

Integrating heat networks into the wider energy system

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Working with leading technology partners

- Optimum efficiency, lowest energy cost

Metering Solutions



kamstrup

Hydronic Solutions



Danfoss



Next Generation
Large dT Heat Pumps
DELTA

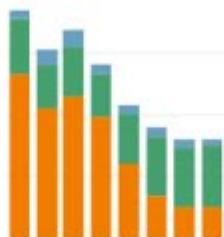
THERMONOVA
VARMEPUMPER

Mechanical ventilation
and heat recovery



AIRMASTER

Energy Monitoring &
Management



 **EnergiRaven**



Electric Boilers
DELTA

 **VÄRMEBARONEN**

Hydronic Solutions



 **FloCon**
Watchman

Heat network billing
solutions



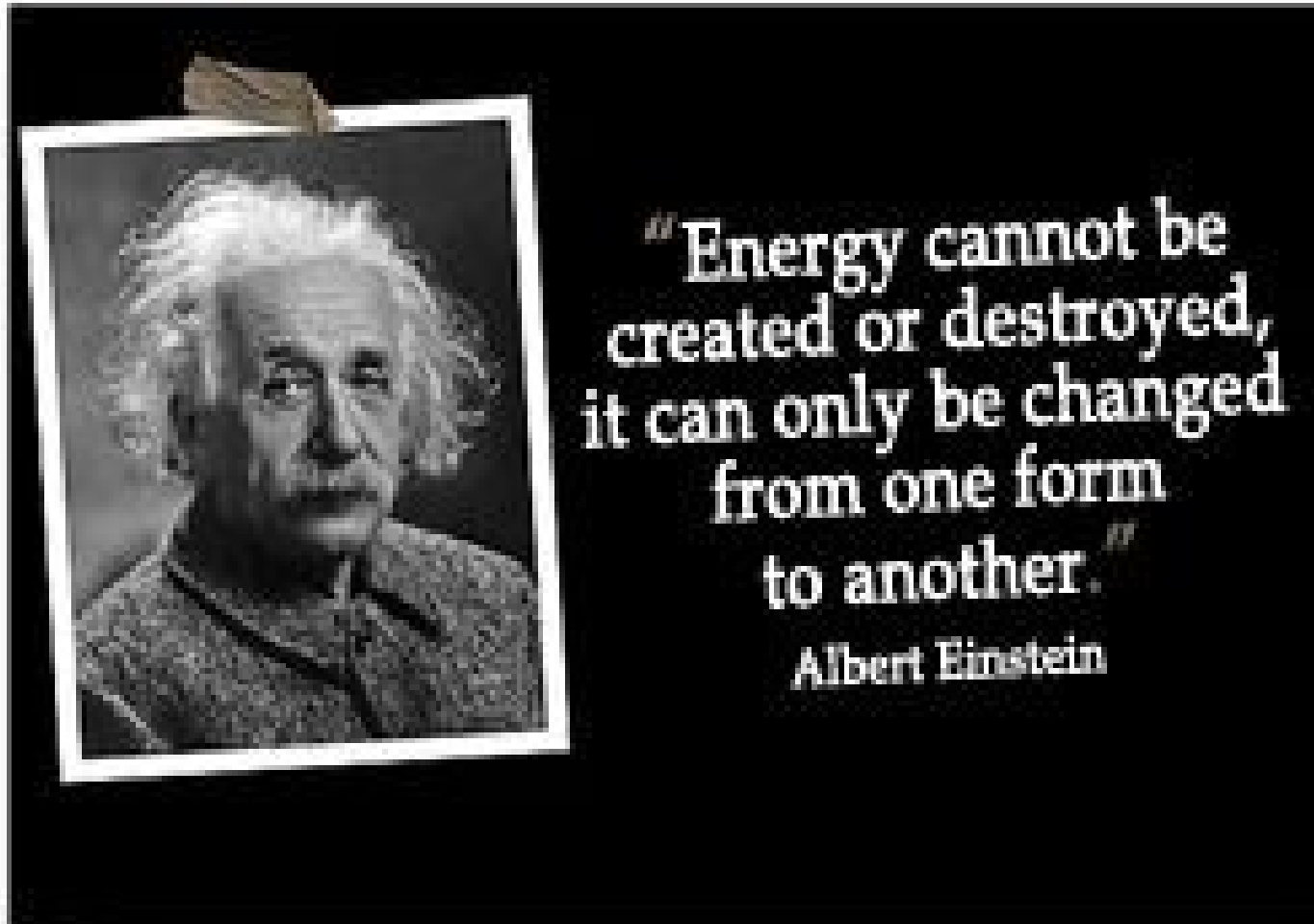
KURVE
TECHNOLOGIES



CHP, heat pumps &
electric boilers

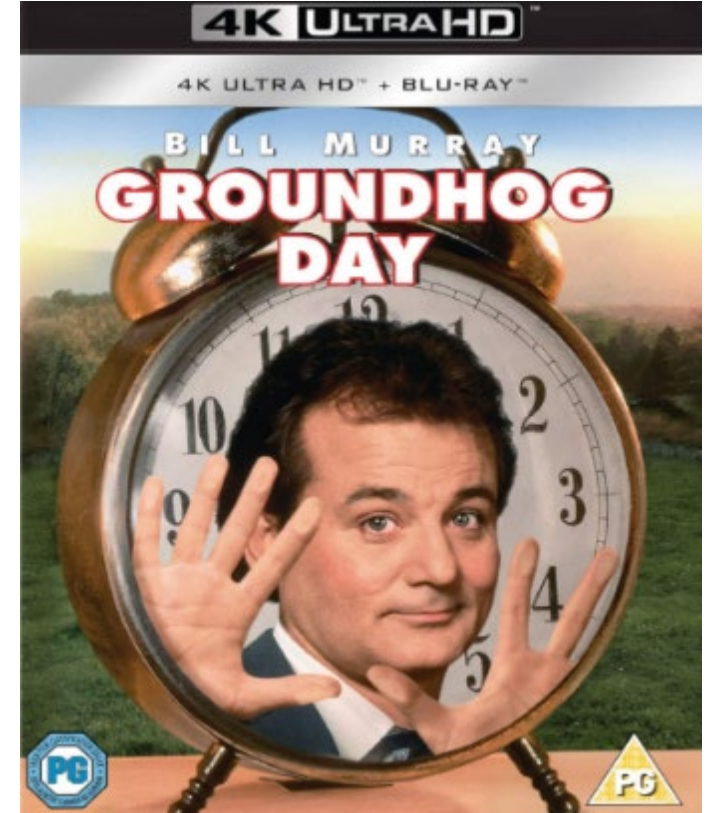
HYBRID
ENERGI

Waste Not (electricity), Want Not (heat)



The Energy “Groundhog Day” Crisis

1. The Post-War Coal Rationing Crisis (Mid-1940s–1950s)
2. The 1970s Oil Crisis (1973–1974)
3. The 1979–1980 Oil Crisis
4. The 2021 Russian invasion of Ukraine
5. The 2026 Strait of Hormuz Crisis
6. ???
7. ???
8. ???



Definition of a Heat Network

Pipes in the ground that transport energy (heat) from where it's readily available to where it is needed most.

- Heat supply agnostic.
- Multiple and varied heat sources.
- Energy security.
- Future proofed.
- Simple affordable technology.
- Local job / wealth creating.

The (Grid) Balancing Act



30th April - 1st May – wholesale electricity prices



https://app.electricitymaps.com/map/zone/GB-NIR/live/fifteen_minutes

Heat Networks with strategically scaled thermal storage can flex heat production to suit the electricity grid.

Blue – grid balancing service with electric boilers and solid-state controls for instant reaction.

Green/Yellow – general heat production via Heat Pumps.

Red – avoid heat generation and discharge thermal storage.



Waste on an Industrial Scale



Belfast

Heat Transmission Highway



"The geology of Northern Ireland is remarkably diverse, with rocks spanning over 600 million years of Earth's history. These rocks offer promising energy transition opportunities to deliver major geothermal, carbon capture and storage (CCS) and energy storage projects in regional sedimentary basins and extensive volcanic strata - whilst supporting major onshore wind development opportunities. Northern Ireland also offers potential for broader renewable integration."

