



Heat sources

3rd workshop on district heating in Antwerp

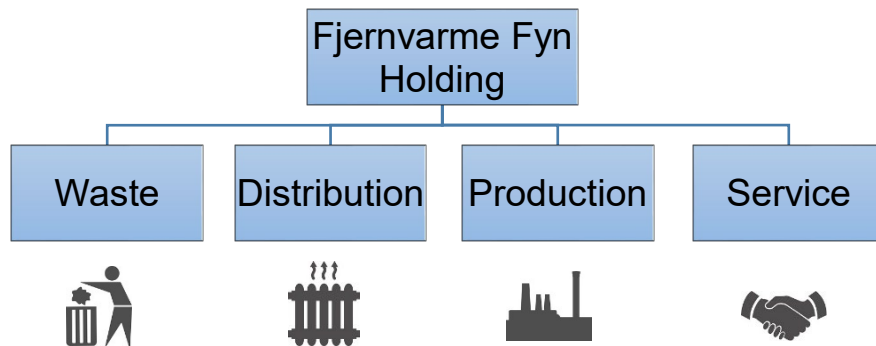
Kim Winther

Head of Development, Fjernvarme Fyn

Key facts about Fjernvarme Fyn

- Owned by the municipalities of Odense and North Funen
- Annual turnover: 200 mio. Euro (Heat, electricity, waste incineration)
- ~300 employees
- First heat from CHP in 1929

Our legal structure includes entire value chain



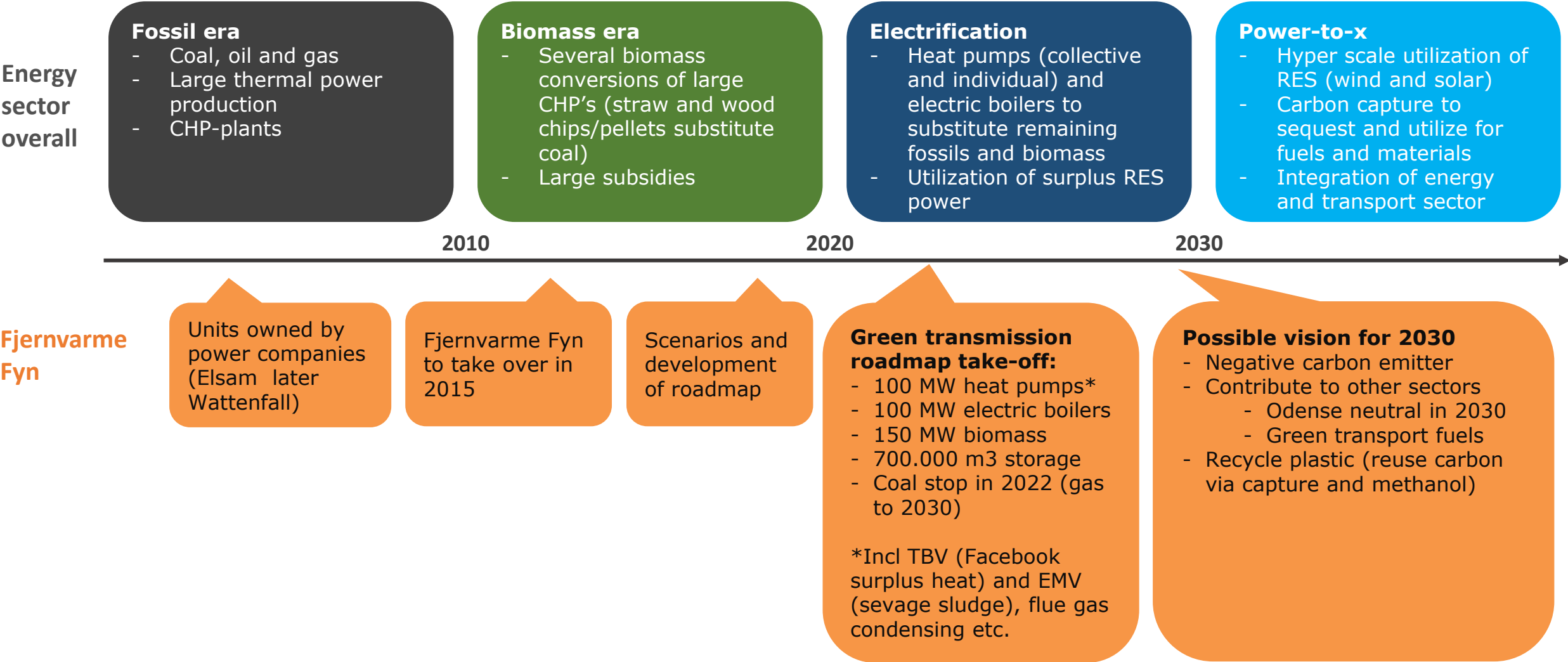
Targets:

