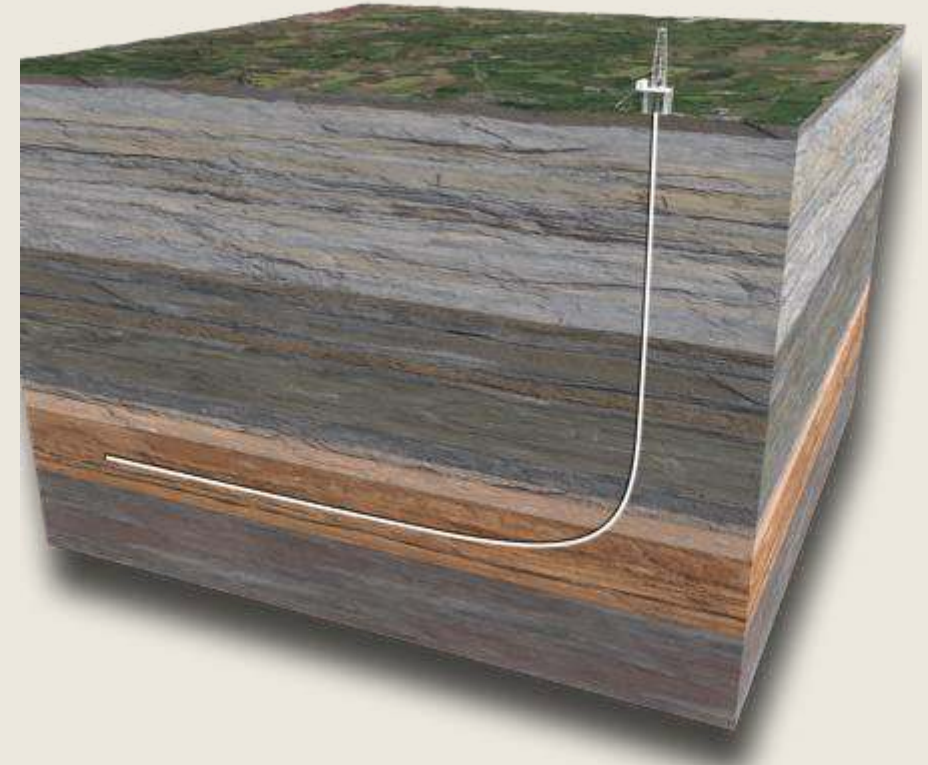


# Heat4Ever™ geothermal solution for direct use in Hungarian district heating

*Kim Gunn Maver, Chief geologist*

kgm@greentherma.com



# green therma

Kim Gunn Maver, PhD  
*Chief Geologist*

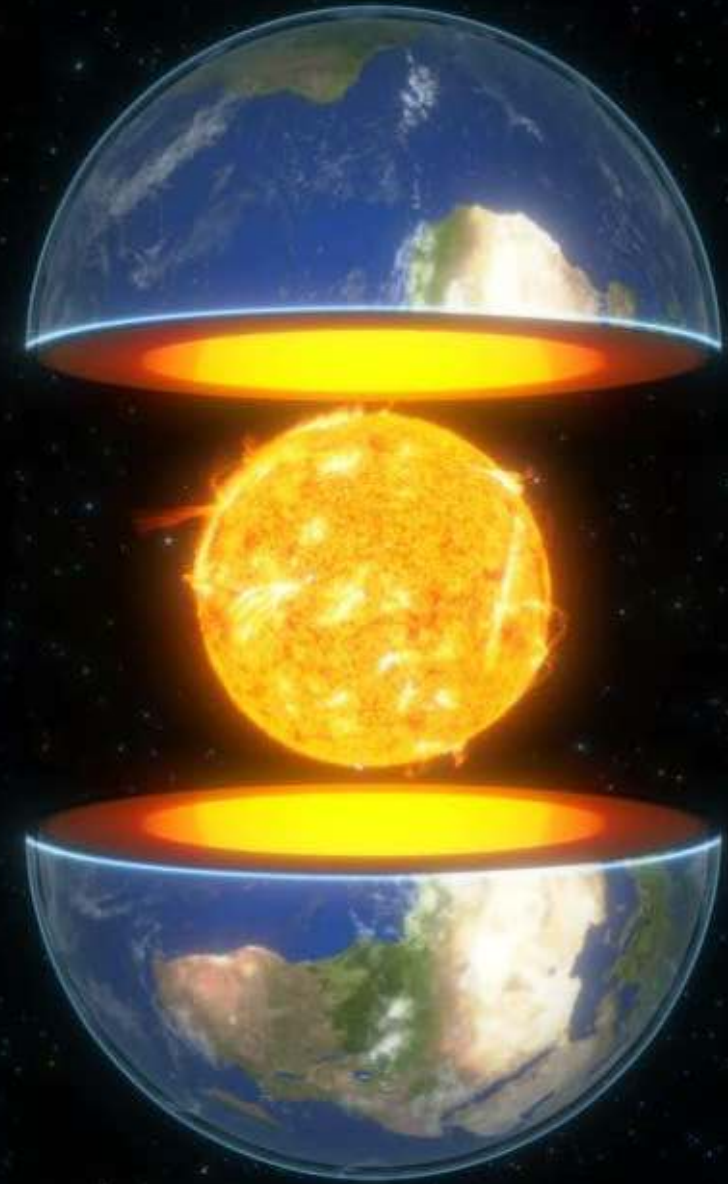


Copenhagen : Hamburg  
Houston : Stavanger



# The Second Sun

- 99% of the earth's volume is +1.000 grader Celsius
- 99,9% of the earth's volume is +100 grader Celsius
- The heat is from the Earths creation and radioactive decay
- On land the temperature increases by 30 degrees Celsius per km
- The Earth's life expectancy is 7-8 billion years

