

Macro Distributed Energy Project – Key Findings

- Distributed Energy is an established and beneficial technology, but with a complex and high risk value chain
- There is a potential strong role for Macro Distributed Energy to play in providing heat to urban areas in the future
- For success – Distributed Energy requires a community approach with the co-ordination of many stakeholders
- There are complex delivery options – there is no single optimal approach
- Investment in Distributed Energy requires a long term view
- In high density urban areas, district heating has the ability to be more cost effective but it is not a practical solution in rural areas
- About half of the country's heat demand is suitable for district heating in principle
- Given the correct regulatory and fiscal environment, district heating networks could be the lowest cost way of delivering CO₂ reductions in the building environment
- There is a current economic case for building district heating networks, and this is likely to improve over time given forecasted rising energy and carbon prices
- CO₂ emissions reductions available using gas-fired combined heat and power are the highest now, but this will decline over time as the electricity grid decarbonises
- Post 2030 – district heat networks look like they can remain competitive in both cost and CO₂ performance

• Future technologies most attractive for further technical and commercial development are:

- **Combined Cycle Gas Turbine Combined Heat and Power (<100MWe)** – has a higher efficiency than gas-engines so potential for CO₂ savings are greater
- **Energy from Waste Combined Heat and Power** – still a largely untapped energy resource – still considerable waste going to landfill and many energy from waste projects are electricity only plants recovering approximately 30% of the available energy
- There is a business opportunity to develop Macro Distributed Energy projects across the country if the right economic and regulatory environment can be put in place.
- Macro Distributed Energy offers substantial CO₂ savings especially over the next decade,
- The main risks are not in the technology but in the security of the heat market

Key facts and figures

43% of the current UK buildings heat market can be connected economically to Macro Distributed Energy schemes – resulting in cost savings

This represents 12.4 million homes & 2.9 million non-domestic connections

UK share of district heating networks is low (1-2%) – Europe much higher – Denmark (60%)

Average home connected could save approximately £350 per year annualised cost against gas boilers and £950 per year annualised cost against air source heat pumps

43% demand represents 4% of the geographical area of the UK

Total CO₂ emissions associated with heating buildings in the UK is estimated to be 113 Mtonnes p.a.