

# The Danish experience - Planning, economy, ownership

*Elsebeth Arendt, Head of District Heating Division,  
elar@kredsløb.dk*

Kredsløb

# District Heating in Denmark

65% of all houses are heated by district heating

370 district heating companies

- 50 are owned by a Municipality
- 310 are owned by the consumers (cooperative)
- 10 are owned by private companies

Non-profit economy



# The cost for an average household

A single-family household in Aarhus

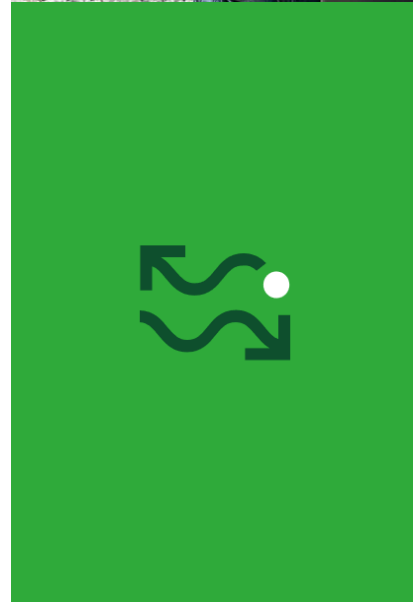
- 19 MWh heat consumption per year
- 130 m<sup>2</sup>
- DKK 12,000 per year (€ 1,600 / £ 1,350)
- Annual cost of heating is approx. 3-7% of available income

District heating is typically cheaper than individual heating

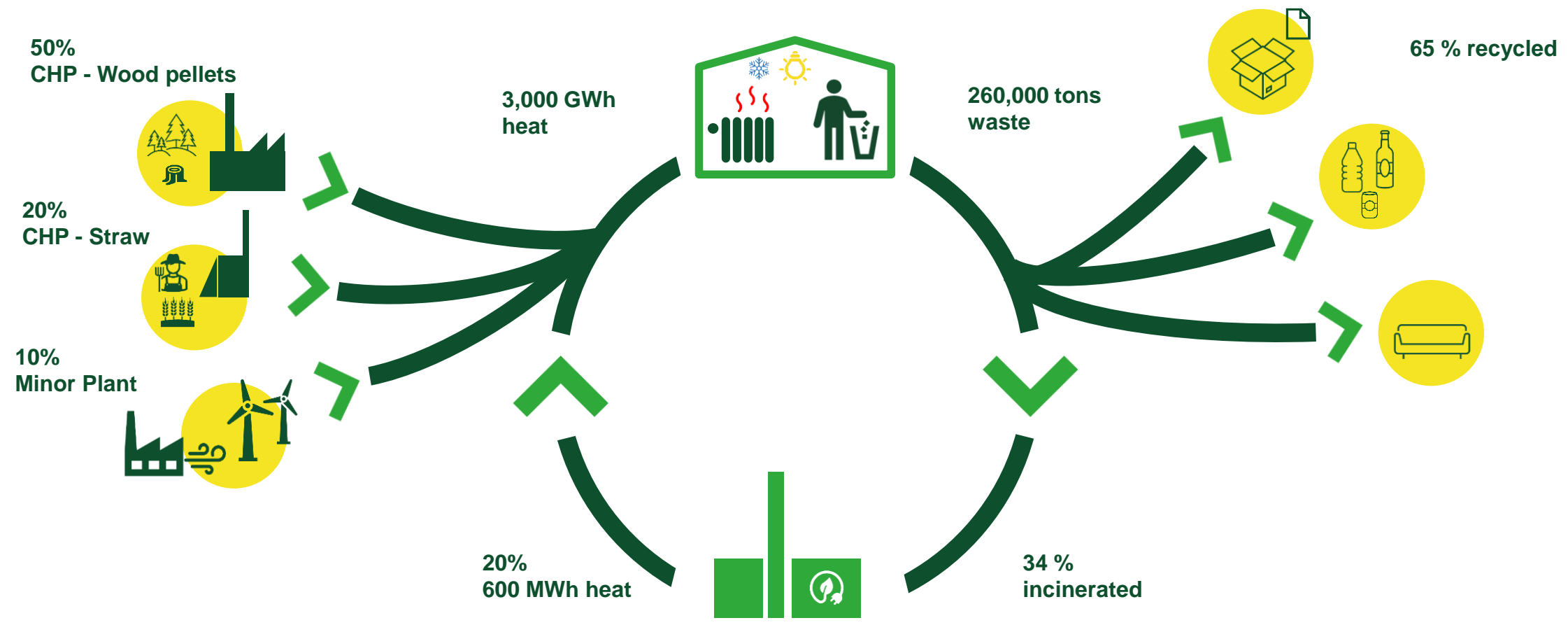


# Kredsløb A/S

- The Waste and Energy company in Aarhus
- Annual turnover is approx. DKK 3,0 billion (€ 400 mill. / £ 340 mill.)
- 450 employees
- Tariff financed
- Owned by the Municipality in Aarhus



