

Heat Mining: Exploiting the Legacy of Abandoned Mines

Charlotte Adams¹ & Jon Busby²

BritGeothermal

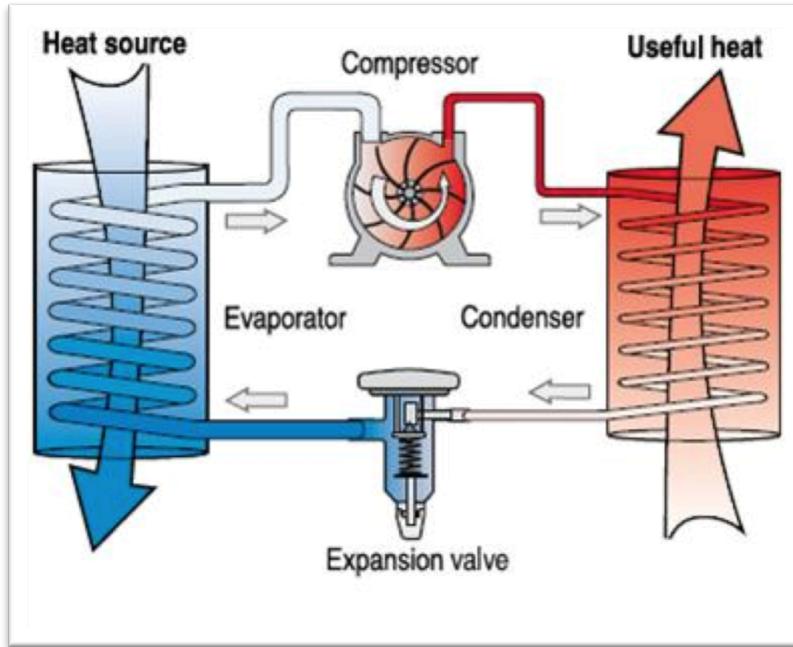
¹Department of Earth Sciences, Durham University, DH1 3LE, UK

² British Geological Survey, Keyworth, Nottingham, NG12 5GG, UK



Considerations

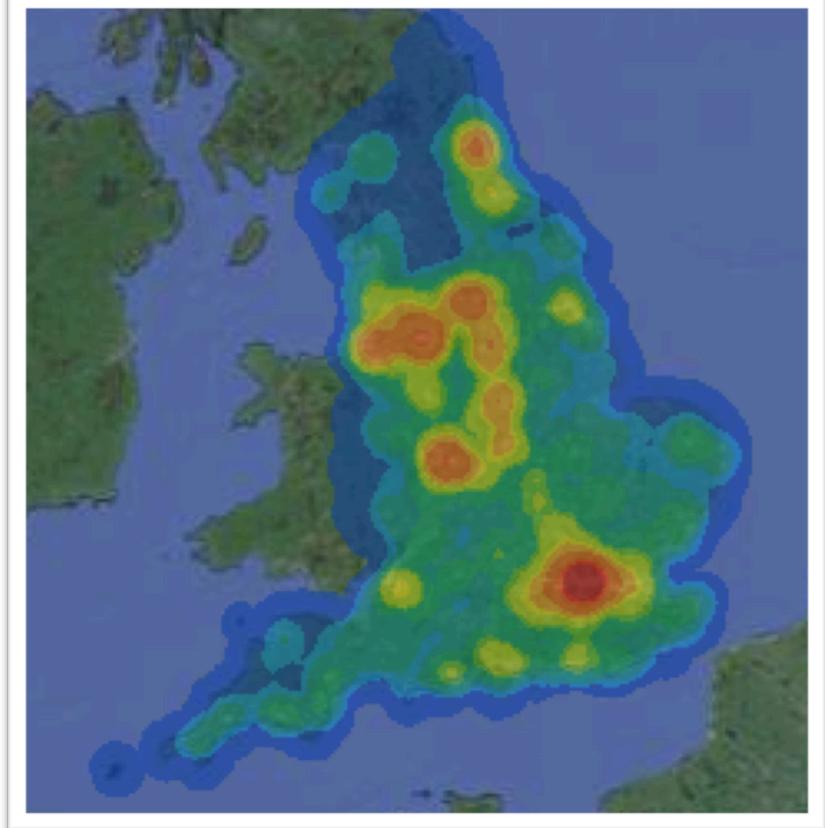
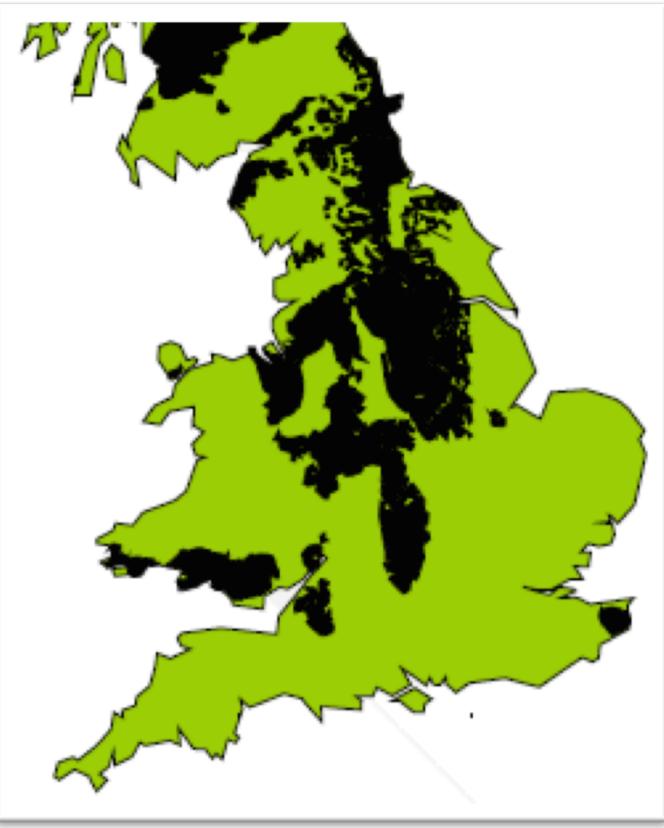
- Low but constant temperature
- Can be used to provide cooling