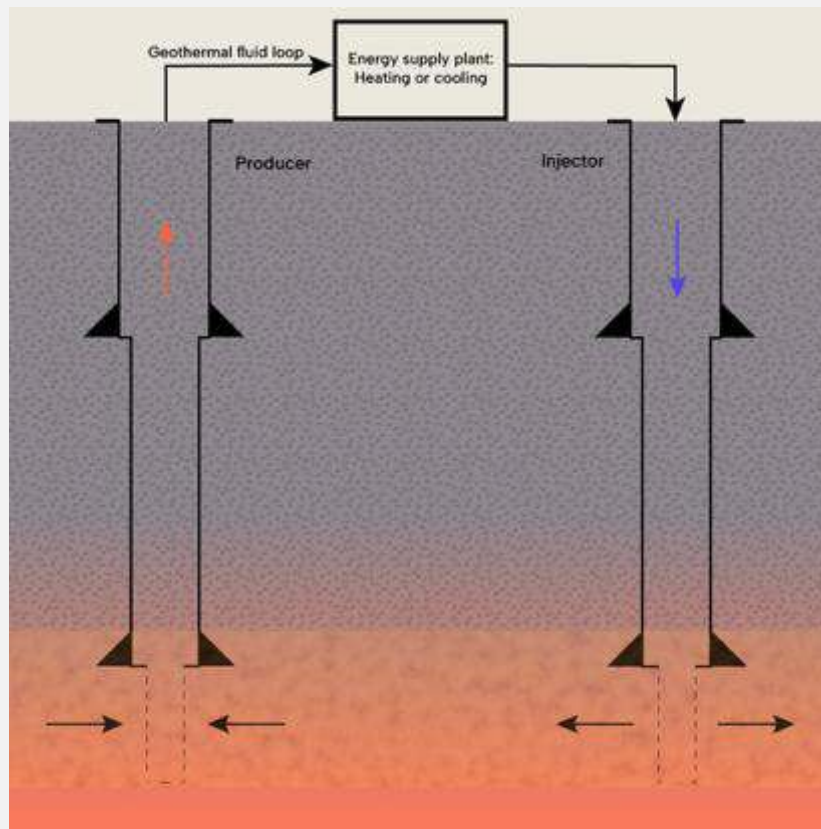


# Széchenyi Thermal Baths in Budapest



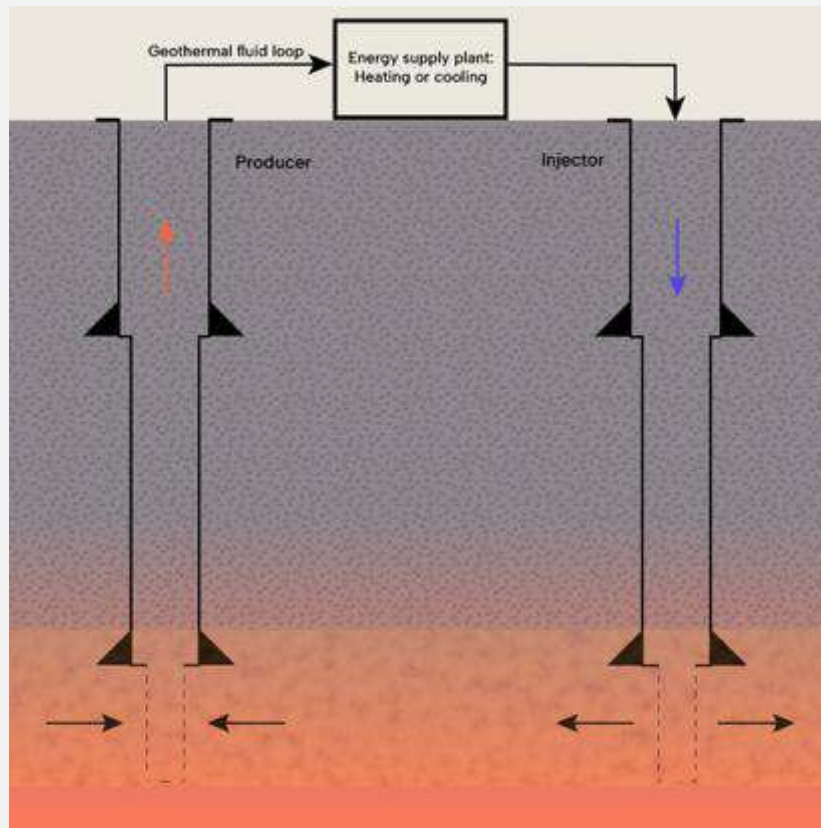
# Geothermal solutions

## Conventional Hydrothermal well solution

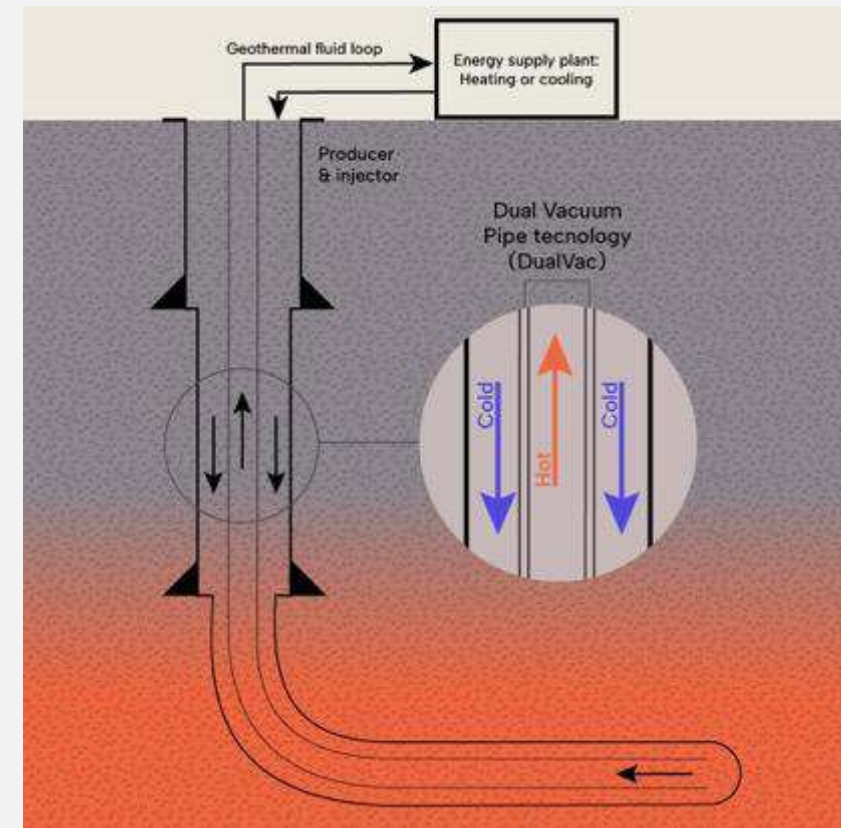


# Geothermal solutions

## Conventional Hydrothermal well solution

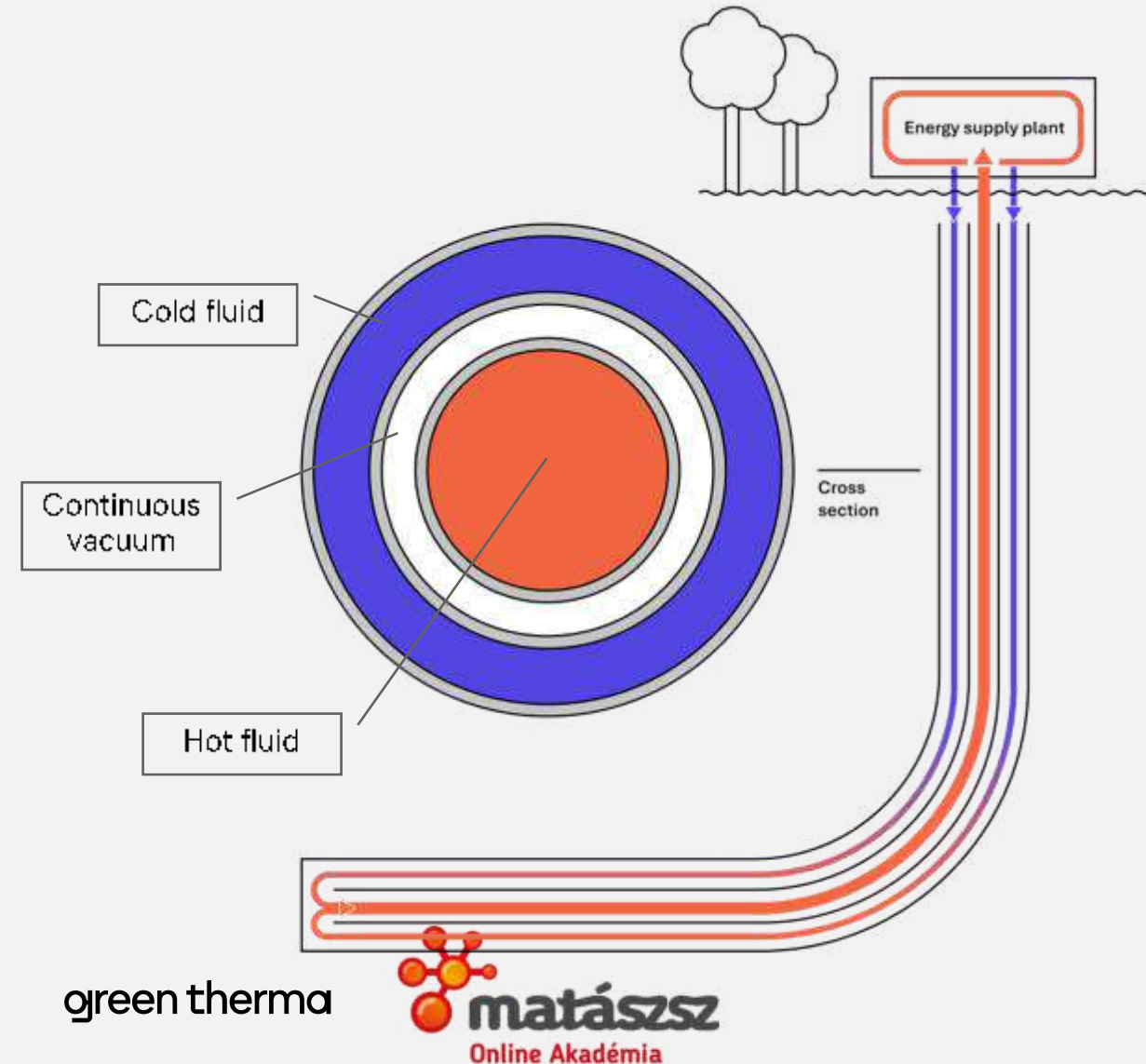


