

# Lochs to Watts: COWI's Impact on Scotland's Green Energy Horizon

Sara Mehrabi & Scott Allan  
COWI UK – Glasgow



# Who we are!



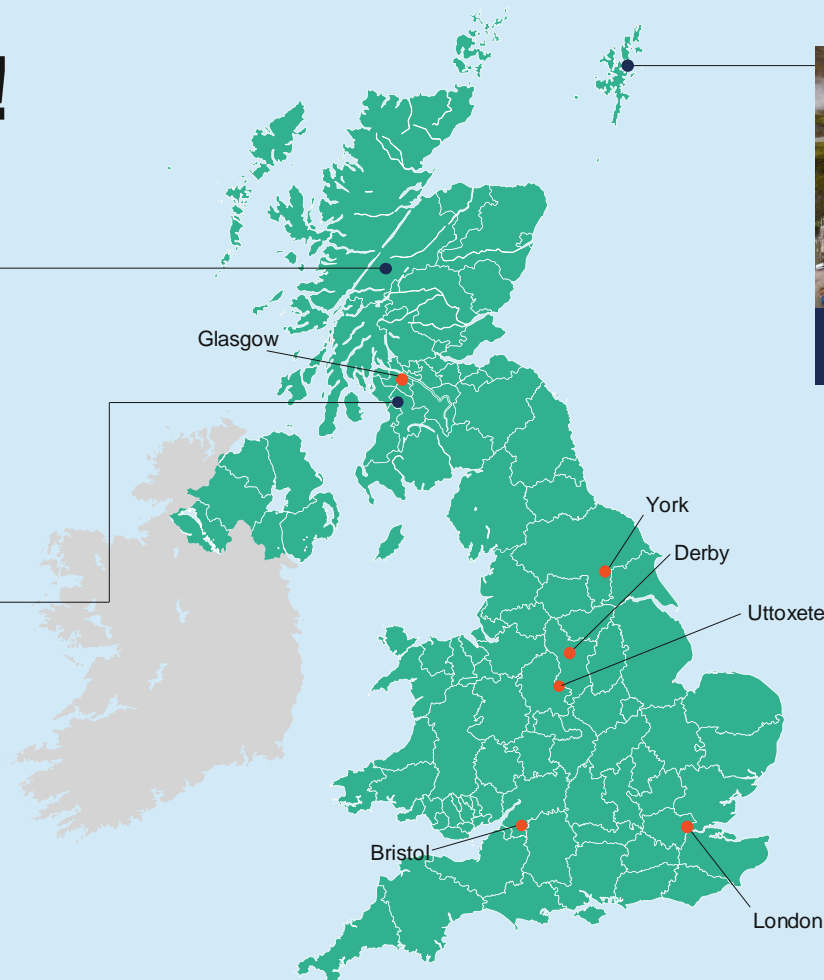
# Who we are!



Coire Glas Hydroelectric Scheme



Whitelee Wind Farm



Shetland Islands SHEAP District Heating

# Thermal Trails: COWI's Pioneering Impact on UK's District Heating Projects

Tees Valley Heat  
and Power Offtake  
- Middlesbrough

Nottingham heat  
master planning -  
zone 1

ST ANDREW'S  
UNIVERSITY  
BIOMASS BOILER

Steam Pipe Project  
Cranfield University

Heat Recovery at  
Data Centre - new  
data centre at  
Lerwick

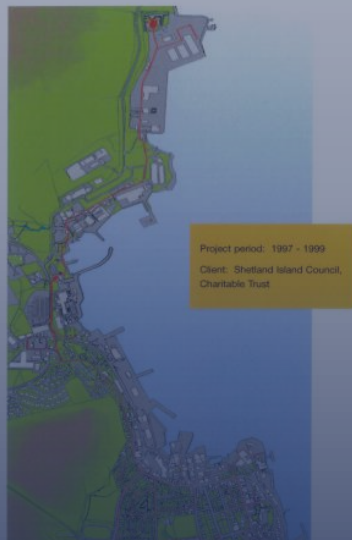
Low temperature  
heat study for  
London

Shetland Heat  
Energy and Power

Lerwick Waste-to-  
Energy Facility,  
Shetland Islands

University of  
Strathclyde CHP  
and District Energy  
Design Review

District heating  
market study for  
the United  
Kingdom



On 10 October 2000 Shetland Heat Energy and Power won the 2000 Environment Award for Engineers. This Award was launched in 1990 by HRH the Duke of Kent and was this year sponsored by Lloyd's Register, British Energy, Rolls-Royce plc, the Engineering Council and the UK Association of Professional Engineers.