- Proven to flow water
- Scaling/precipitation
- Shallower



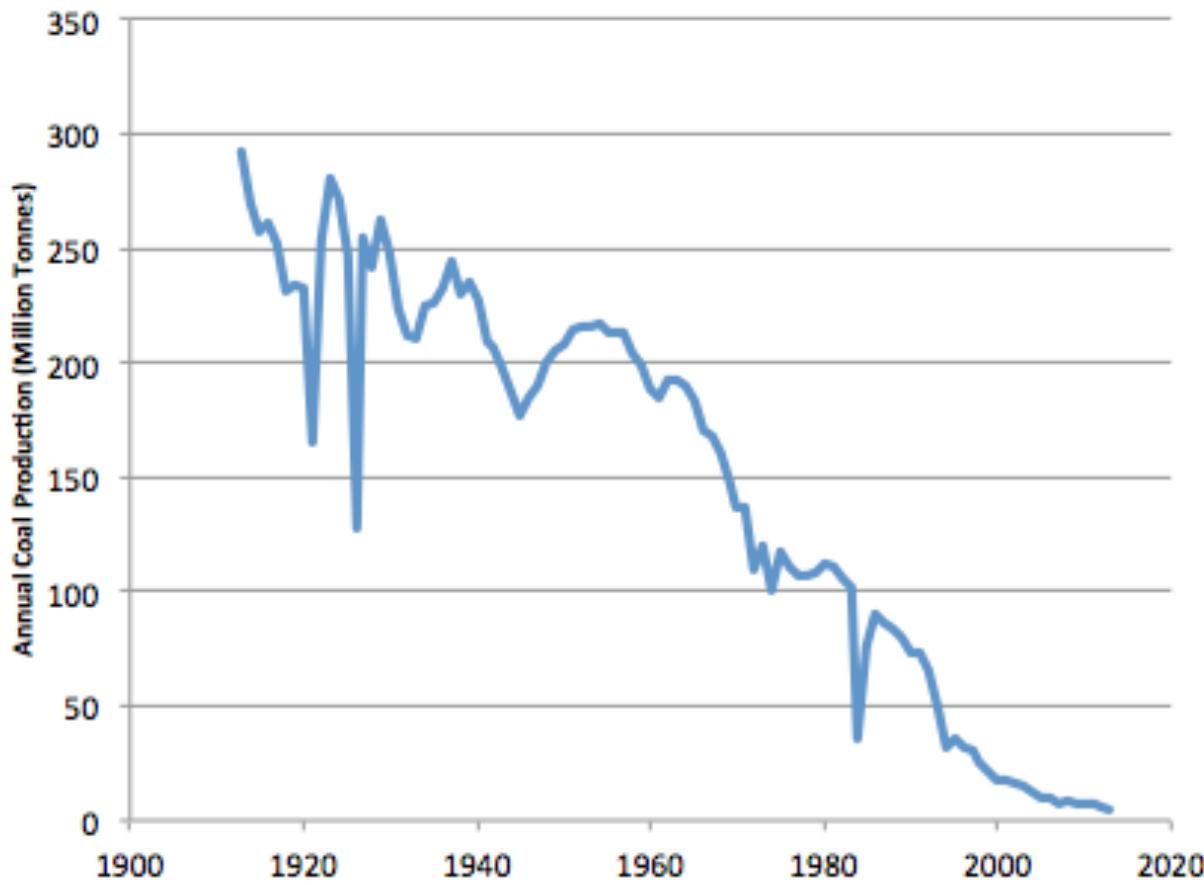
Supply vs Demand



“Around half of the energy consumed in the UK is for heat production”



UK Coal Production



- 15bn tonnes of coal from deep mines
- 2bn m³ of water within flooded workings in the UK
- 38,500TJ of heat*

* At Δ T 4°C



Comparison with other systems

- Reduced CO₂ emissions,
- No electricity production but can provide cooling
- No transportation or storage of fuels
- Health and Safety – non combustible fuel source
- Low visibility
- Low noise



Where is it used already?

- Heerlen, The Netherlands
- Nova Scotia, Canada
- UK has some smaller schemes with larger schemes being considered
- Metal mines also have potential



Research Opportunities

- Mine Gas
- Use workings as heat network
- Thermal Storage
- Economics
- Social aspects of sharing energy



Why we should use minewater

- Could be used to contribute heat for several of our demand centres
- Can offset power consumption associated with cooling
- Abundant and accessible indigenous energy resource
- Compatible with heat networks and other energy sources

