Heat Mining: Exploiting the Legacy of Abandoned Mines

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Considerations

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

• Proven to flow water
• Scaling/precipitation
• Shallower
“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 CO$_2$ 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