

# Ex mine as a source for district heating and cooling, GERMANY



CONCERTED ACTION  
ENERGY EFFICIENCY  
DIRECTIVE

## Pit water utilisation for heating and cooling in Ruhr area

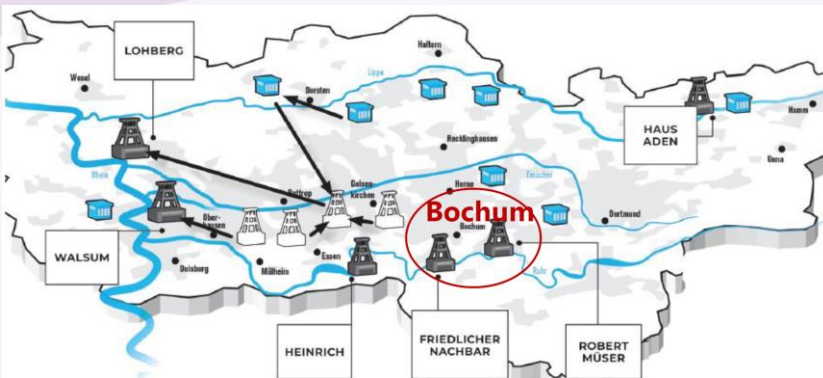
- To protect potable water resources, **pit water must be constantly regulated and pumped out** (70 million m<sup>3</sup> annually at 6 locations in Ruhr area) with annual costs to around 100 million euros.
- Depending on the depth level, **pit water has temperature up to 50°C and estimated at least 1.5 TWh potential for heating and cooling in Ruhr area.**

## Project “Mark 51°7” in Bochum

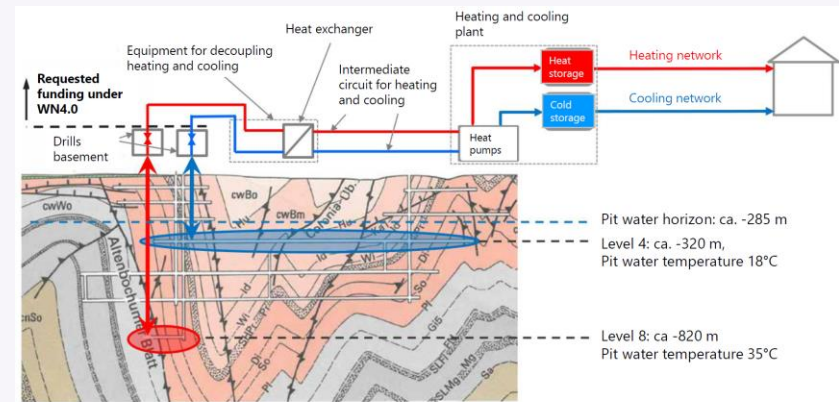
New district heating and cooling network will be built, 80% supplied by geothermal energy from pit water by use of heat pumps:

- **Heating network:** 2.3 km network length, 2.4 MW installed capacity and 11.4 GWh heat demand
- **Cooling network:** 1.2 km network length, 1.5 MW installed capacity and 6.8 GWh heat demand

**50% lower CO<sub>2</sub> emissions (-1 700 tCO<sub>2</sub>)**



Source: RAG, *Grubenwasser, Unser Konzept für das Ruhrgebiet*



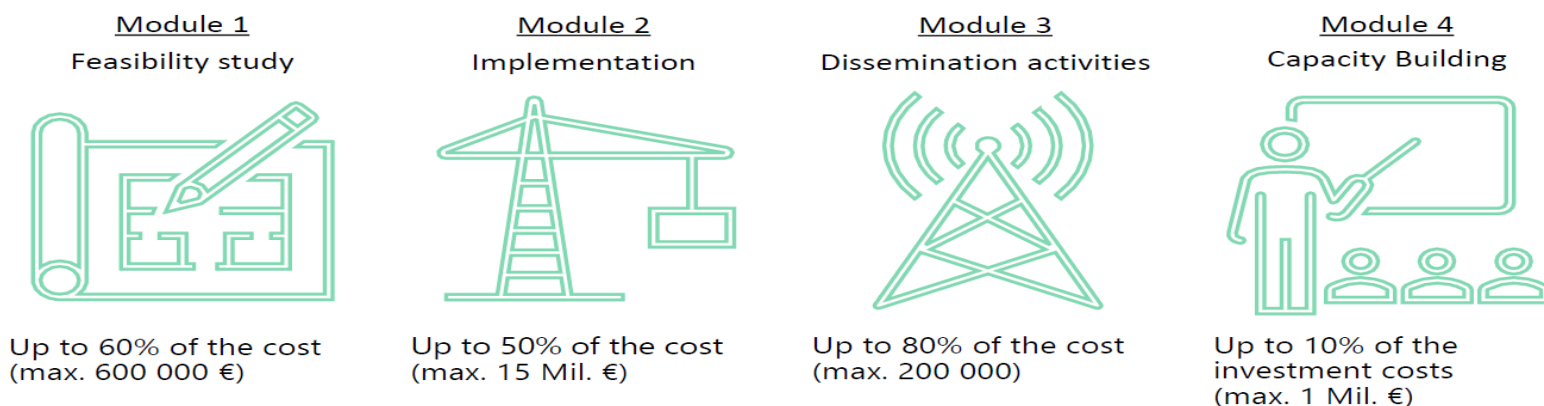
Source: FUW Stadwerke Bochum, Projekt „Mark 51°7“ – Wärme / Kälteversorgung

