

ENGINEERING  
TOMORROW

*Danfoss*

# District Energy – Cities are key to sustainable growth

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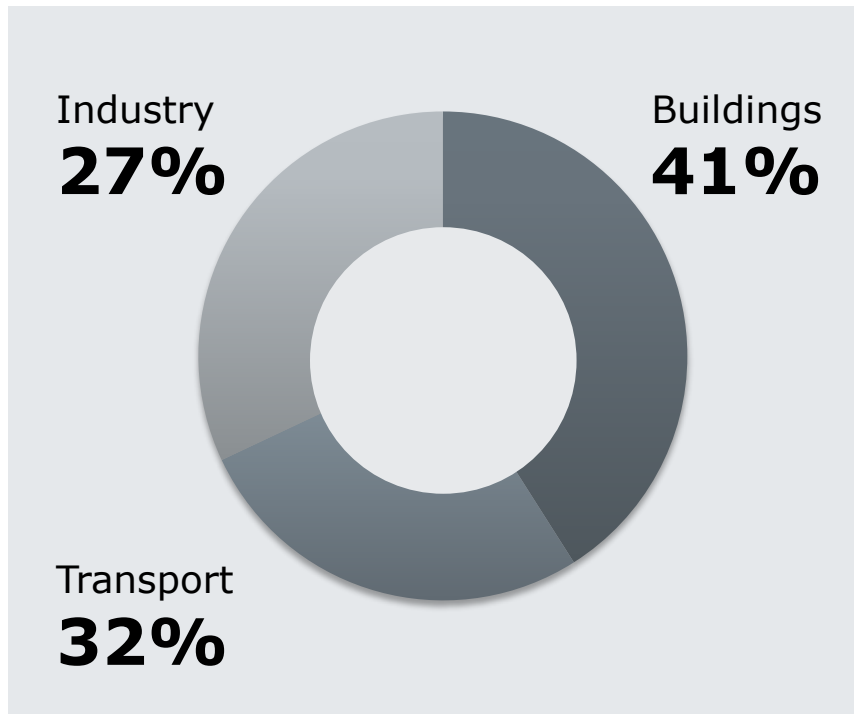


# Large potential for energy savings in buildings

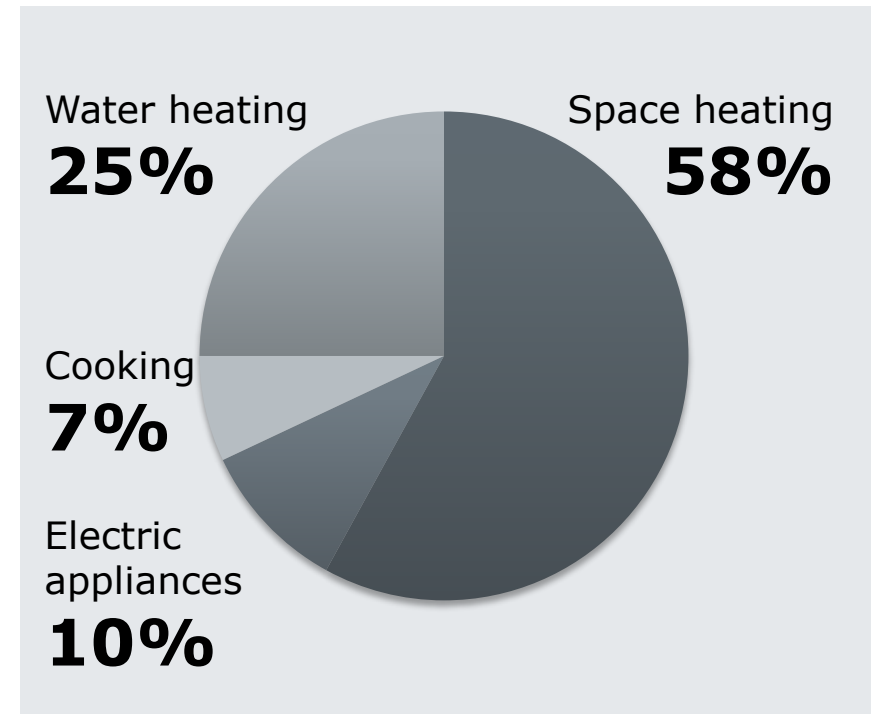
Buildings account for one-third of total final energy consumption in the world ...