Bruun & Sørensen Group's project manager, Mr. Jan Clement, took part in the ceremony at the Science Museum in London. Among the finalists, the district heating project was appointed the overall winner. In the presentation of the project it says: Shetland is Britain's remotest and one of the smallest communities. The remoteness limits the options for recycling and what to do with its waste. Shetland Islands Council decided to construct a waste to energy plant with the objective to attract waste from Orkney and offshore installations, create jobs and provide energy to the local economy.

Shetland Islands Council Charitable Trust, with EU funding, invested £7 Million in a district heating scheme to distribute heat. In less than two years the scheme gained customers from all sectors of the economy. Customer feed back has been excellent and the system is now selling itself by word of mouth resulting in a long waiting list for connections.

When a major extension currently under-way is completed over half the Lerwick population (8000) will be within reach of the scheme. The scheme is unique in Britain in that it based on the Danish model by aiming to serve the whole town.

Architectural engineers Bruun & Sørensen Group, in partnership with Shetland Islands Council, designed and constructed the waste to energy plant from 1994 and of the district heating network since 1997. An essential part of the project was the design of the company and of the marketing strategy.



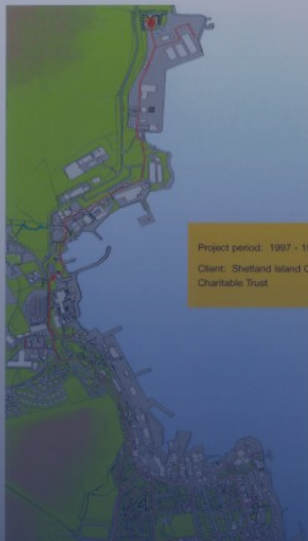
# Circular economy on the Shetland Islands

## Lerwick District Heating Scheme

- 1998 Waste to Energy facility commissioned & First Customer connection
- 2002 Sound area of Lerwick connected
- 2006 Hot water storage tank installed
- 2008 Additional boiler installed
- 2011 1000<sup>th</sup> domestic customer connection
- 2017 New Anderson High School connected
- 2022 LPS connection for use of surplus heat

# SHETLAND COOPERATION SINCE THE 90TIES





Project period: 1997 - 1999  
Client: Shetland Island Council,  
Charitable Trust

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An consulting engineers Bruun & Sørensen has been responsible for the design of the plant and the district heating network since 1994 and of the district heating network since 1997. An essential element of the project has been the company and of the managing strategies.



# Leading the way on the Shetland Islands

## COWI collaboration with SHEAP

Trusted advisor for +25 years

Network design

Hydraulic simulation

Control strategies

Waste heat utilisation

Digital twin

Learnings

# SHETLAND COOPERATION SINCE THE 90TIES

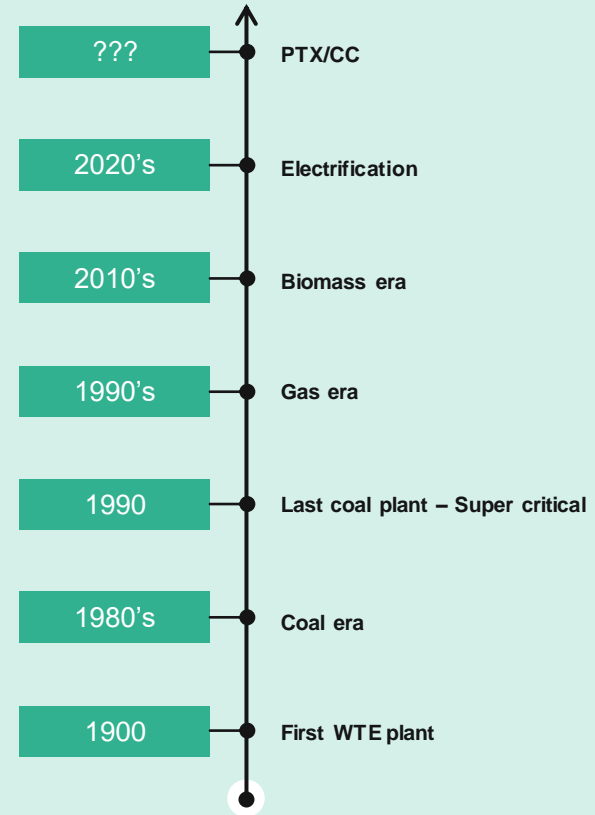


# A SUSTAINABLE AND CONNECTED SOCIETY

## MASTER PLANNING

- Large-Scale Master Planning
- Real-time Modelling
- Maximising Renewable Energy Production
- Future of Space Heating
- Green Energy Storage Solution