## New closed loop Co-axial well solution



# Closed loop horizontal geothermal well solution

## Well completion



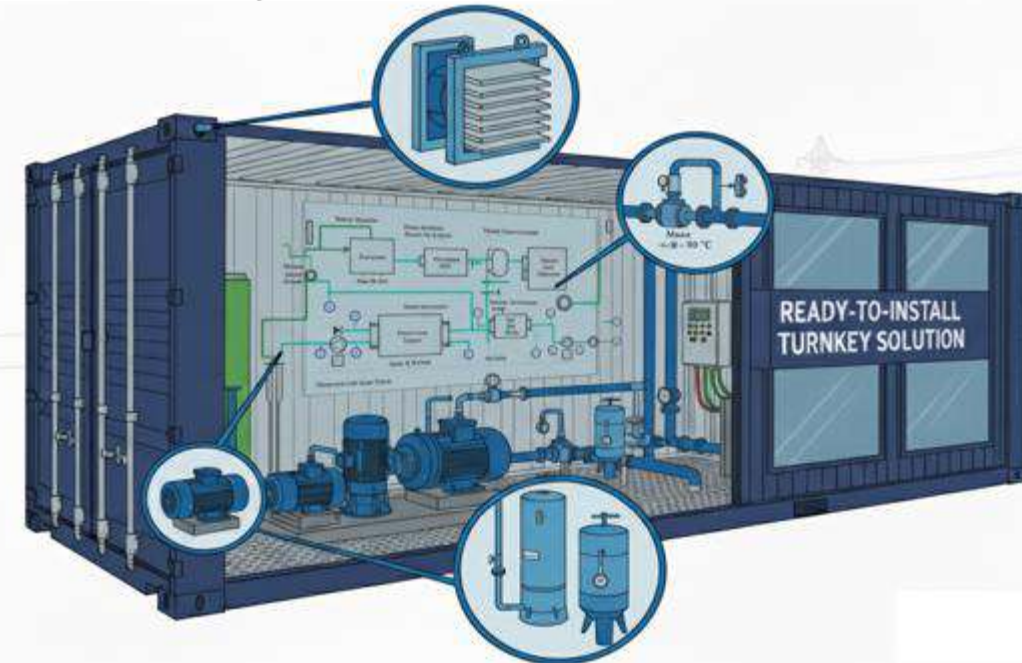
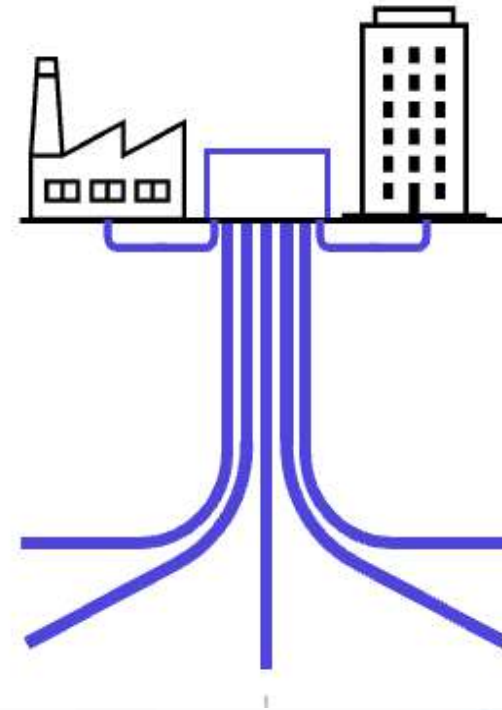
### Closed loop horizontal solution

- Oil and gas industry technology:
  - 7,5 inch tubing
  - Vacuum pipe 4,0 inch inside 5,5 inch
- Continuous vacuum maintained at the surface
- No downhole equipment
- Vertical section: 2-5 km
- Horizontal section: 2-5 km