Globally, space heating and cooling account for over one-third of all energy consumed in buildings...

EU example:

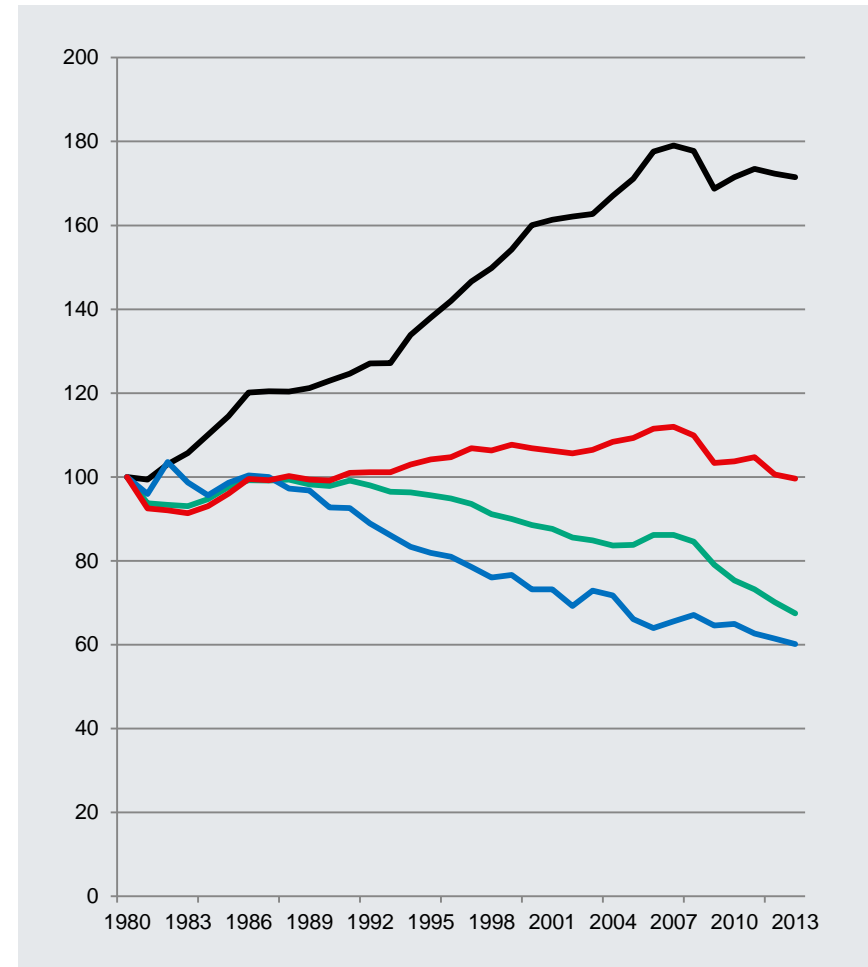
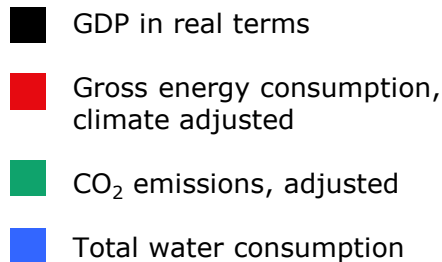


EU example:



# Decoupling of Growth and Energy Consumption

- Since 1980, the Danish economy has grown by almost 80 per cent without increasing gross energy consumption.
- And total water consumption has been reduced by 40%.
- And CO<sub>2</sub> emissions has been reduced by more as 30%.