# Combining Global Expertise for Local Impact





# Shaping the Future of Heat Networks



Geothermal Innovation workshop

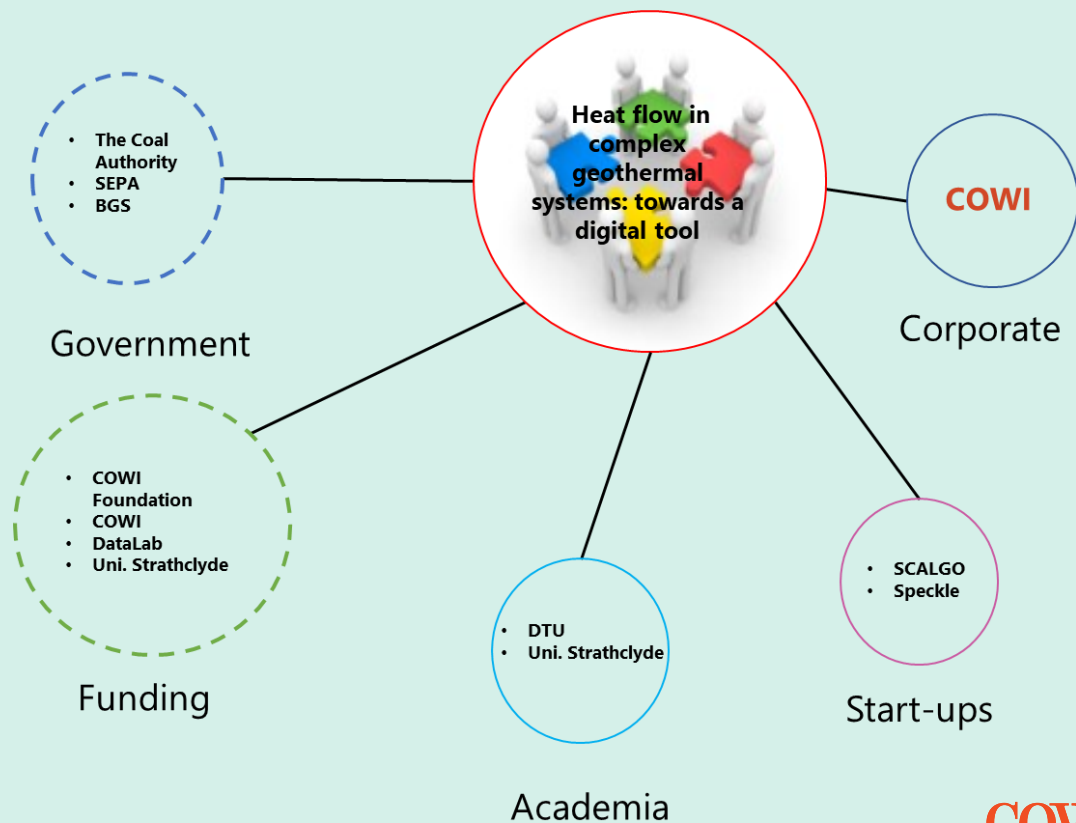
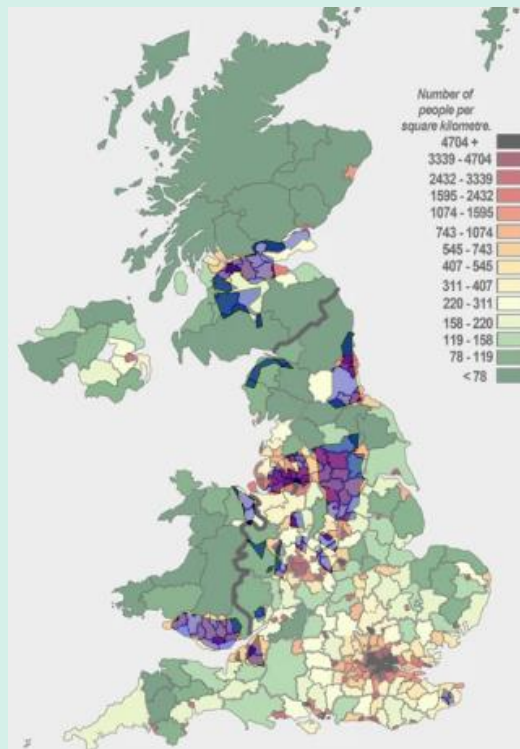


EGPD site trip



EGPD conference

# Innovating Together



# The Heat is On! Envisioning the Future of District Heating



**More buildings will be connected**



**More energy sources will be supplying heat to the network**



**Networks will face lower temperatures (sustainable energy sources)**



**Price of heat will vary (introduction of tariff structure)**

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# Thank you

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