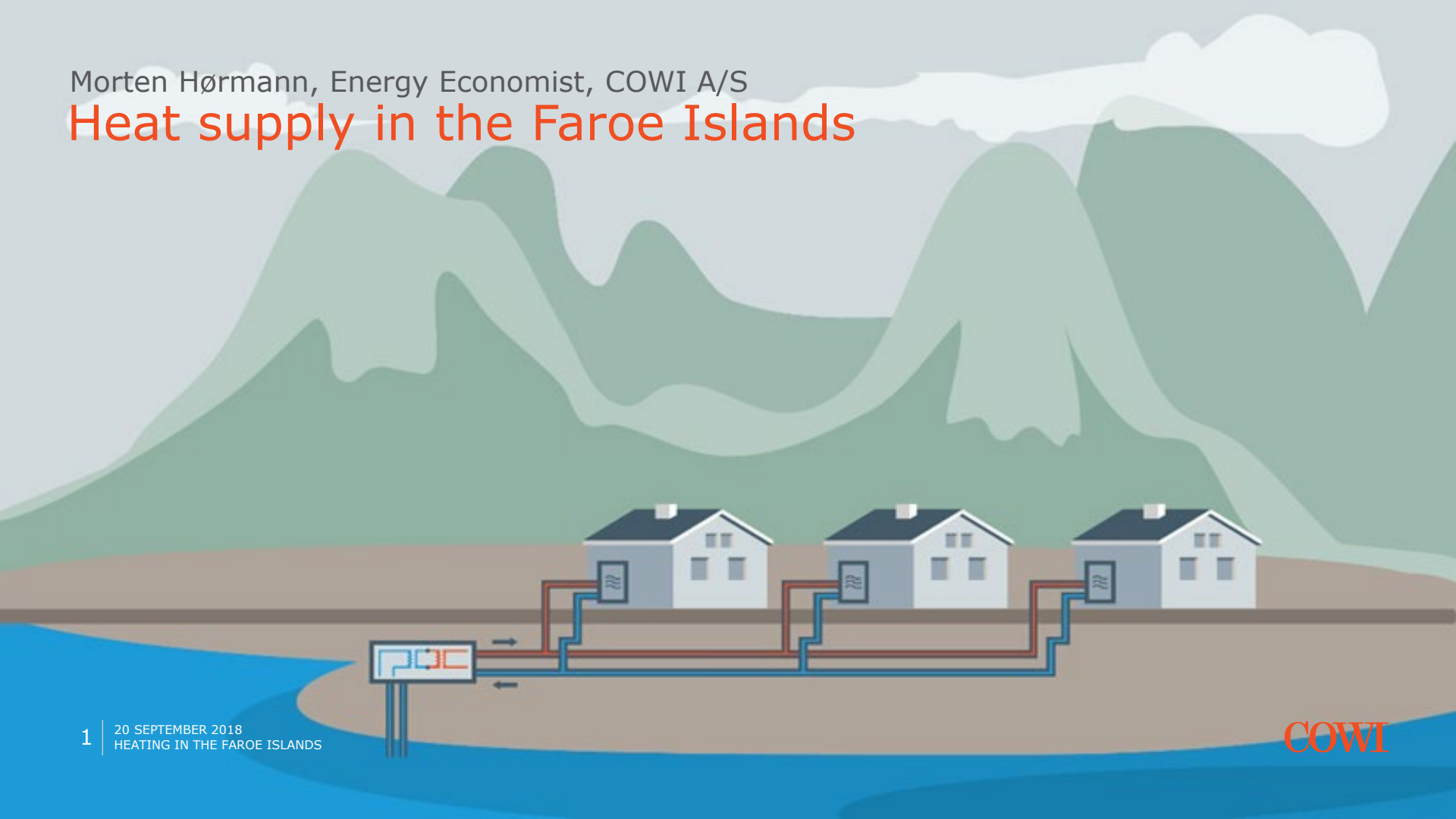


Morten Hørmann, Energy Economist, COWI A/S

# Heat supply in the Faroe Islands

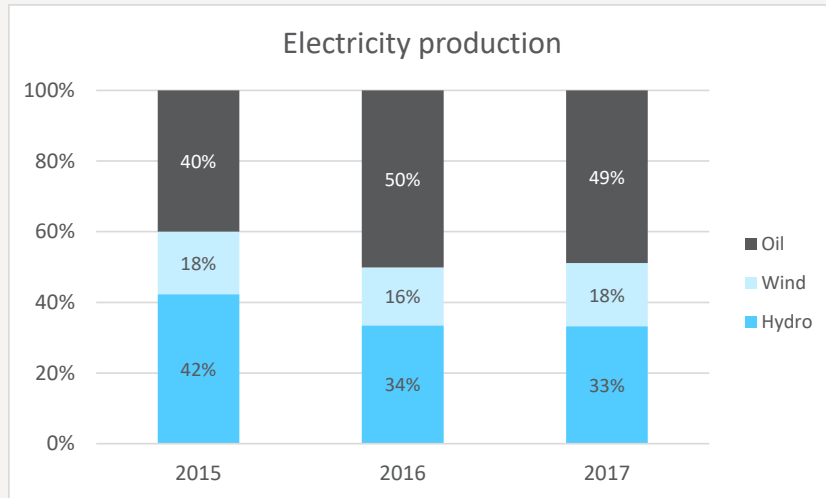


# The Leirvík case

- > Part of a Nordic Energy Research study on renewable energy in sparsely populated areas