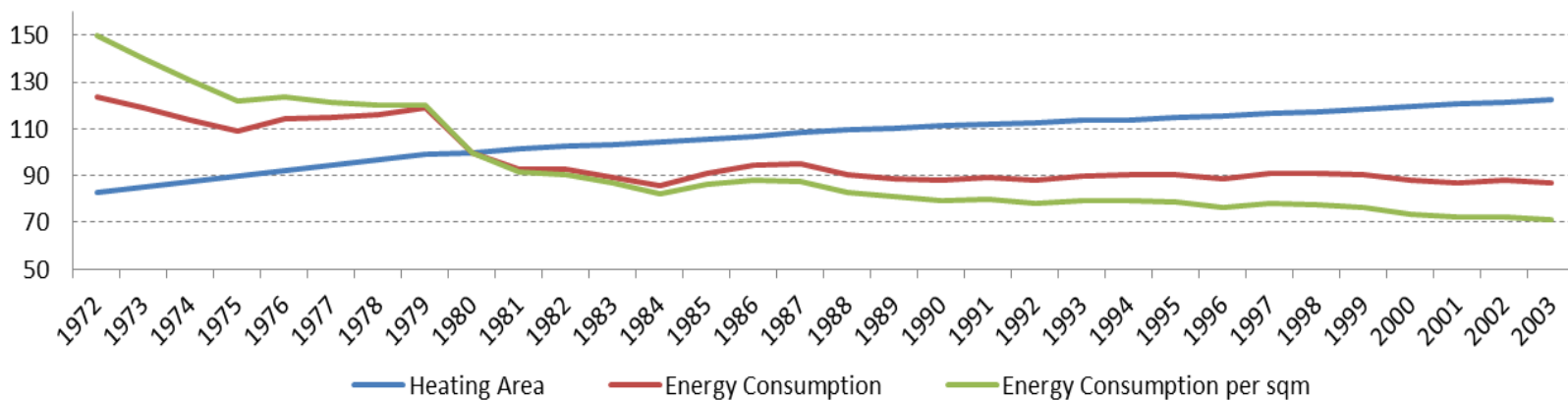
Source: State of Green 2014

# Denmark is a pioneer in district heating

## District heating development in Denmark

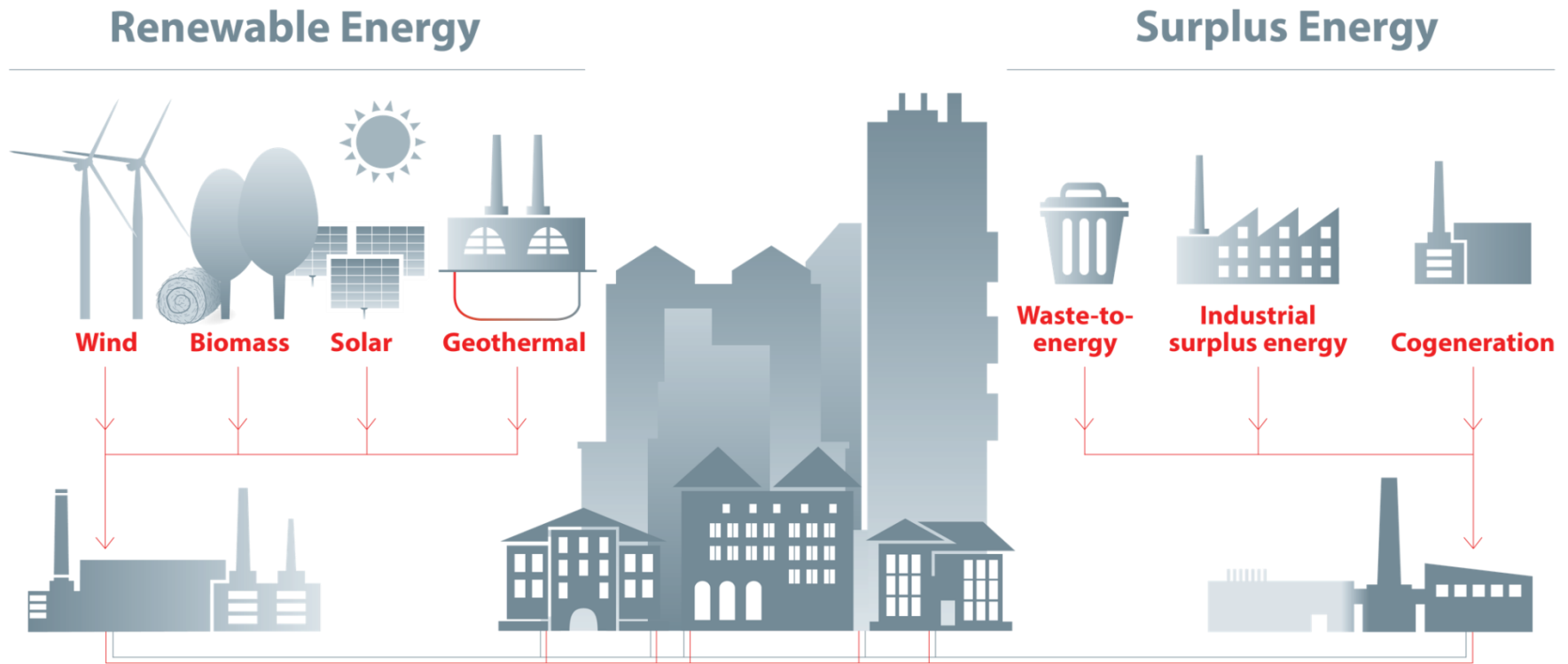
- From 1972-2002 Denmark **doubled its heating energy efficiency**
- **District energy as backbone** for
  - Decoupling of growth and energy consumption
  - Green transition through integration of renewables
- Today, district heating supplies around **63% of all households** in DK