British Geological Survey

----- Future Heat Transmission Highway
—— Original Heat Transmission Highway



Existing Heat Sources

– 100,000 homes (exc. Geothermal)



NI's Geothermal heat capacity is virtually limitless
- British Geological Society

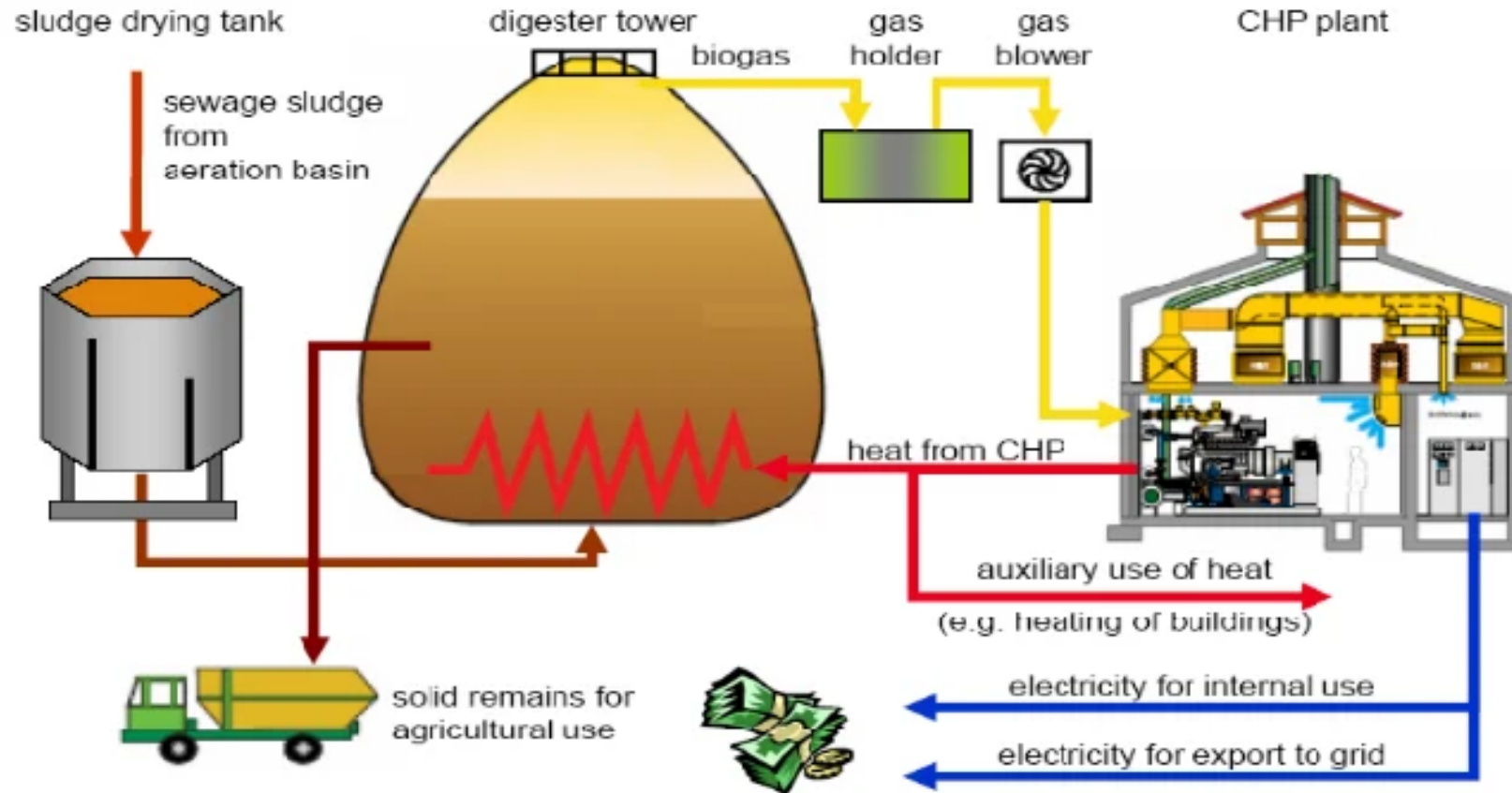


These heat sources are not an exhaustive list and others should be available with further and more detailed analysis.