Top 3 on lowest price
by
Competitive development and cooperation along with automation and digitalization

Phase out coal by 2022 (->Q1-2023)
by
Stepwise installation of new technologies with synergies to existing units and a high level of electrification

Odense Carbon Neutral 2030 (new)
by
Carbon capture from fossil and biogen sources at Fjernvarme Fyn

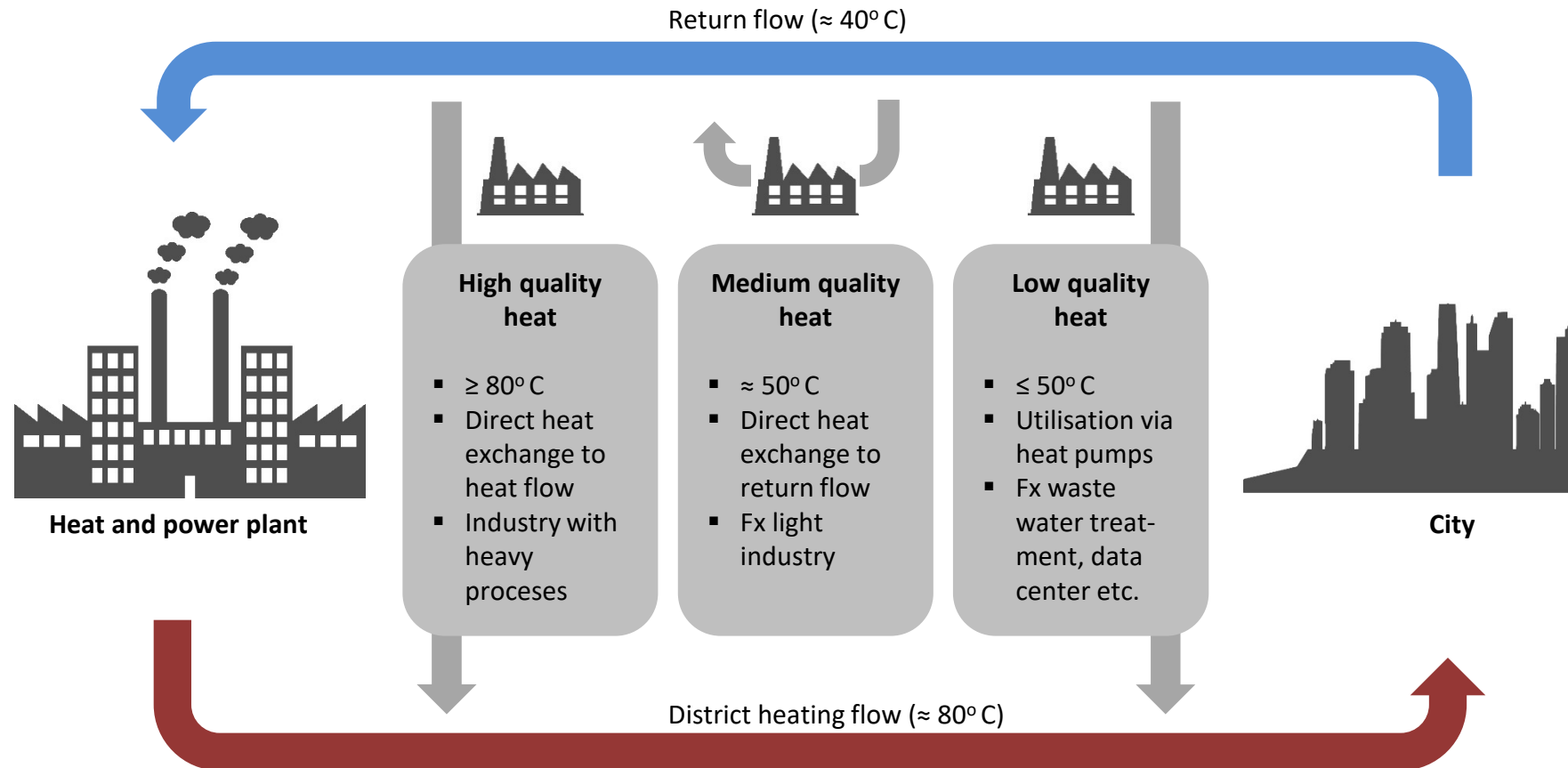
Timeline for energy sector and Fjernvarme Fyn