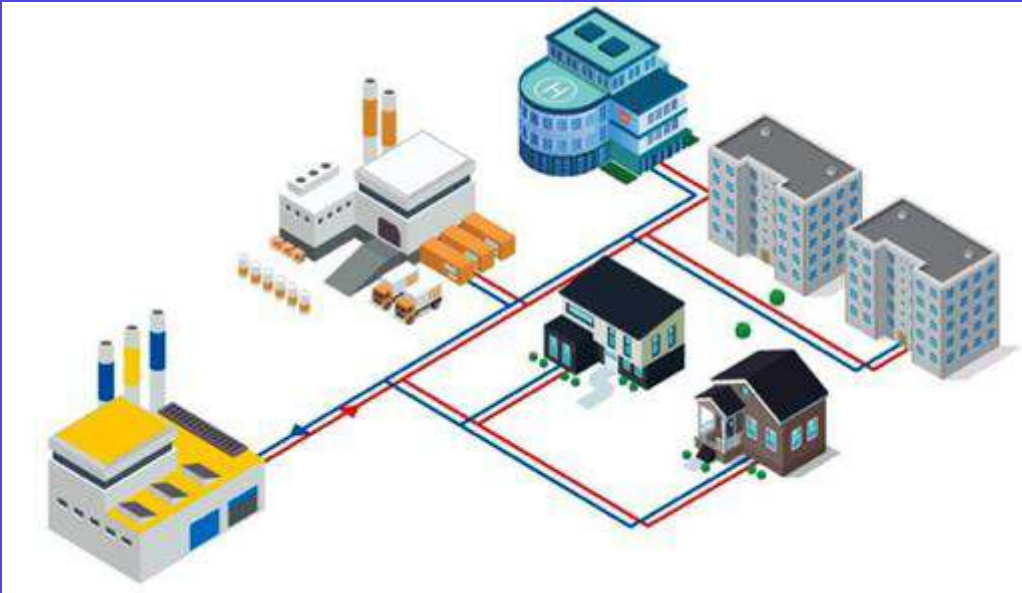
# Heat4Ever™ well cluster

## 5 wells – 10 MW project

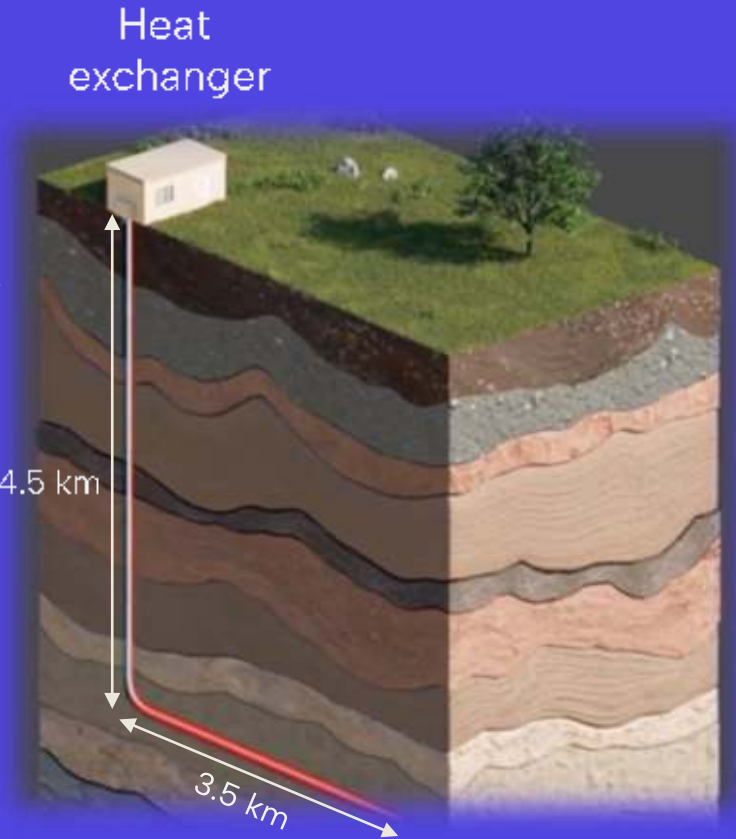
- Adjustable heat production during the year
- Surface installation foot print per well in 20 foot container:
  - Heat exchanger
  - Circulation pump
  - Vacuum pump
  - Expansion tank
  - Control panel



