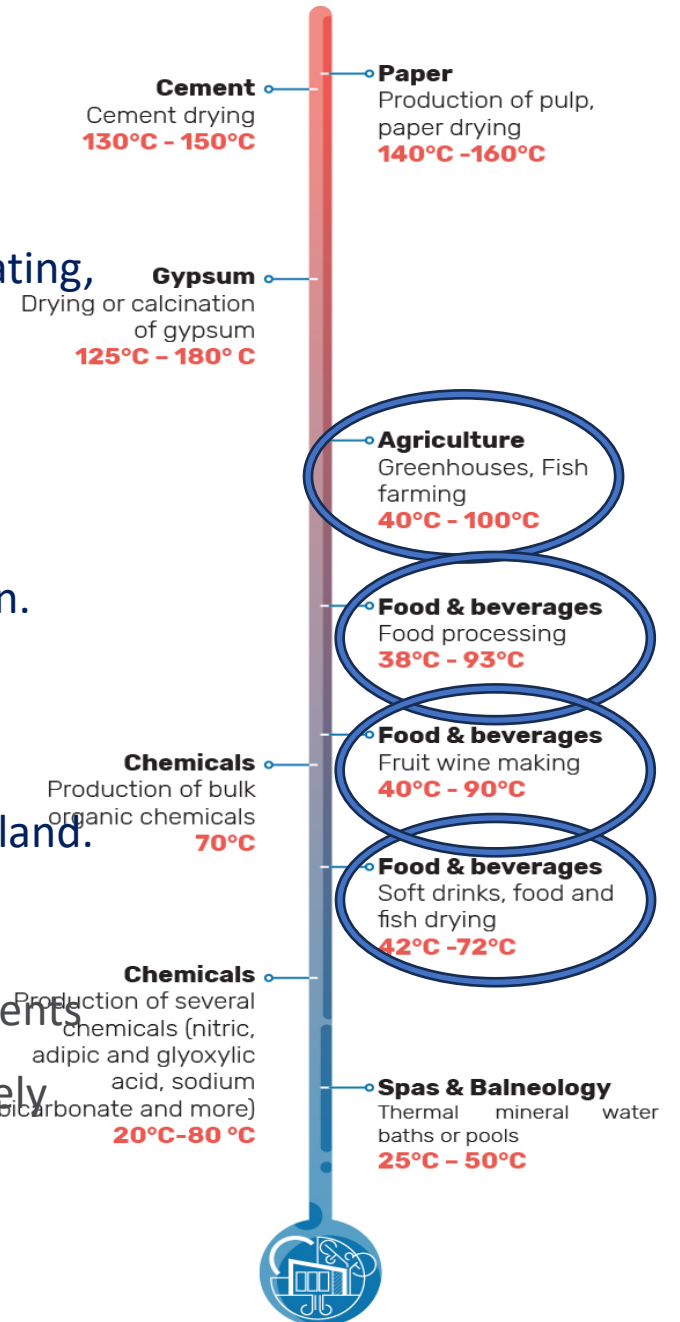


# Geothermal: Sustainability and food security



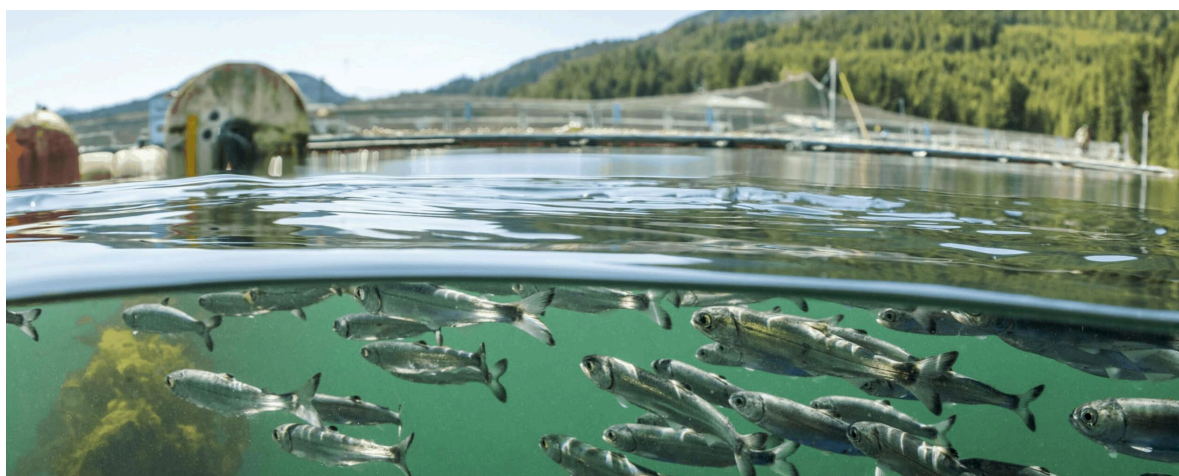
# Geothermal energy is...

- **Available everywhere** providing cost-effective long-term supplies of permanent heating, cooling and electricity.
- **Cheapest renewable heating & cooling solution** according to ADEME, the French environment agency and the International Energy Agency.
- It provides **permanent supplies** of renewable heating, cooling and power generation. Cost stability all year round for 50+ years is why urban and rural communities, industries, farmers are turning to geothermal.
- **Least land intensive:** Geothermal below ground so has little physical impact on the land.
- Benefits of geothermal food production are:
  - Increased food productivity by growing crops and animals in optimal environments
  - Timely processing, drying and dehydration to reduce food spoilage due to timely processing,
  - Refrigeration and cold storage.



# Examples of geothermal agri-foods

- **Greenhouses** represent about 400,000 jobs and accounts for a yearly production valued around €8 billion in **The Netherlands**. Energy costs represent about 20-30% of total production costs. Greenhouse holdings installed 300 MW<sub>th</sub> (26 projects) of geothermal to protect the industry.
- **Aquaculture: Le Teich, Nouvelle Aquitaine (France)**, an old oil well was converted to a geothermal system producing 73°C water in the 1980s. Supplies 3,000 m<sup>2</sup> of hot water for ponds and saves **5,000 equivalent tonnes of CO<sub>2</sub>** to produce caviar.



# Financing geothermal

**Heat Purchase Agreements (HPAs)** main source of private sector investment in rural communities:

- In February 2022, 21 greenhouse horticultural companies agreed to a **Letter of Intent** to purchase geothermal heat from Tulip Energy for 20+ years.
- **Vapori di Birre brewery in Tuscany** purchases heat from Enel's 20 MW Sasso 2 geothermal power in Pisa. The brewery uses this geothermal heat for the production of over 40,000 bottles of sustainable beer every year. Importantly, the use of geothermal energy led to a 25% reduction in the brewery's energy costs.
- **ECOGI** is a joint venture between *Electricité de Strasbourg Group* (supplier), *Roquette Frères* (industrial heat consumer), and the *Caisse des Dépôts* (public infrastructure fund) to supply geothermal heat for industrial processes. The €55 million project also received €25 million from the *Fonds Chaleur* operated by ADEME. This included a €13 million guarantee fund to de-risk the project during the project development phase. A 15 km heat network was created between the geothermal plant and the bio-refinery.





**Think local  
Act global  
Go geothermal**

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