# Key success factors

## Support instruments key for the project implementation

### BAFA Federal funding for efficient heat networks (Wärmenetze 4.0)

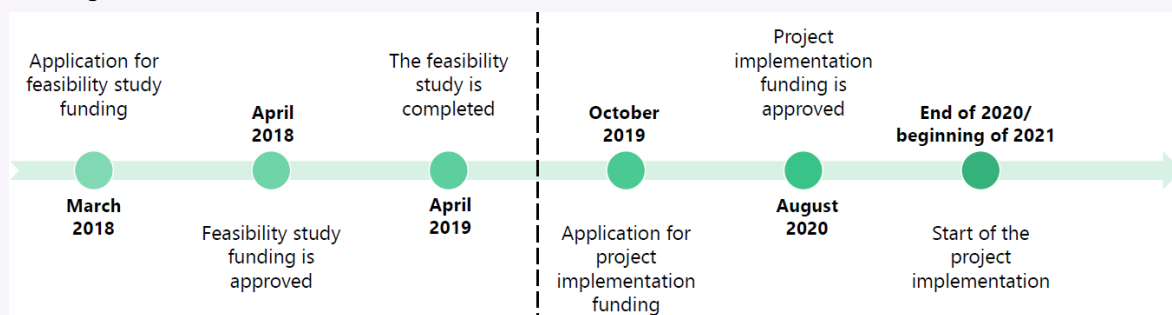
The program consists of 4 different modules:



### Project subsidies:

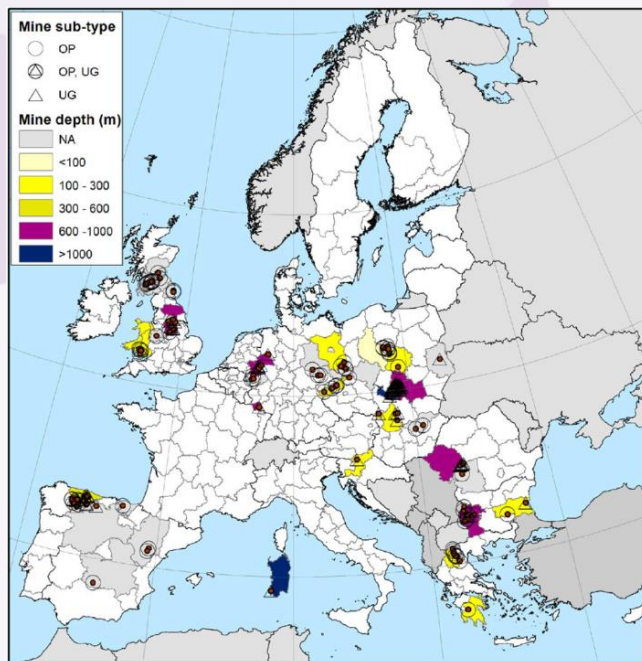
- **BAFA WN 4.0:**
  - 50% of feasibility study
  - 26% of investment costs (above grounding equipment)
- **EU Interreg Nord-West Europe program:**
  - 50% of drilling costs as highly innovative and unique project

### Project timeline



## Energy potential in mines area in EU

Existing and closed mines in EU (coal and other mines) represent geothermal energy potential for district heating and cooling in EU.



Source: JRC 2018, EU Coal Regions: opportunities and challenges ahead

## Further information

- Complete presentation available at:  
[www.ca-eed.eu](http://www.ca-eed.eu)
- Support scheme:  
[https://www.bafa.de/DE/Energie/Energieeffizienz/Waermetetze/waermetetze\\_node.html /](https://www.bafa.de/DE/Energie/Energieeffizienz/Waermetetze/waermetetze_node.html/)

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