Future Heat Sources – Industrial Clusters



Future Heat Sources – Agriculture and Biogas CHP



Future Heat Sources – Data Centres



HEAT.

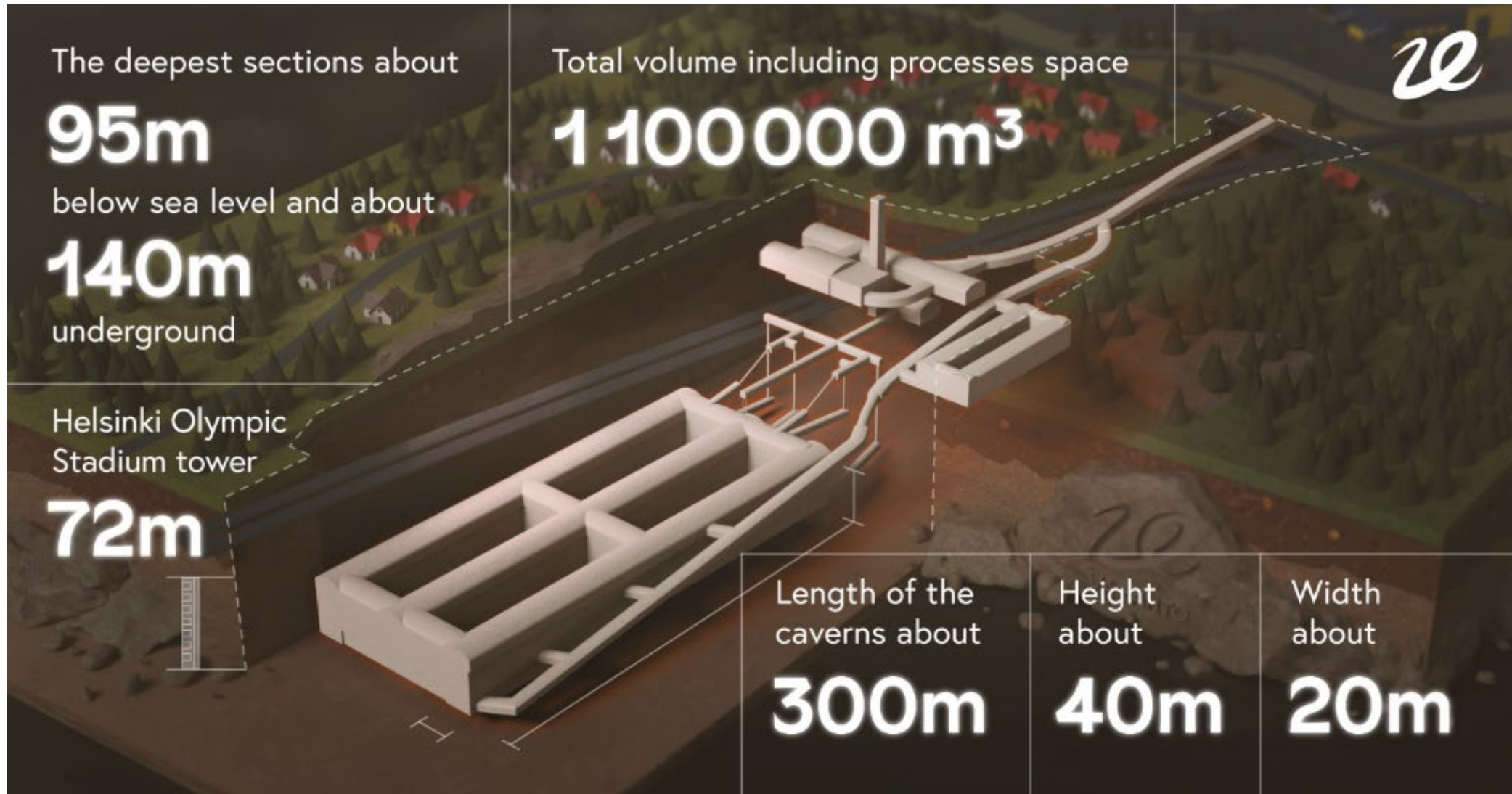


**DEEP
GREEN**

<https://deepgreen.energy/blog/how-to-use-robots-to-save-the-world>

Underground Thermal Energy Storage (UTES)

- Varanto, Finland



Triangle Region Heat Transmission Company (TVIS)

TVIS is responsible for entering into agreements with local heat suppliers so that the heat demand in their four owner municipalities is covered. They are also responsible for the heat transmission highway in the Triangle Region, which consists of a 123km piping system.