- > The case focuses on heat supply in Leirvík in the Faroe Islands



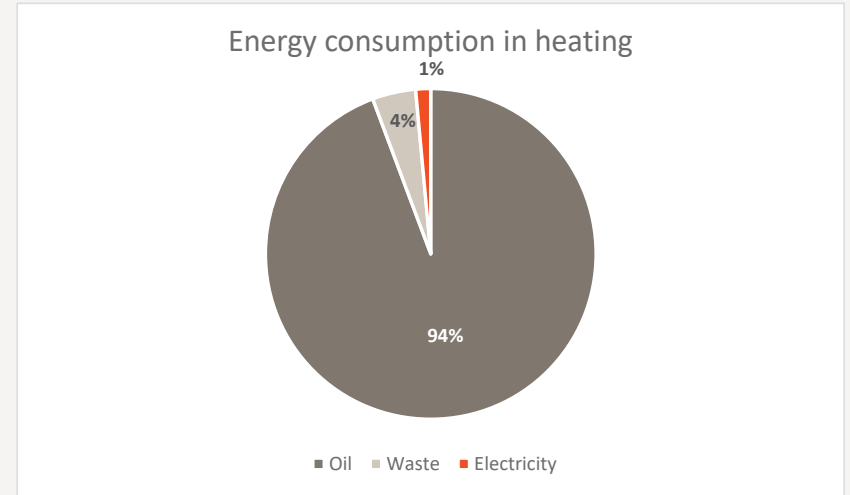
# Electricity in the Faroe Islands



Source: <https://statbank.hagstova.fo>, U003020

- > The goal is 100% renewable energy in power production by 2030
- > Much more wind power
- > Smart grid
- > Storage