# Geothermal energy directly for the district heating network

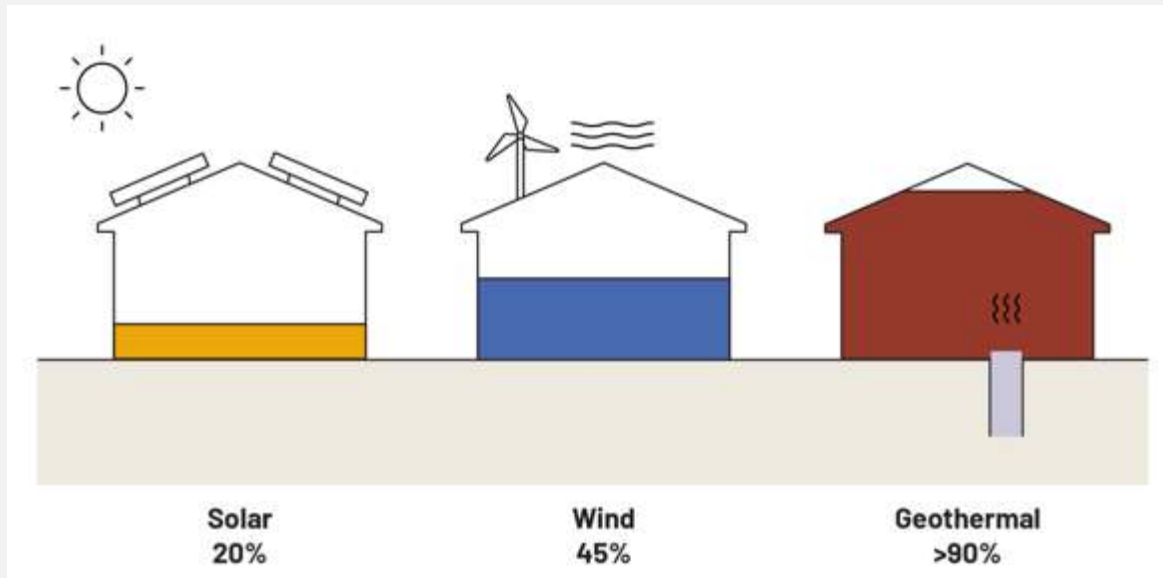


← 100°C  
60°C →

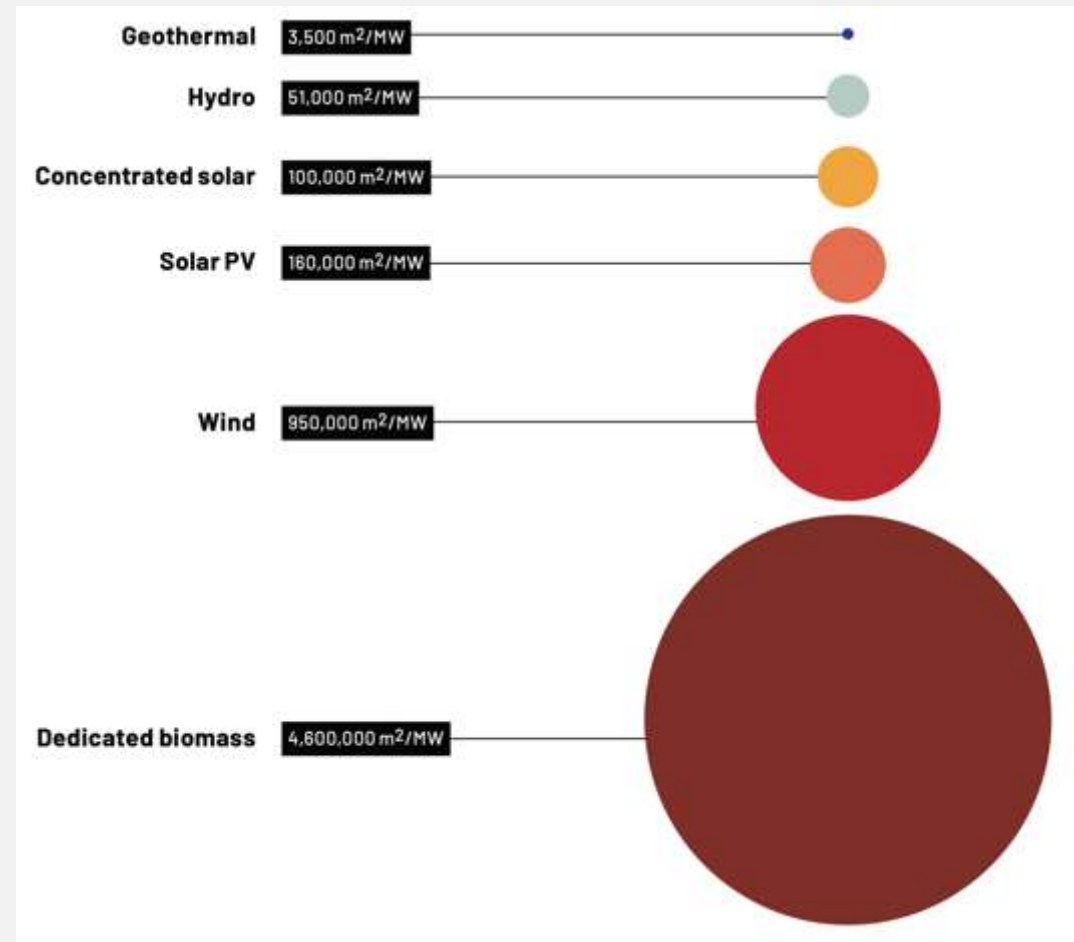


# The impact of geothermal energy

## Capacity factor



## Surface footprint



# Closed loop horizontal well technology status

2024

Testing 525 m pipes

2025

2026

2027

Stavanger testsite, Norway



# Closed loop horizontal well technology status

2024

Testing 525 m pipes

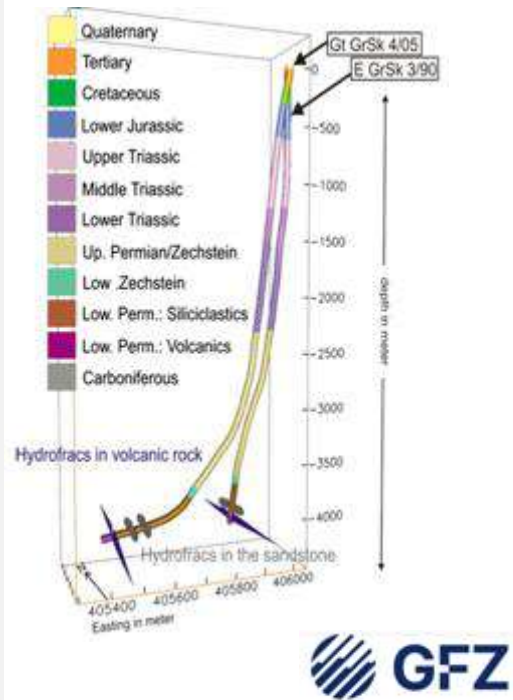
Stavanger testsite, Norway



2025

Repurposing hydrothermal well

Gross Schönebeck, North of Berlin



2026

2027

# Closed loop horizontal well technology status

2024

Testing 525 m pipes

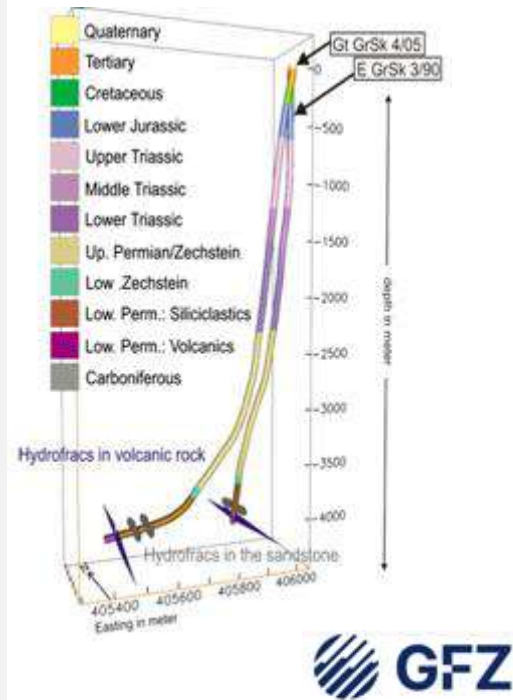
Stavanger testsite, Norway



2025

Repurposing hydrothermal well

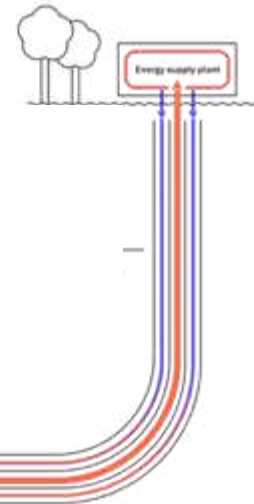
Gross Schönebeck, North of Berlin



2026

Drill geothermal well for district heating

Aalborg, Northern Denmark



30 years heat offtake agreement with Aalborg Forsyning

11.5 mill Euro grant from the Danish Government

2027

# Closed loop horizontal well technology status

2024

Testing 525 m pipes

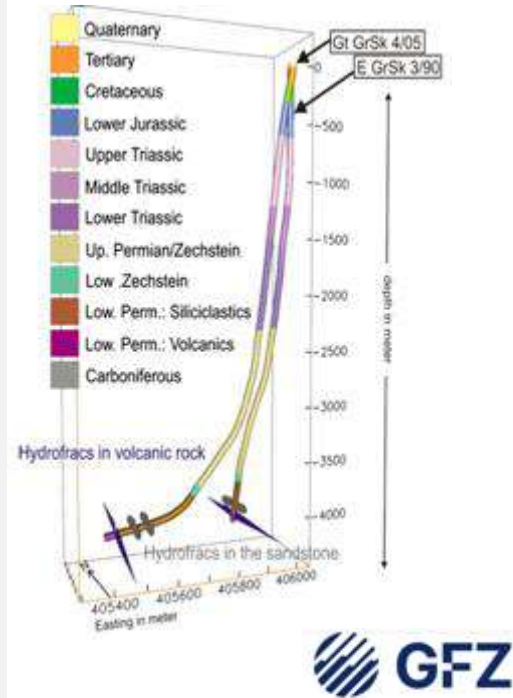
Stavanger testsite, Norway



2025

Repurposing hydrothermal well

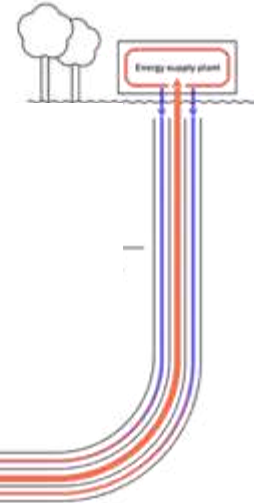
Gross Schönebeck, North of Berlin



2026

Drill geothermal well for district heating

Aalborg, Northern Denmark



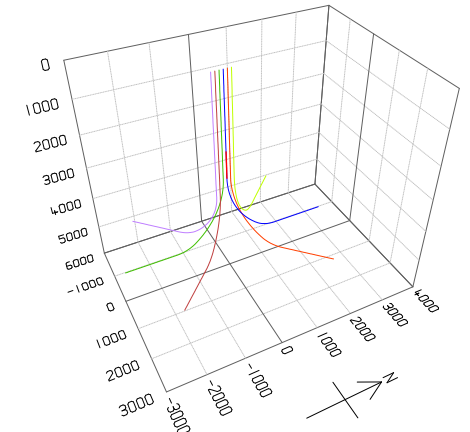
30 years heat offtake agreement with Aalborg Forsyning