Since its inception in 1983, TVIS has through sector integration and industrial clustering been able to deliver low - cost waste heat to nine independent district heating companies, supplying over 60,000 consumers spread over seven municipalities.



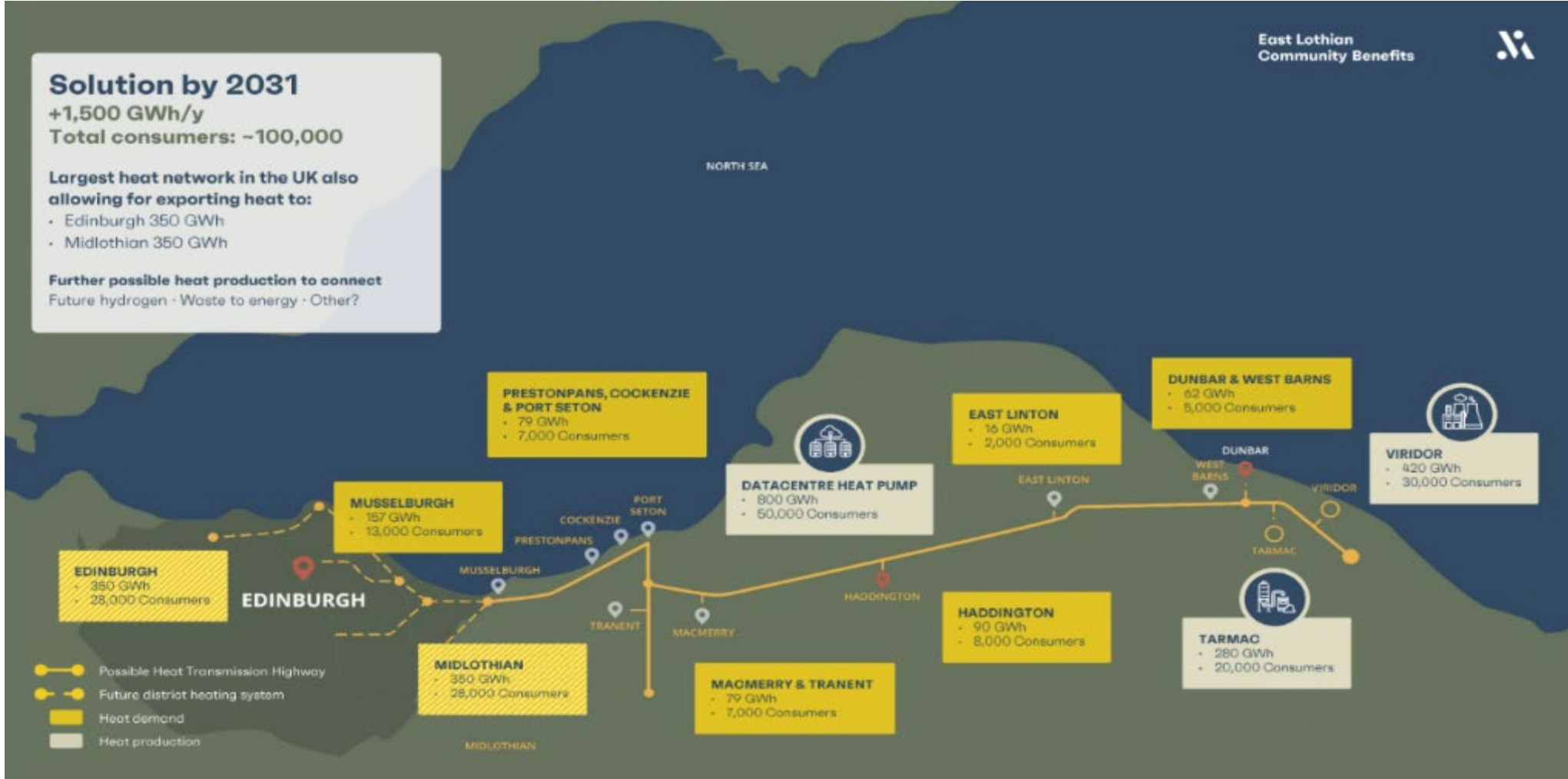
Shetland Heat Energy And Power (SHEAP)