# Kredsløb A/S



# The District Heating Division

- 90+ years tradition with district heating in Aarhus
- 95% of all buildings in Aarhus are supplied with district heating (both heating and domestic hot water)
- 355,000 inhabitants
- 1.5% increase in inhabitants per year
- 63.000+ customers (meters)
- Nearly all new buildings (housing) are connected to district heating
- Carbone neutral district heating since 2017



**The key word for  
our success is**

**Political Regulation**

**and national Heat  
planning**



**The oil crisis in 1973  
and 1979**

**The Danish  
government decided  
to be independent of  
the Arab oil states**

**And become self-  
sufficient**



**The first Heat Supply  
Act in the world (1979)**

**Non-profit economy**

**The municipalities  
were authorized to  
make heat planning**



**The Danish Energy Agency could decide**

**Which area should be supplied with gas or district heating.**

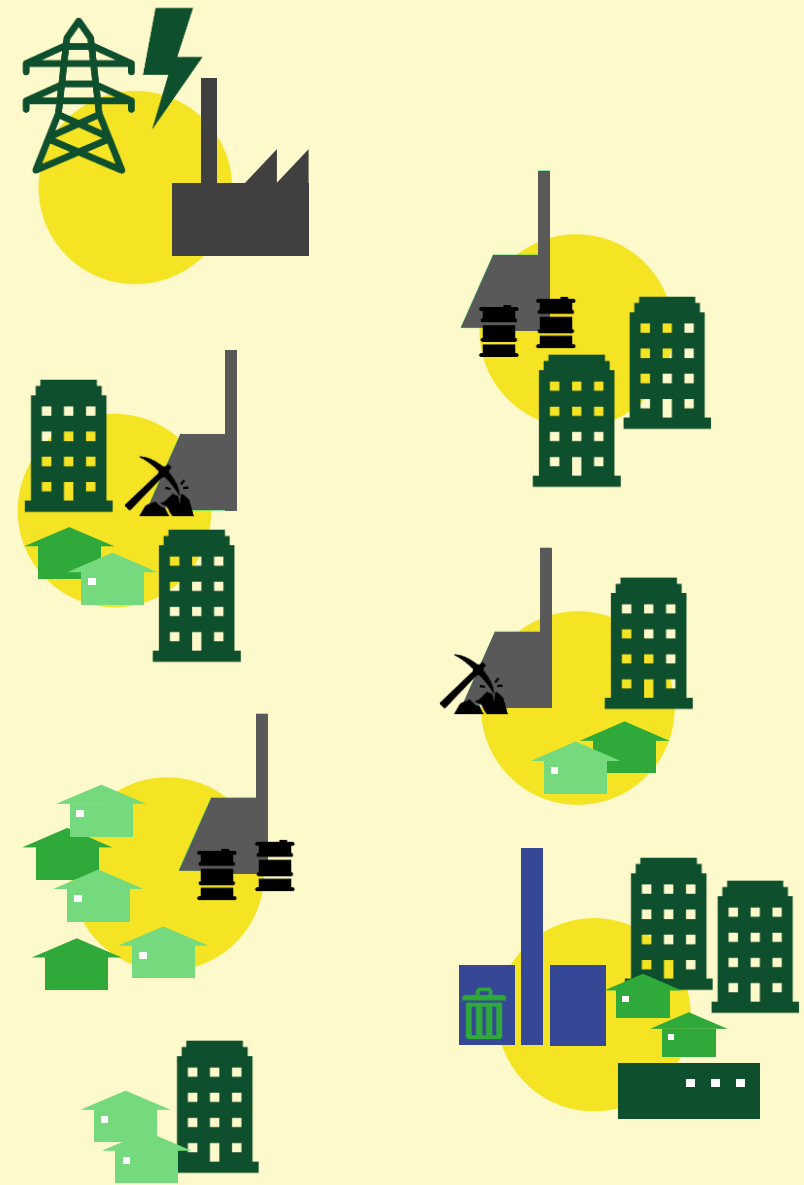
**Which fuels the district heating companies should use**

**Co-production of electricity and heat**



# The develop of the district heating in Aarhus

- In 1979 there were different heating solutions
  - Individual oil boiler
  - Boilers based on coal or oil owned by small community, housing associations or consumers.
  - Incineration plant owned by the municipality
- Non of the network were connected
- The Power plant in the north of our area was producing electricity