11.5 mill Euro grant from the Danish Government

2027

Multi-well project for district heating

Northern Europe



# Project concepts in development

## Denmark



We create sustainable energy

## Germany

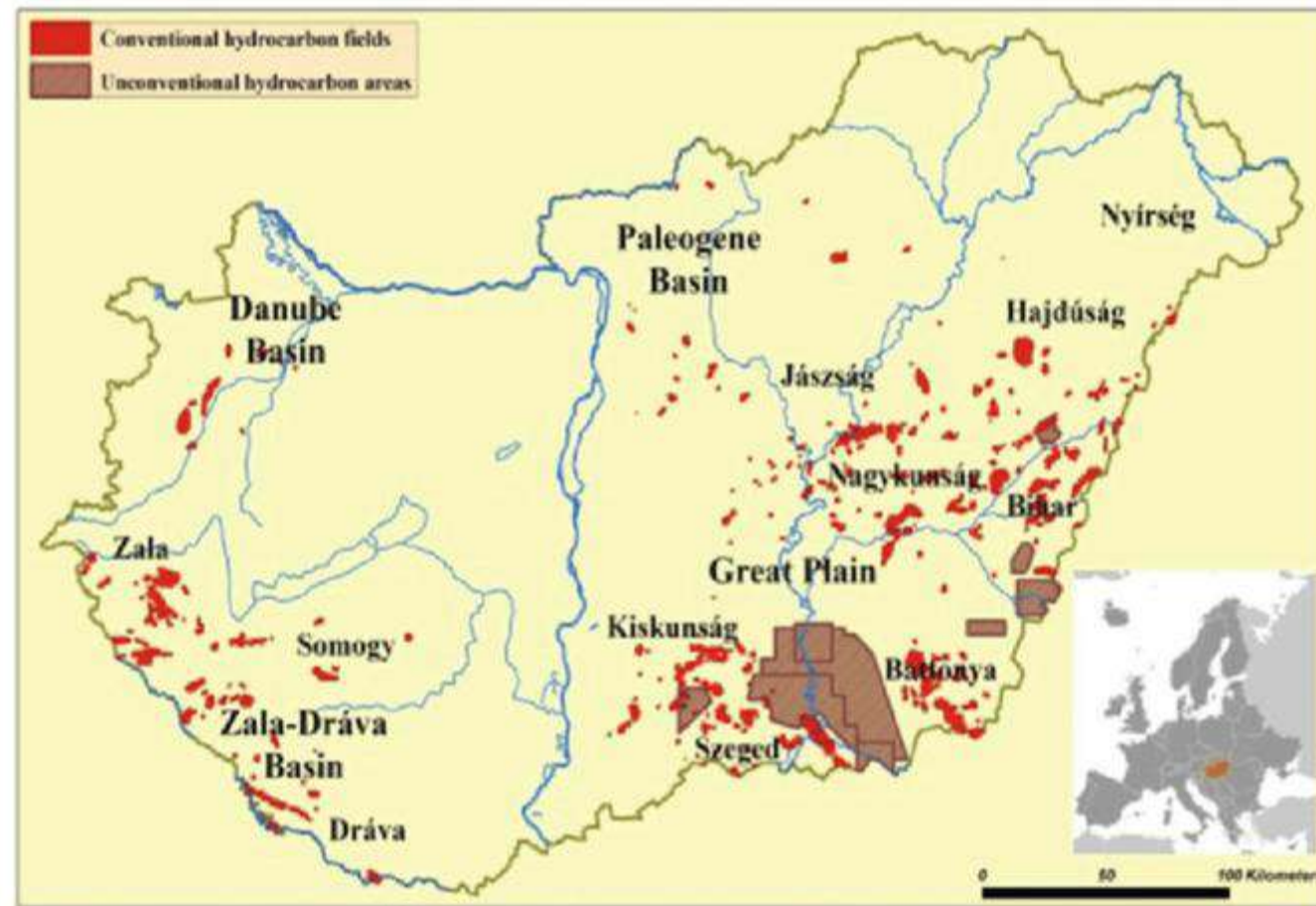


27/02/2026

ZeroGeo Energy GmbH completes purchase of Geothermie Rupertiwinkel GmbH