- est.1998 now with 1300 homes connected.

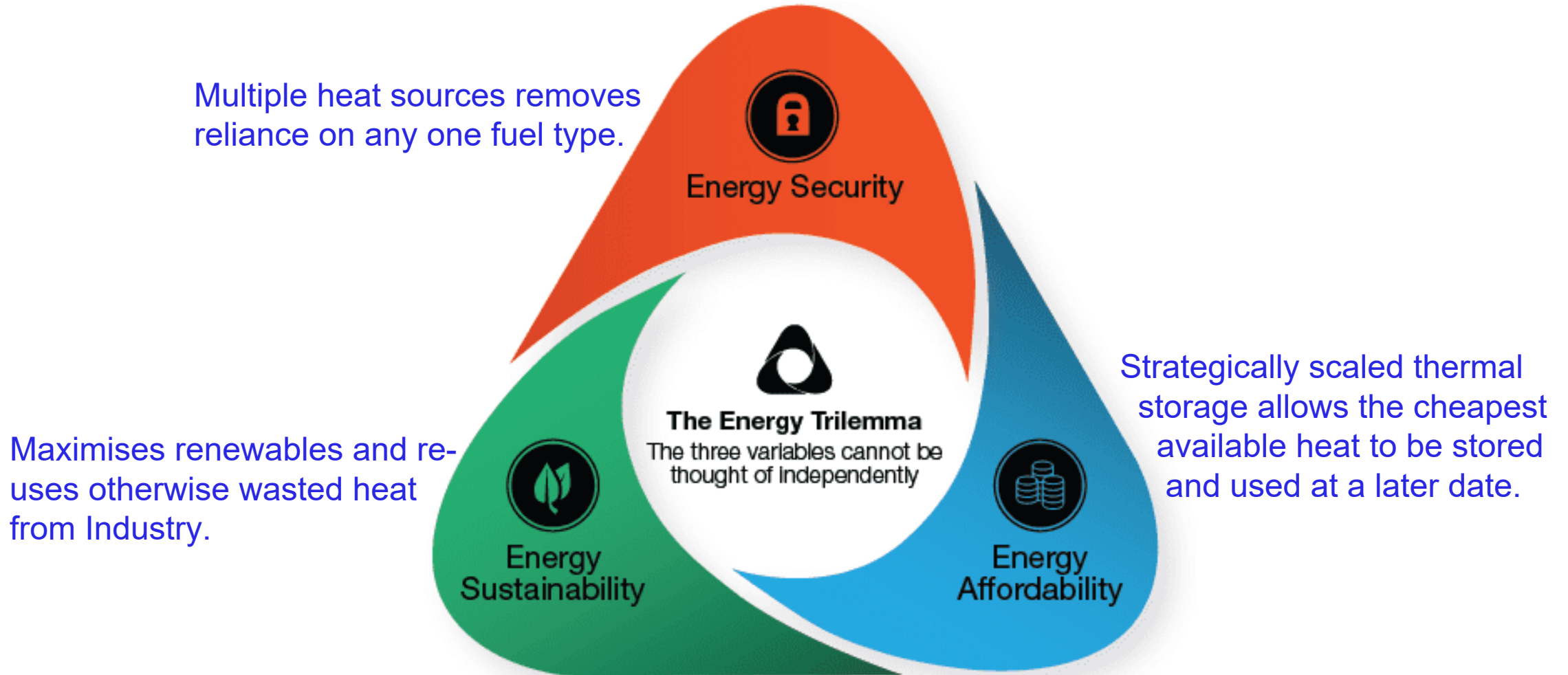


Lothian Heat

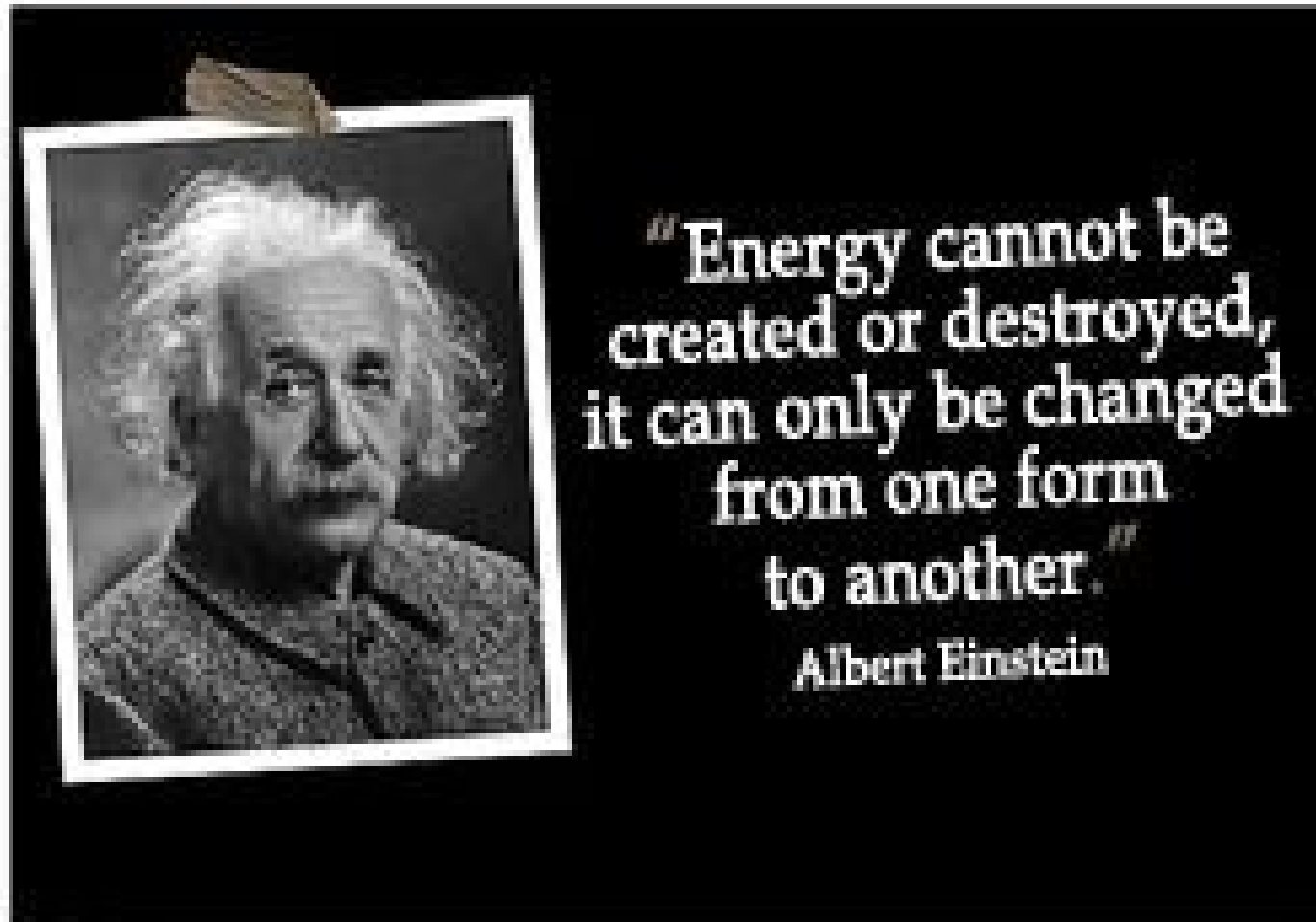
- est.2025 with plans to connect over 100,000 homes by 2031



Heat Networks and The Energy Trilemma



Net Zero, a Fair Transition and plain common sense, starts with using the energy we already have.



Thank you
for your attention.

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