# Heating in the Faroe Islands

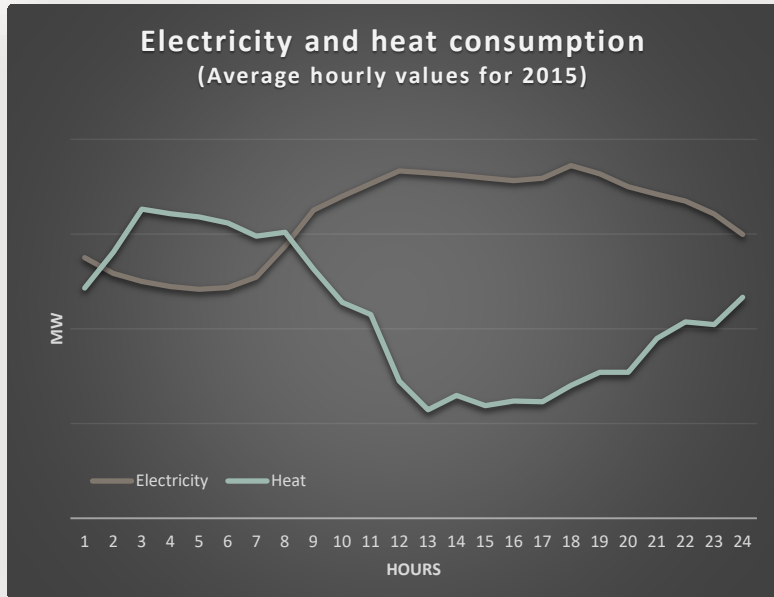


# Leirvík

- > Population: 867
- > 315 houses
- > 20 larger buildings
  
- > Oil consumption:
  - > 1.1 million litres per year
  
- > CO<sub>2</sub> emissions:
  - > Almost 3,000 tonnes/year



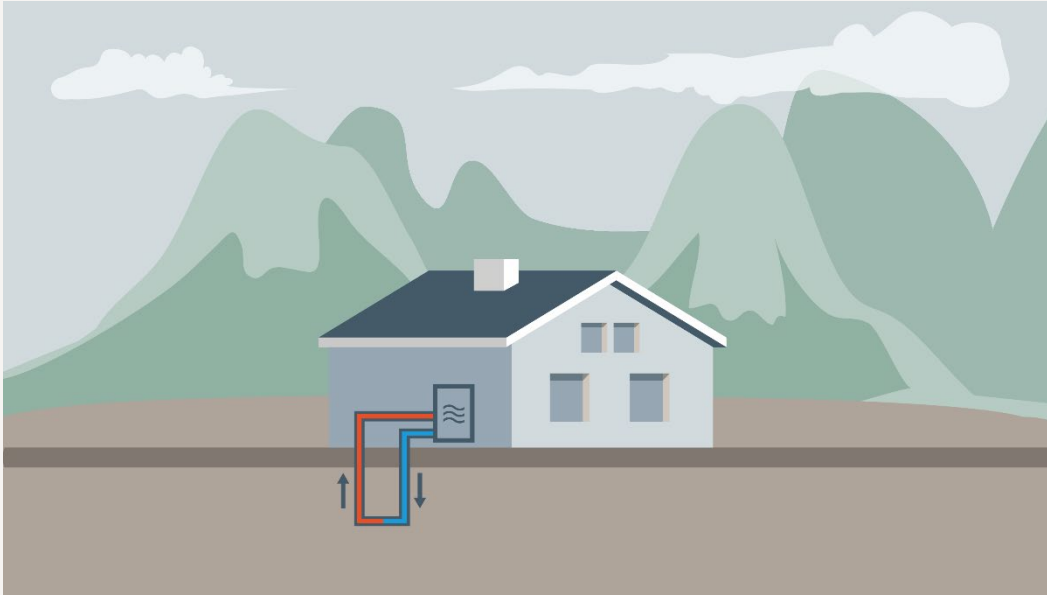
# Electrification of heating



- > Even out electricity consumption
  - > Better utilization of existing generation capacity
- > Energy storage
  - > Support additional wind power capacity
- > Frequency response
  - > Support power system stability

Reduced electricity prices?

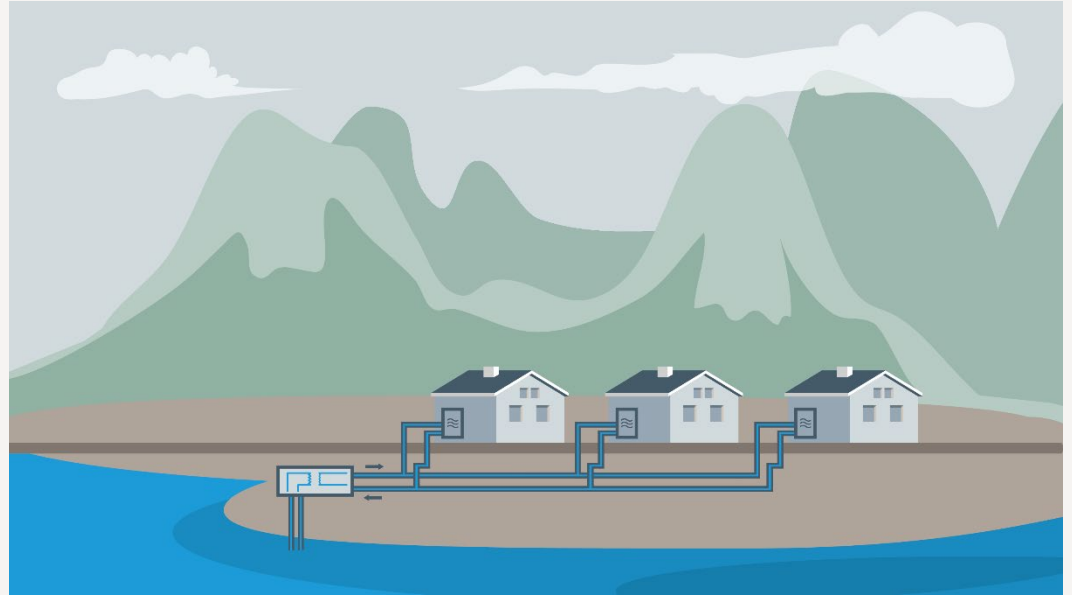
# Individual heat pump



- > Heat pump, electric boiler and heat storage
- > Individual boreholes
- > Benefit: gradual implementation
- > Challenge: many small units