# Hungary

## Oil and gas activity

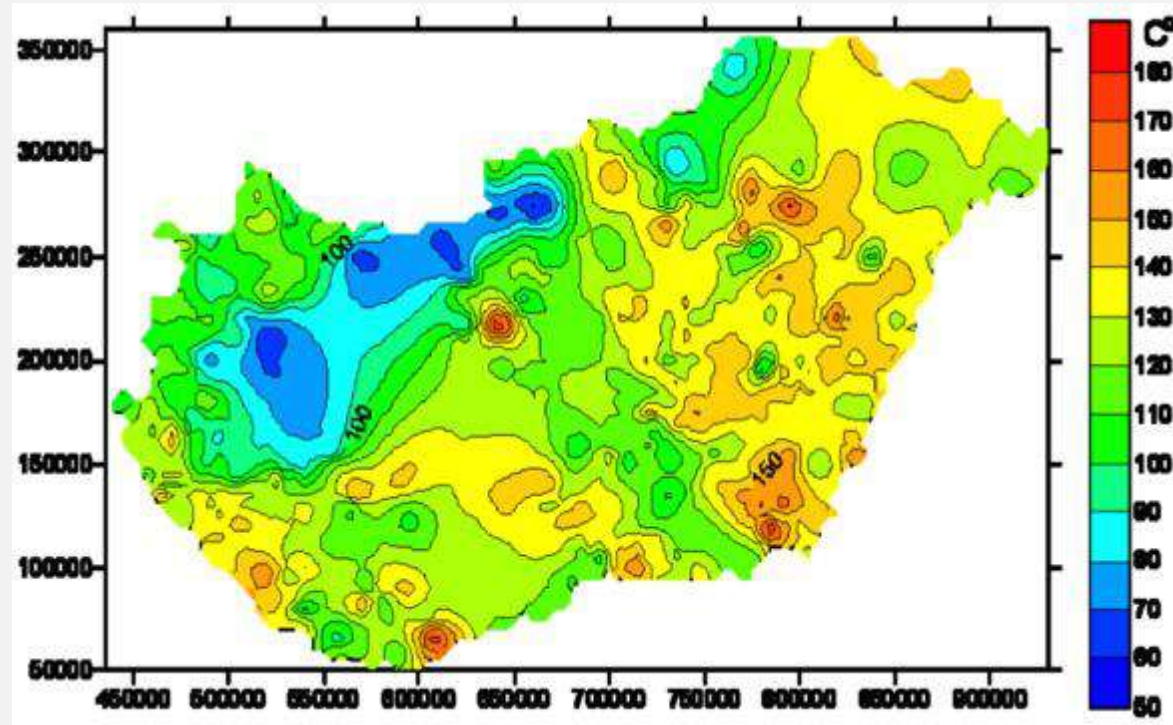


Oil and gas activity gives access to well and seismic data

# Hungary

## Geothermal temperature gradient – degrees C/km

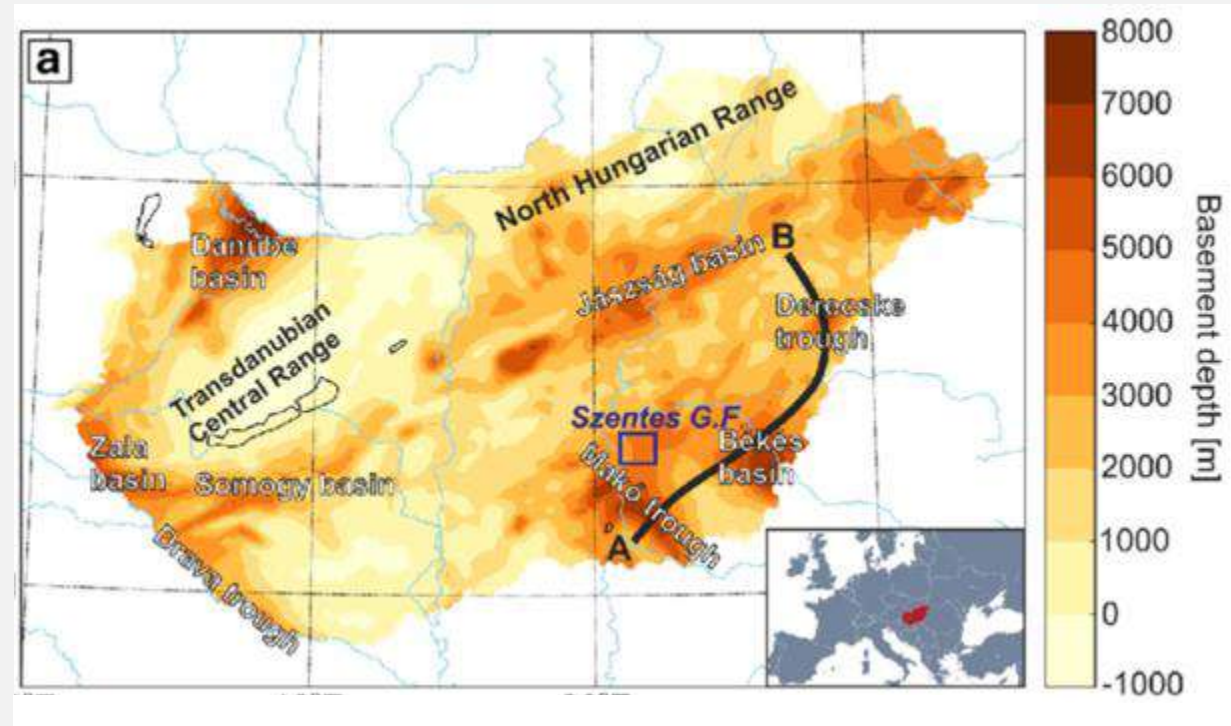
Temperature @ 2,500 m



# Hungary

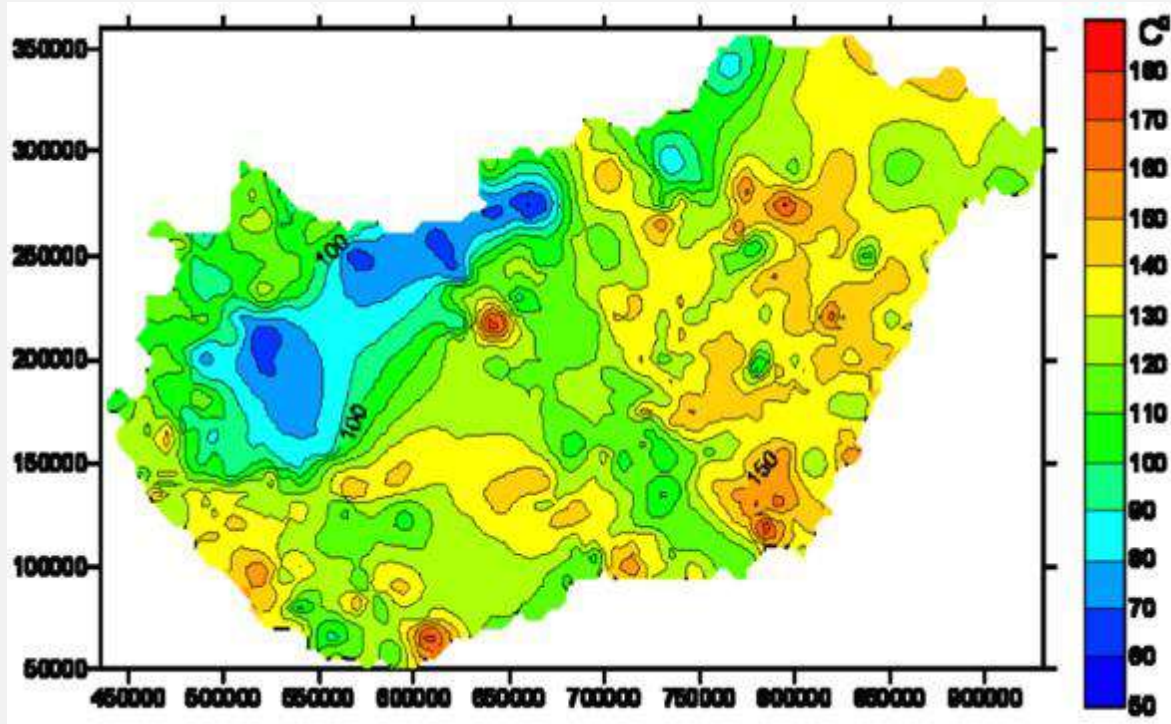