### Efficiency of buildings in Denmark



# What is district energy?

Urban leaders are embracing a new vision for supplying energy to their cities, one that combines local renewables, cogeneration plants and district energy in one low-carbon network



# Case Story – Soma

- Investment in a district heating system that will transfer the waste heat from a thermal power station to the city of Soma.
- TSAD is a project of research and development of the methods of utilizing waste heats from the thermal power plants and heating application in buildings in order to increase the energy efficiency. Project started in 2006. Pilot project in SOMA will be finished in 2018.

## Soma DHS General Properties

Number of houses  
that will connect

**8 100**

Thermal power Potential

**64 MWt**

Annual heat  
carrying capacity

**145.600 MWth**

Temperature

**110 - 60 °C**

Network length Transfer

**5,2 km**

Distribution

**65,7 km**

Power station fuel

**Lignite of Soma**

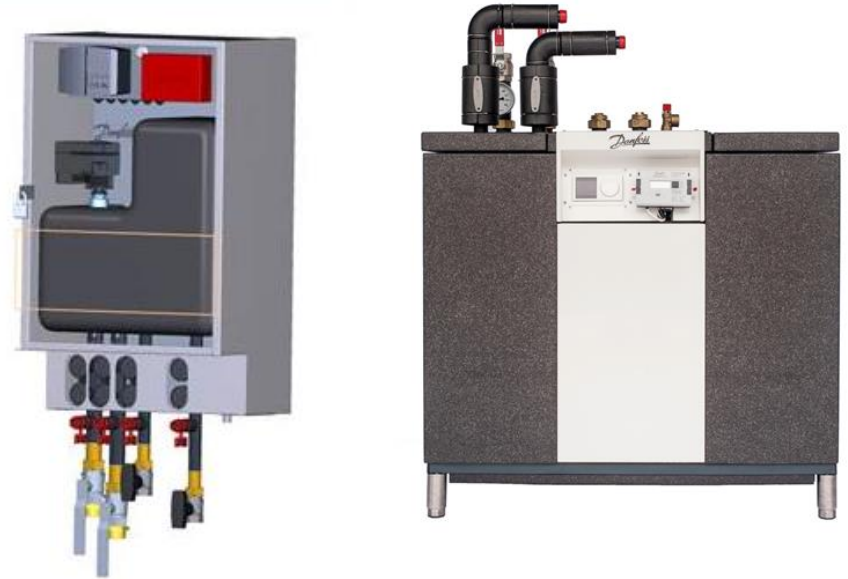
# Case Story - Soma

- The DHS network which will be built with the investment in the town of Soma will transfer the heat energy generated in the Thermal Power plant of Soma to the dwelling houses in the town.
- With the aim of realising this investment a goodwill protocol between the Municipality of Soma and SEAŞ (Soma Electricity Production Incorporated Company) regarding the utilization of the heat of the power station wastes has been signed on the date of 29.01.2010.
- With the DHS application, provision of comfortable heating in houses, decrease in fuel costs, reduction in the amounts of greenhouse gases and contaminating (dust and SO<sub>2</sub>) emissions, more efficient usage of our energy sources and therefore contribution to the economy of the country are targeted.



# Case Story – Soma

- In the district heating systems the heat delivered to the buildings is transferred to the heating and potable hot water systems of the building through an installation called “building substation”.
- Untill now we have delivered over 500 pieces of substations in various capacities.



**Preliminary results shows around 50% savings...**



# Summary

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District Energy is a key requisite for providing:

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- 1. Energy security**
- 2. Flexibility in energy** sources
- 3. Environmental friendly** energy solution
- 4. Energy Efficiency** in buildings
- 5. Fast implementation** (Built on known technology)



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