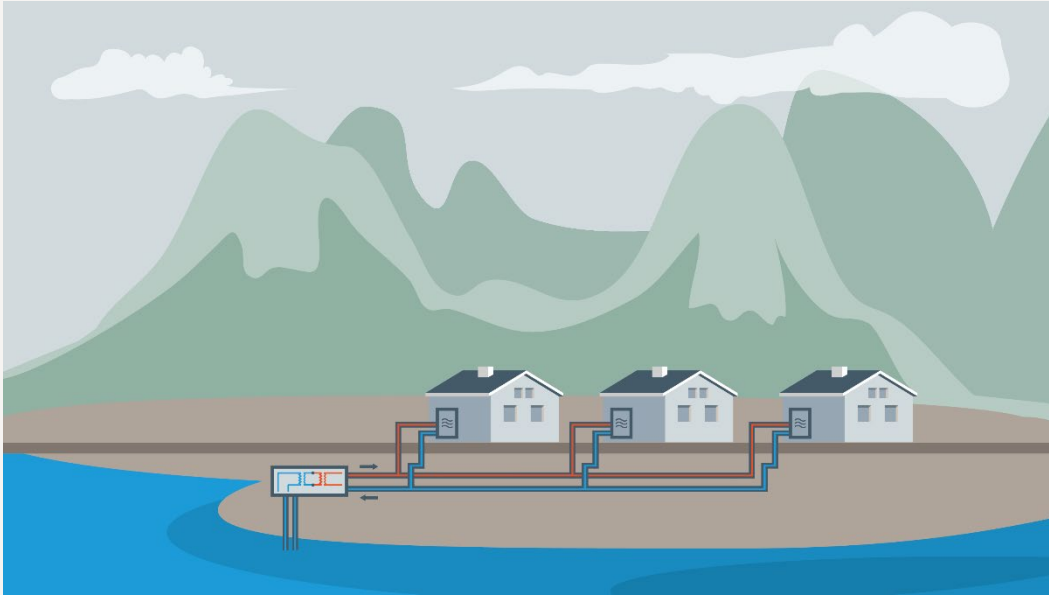
# Individual heat pump with collective heat source

- > Heat pump, electric boiler and heat storage
- > Brine at seawater temperature in pipes
- > Benefit: no need for boreholes
- > Challenge: large volume of water





# District heating based on heat pump



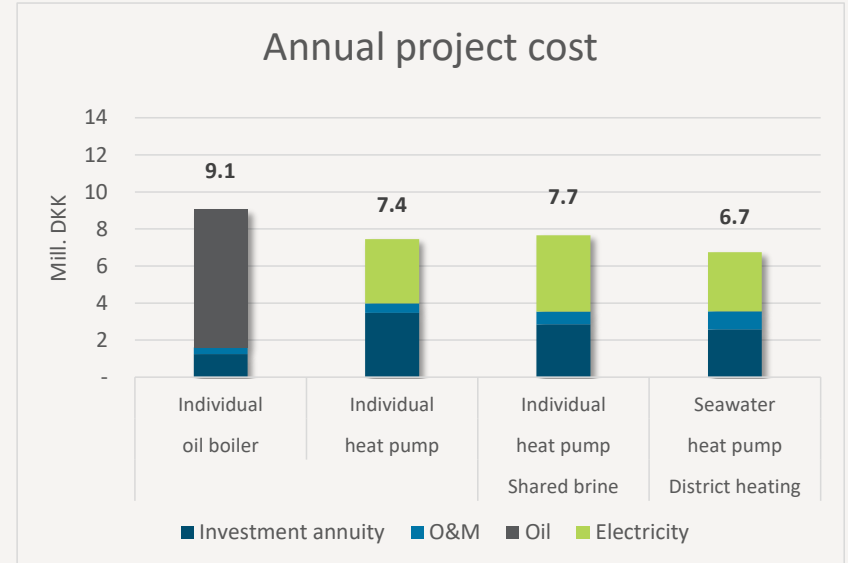
- > Heat pump, electric boiler and heat storage
- > DH network
- > Benefit: One big unit, low household investment
- > Challenge: Requires big uptake within short timeframe

# Pipe network for collective solutions



# Feasibility

- > District heating solution turns out to be the cheapest solution
  - > Requires the formation of a municipal/community owned DH company
  - > Removes the largest investments decisions from the households
  - > Requires a high degree of uptake
  - > Based on tentative commitment from power supplier on reduced electricity prices at night (0.5 DKK/kWh)



# Perspectives

- > All heat pumps are cheaper than the current oil based heating
- > Matches very well with the conclusions from EVA
  - > Goes a step further, as this study is based on real prices **including taxes**
- > Reduction in CO<sub>2</sub> emissions
  - > 50% today = 1,500 tonnes per year
  - > 100% by 2030 = 3,000 tonnes per year

# What now?

## Leirvík:

- > Pilot project on supplying 20 primarily public buildings from a sea water heat pump

## Other municipalities:

- > High interest
- > On-going work to assess the possibilities of using existing heat sources
  - > Waste incineration
  - > Industrial excess heat

## Regulatory:

- > No VAT on individual heat pumps
  - > Goes against DH solutions
- > Still no decision on differentiated electricity prices
- > Leaning toward individual solutions