## Depth to hard rocks

### Depth to basement rocks

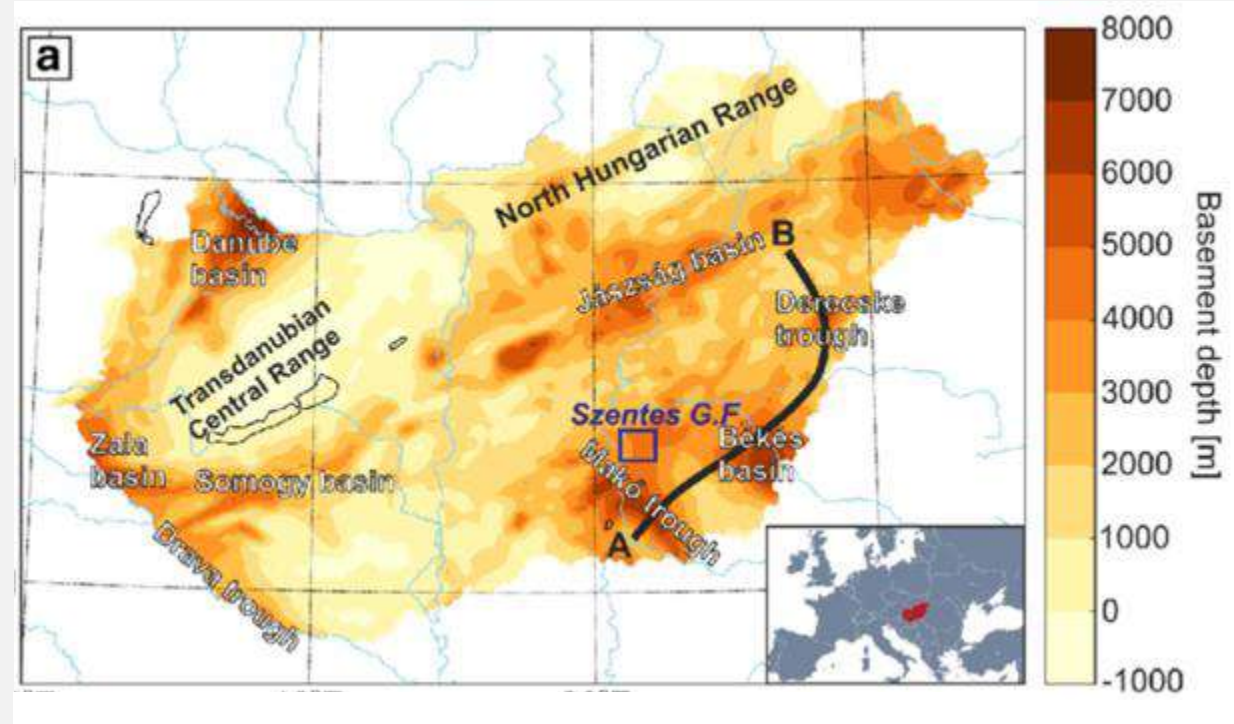


# Hungary Geology

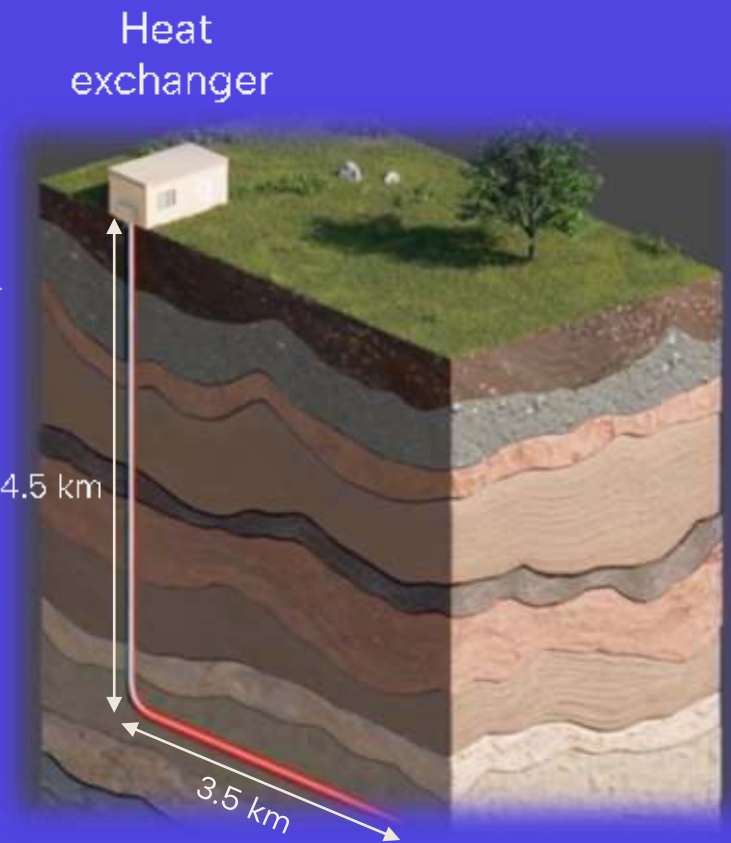
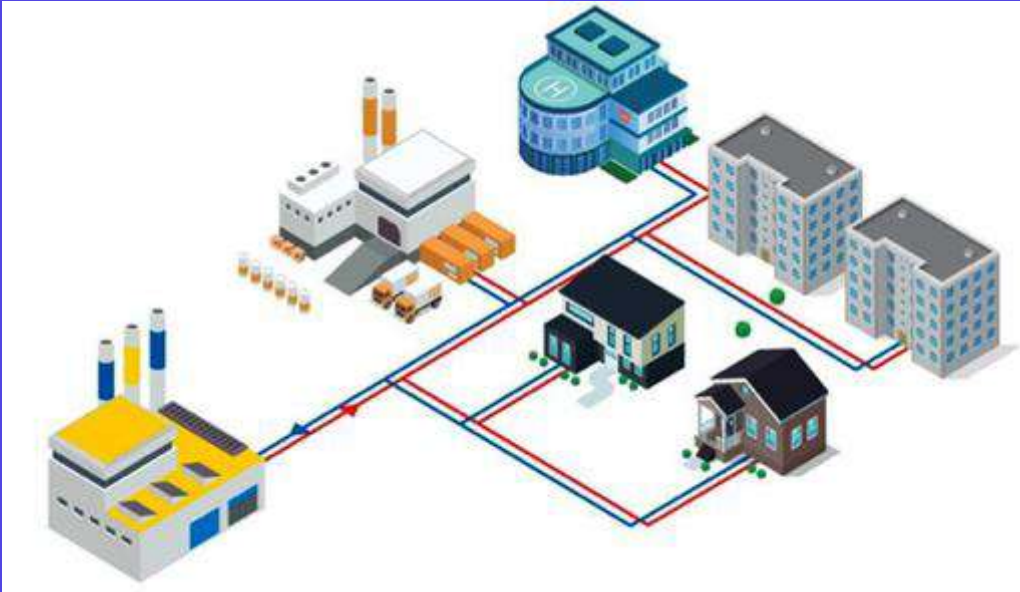
Temperature @ 2,500 m



Depth to basement rocks



# Geothermal energy directly for the district heating network



# Thank you

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