1970

**Because of the national regulation a new co-operation in the Aarhus was established**

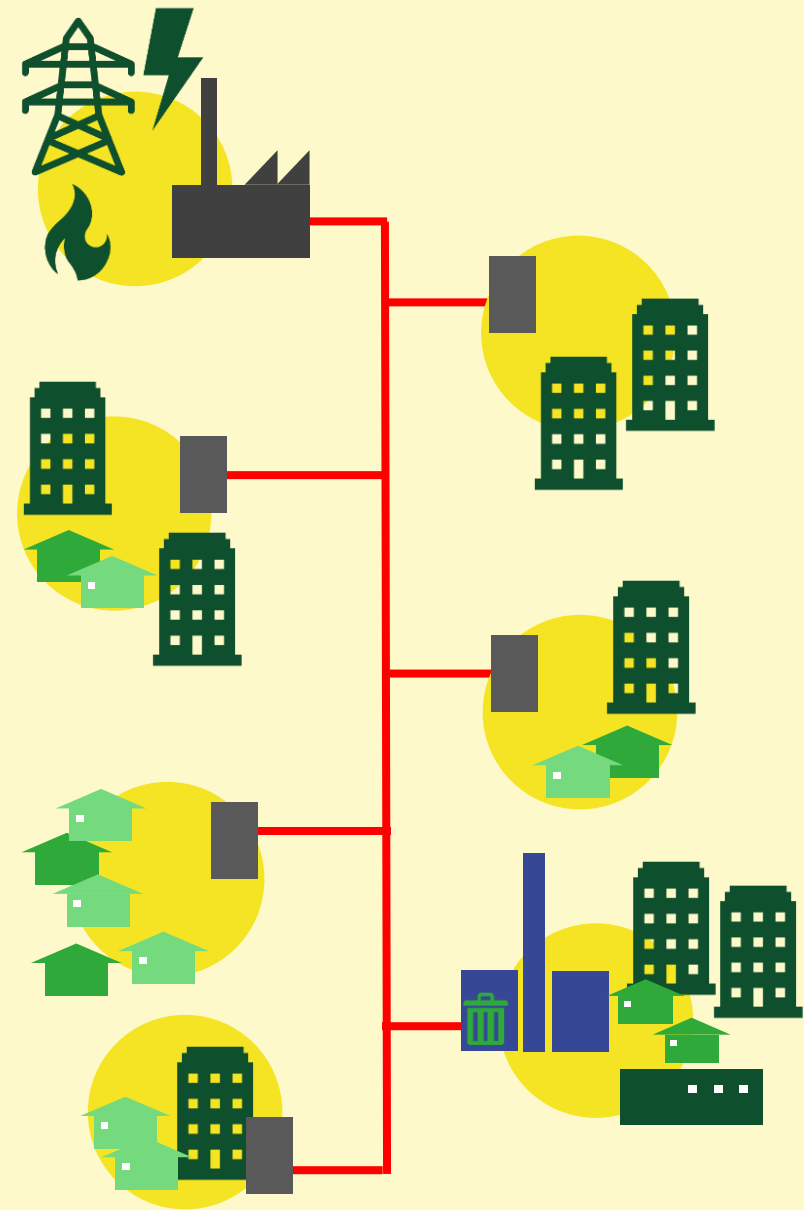


**Aarhus  
municipality makes  
an agreement to  
buy surplus heat  
from the Power  
production**



# The develop of the district heating in Aarhus

- Aarhus makes agreements with locale district heating companies and house associations to supply heat
- A new transmission network was established
- The local boilers were shut down
- All locals district heating network were connected.



1987

**For 40 years, the  
authorities could  
decide that the  
building should be  
connected to the local  
district heating  
network**

**... but not any longer**



**Because of all the  
locale networks  
are connected, it  
was possible to  
replace the fossil  
fuels with Carbone  
neutral fuels  
in 7 years**



**But City Council  
wants us to be  
Carbone Negative**



2021

From public  
administration to a  
company with its  
own board of  
directors



# Advantages

- **Professional Board**
- **External investment**
- **New partnerships**
- **New divisions**



**Because of the  
situation in Ukraine**

**History repeats  
itself again.**



The government  
has decided that  
DK will be  
independent of  
natural gas

As fast as possible




**Today 400,000  
households in  
Denmark have  
natural gas.**



**The municipalities are now making heating plan that determines which form of heating is to be used in the future**





**It is the national and local politicians  
who must define the vision  
and set the terms for the  
future energy supply**

**But it must be  
professional companies  
that find the technical  
solutions to get to  
the finish line**

# Thank you for your attention