We consider fuels and heat sources from various perspectives

	Technology	Market	Security of supply	Sustainability
Coal	Boilers/CHP	Global	Many suppliers ●	High CO2 ○
Gas	Boilers/CHP	Global	Russia! ◐	EU green label? ◐
Wood chips	Boilers/CHP	Regional/Global	Increasing demand ◐	CCU ◐
Straw	Boilers/CHP	Local/regional	Wet years ◐	CCU ●
Waste	Boilers/CHP	Regional	Recycling? ◐	CCS/U ◐
Power	Electric boilers Heat pumps (TRL?)	Regional	99,99 in DK ●	RES deficit ◐
Surplus heat	Exchangers Heat pumps (TRL?)	Local	Depend on 3rd parti ◐	Waste product ●

Surplus heat can be used at different levels

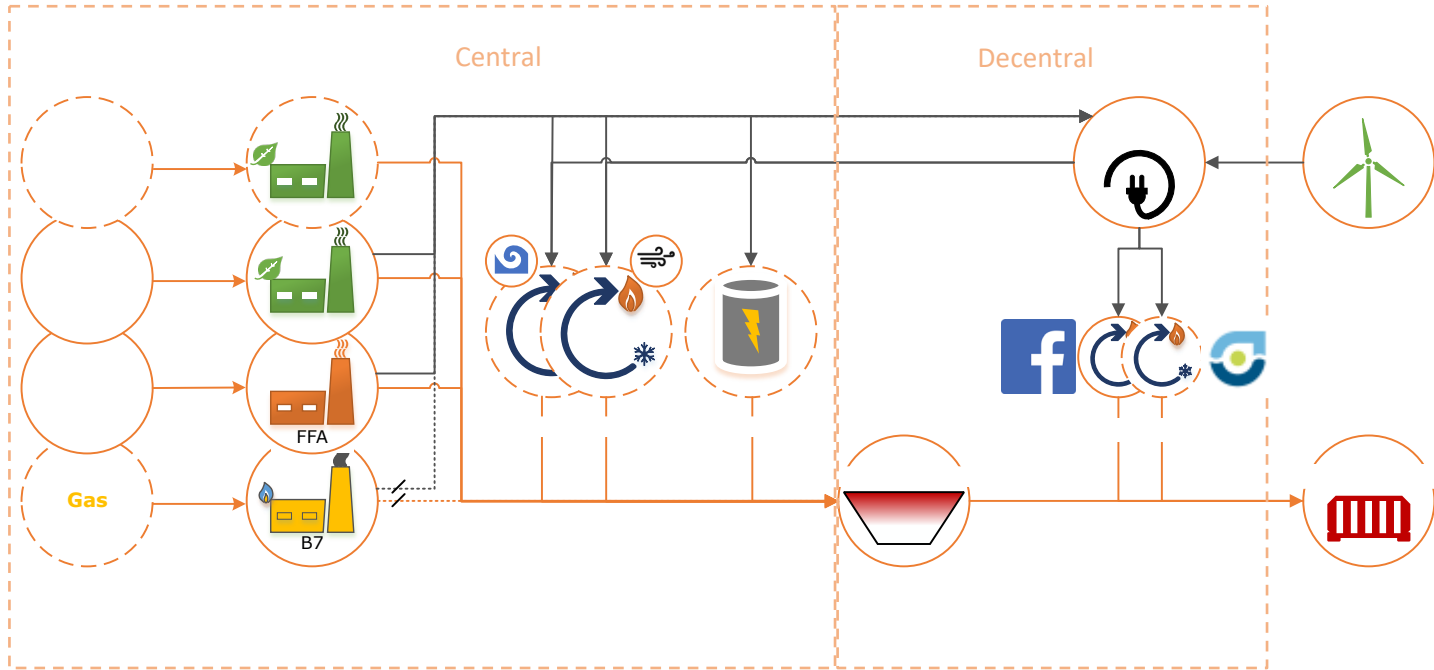


Our future district heating is green, flexible and based on waste products

Electric boilers



Heat pumps



Biomass CHP



Thermal pit storage (TBD)



Surplus heat from Meta



Surplus heat from CCUS (TBD)



CCS



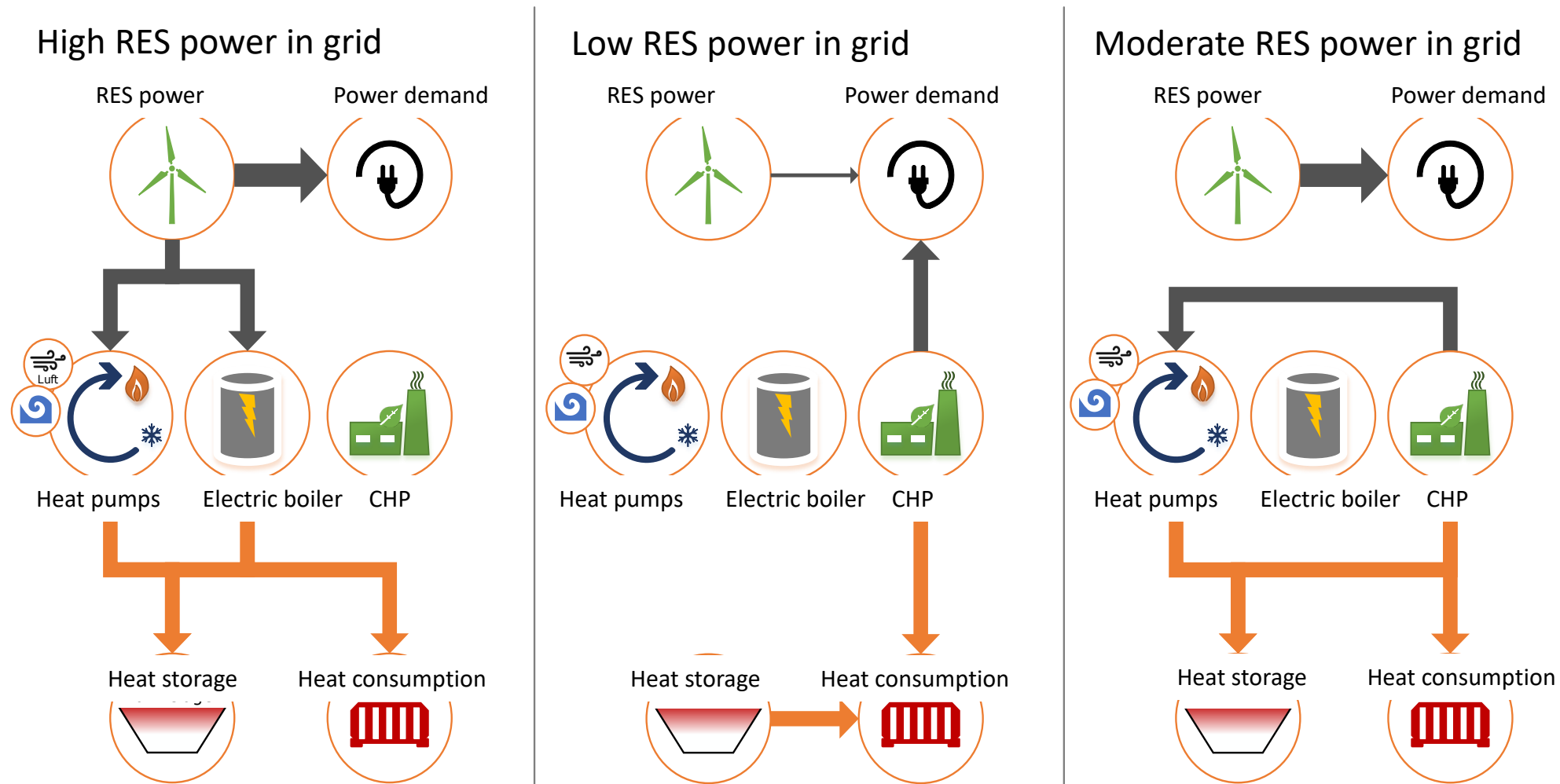
CCU (PtX)



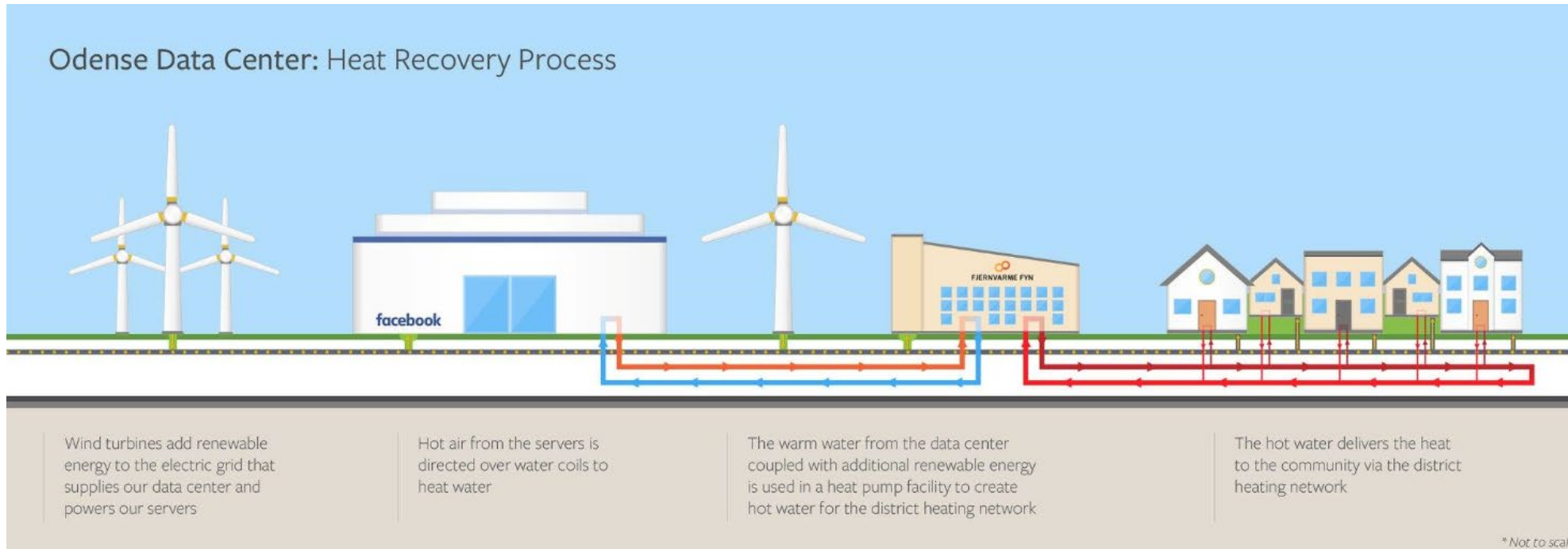
Heat from sewage



The future heat generation depend on RES power in the grid



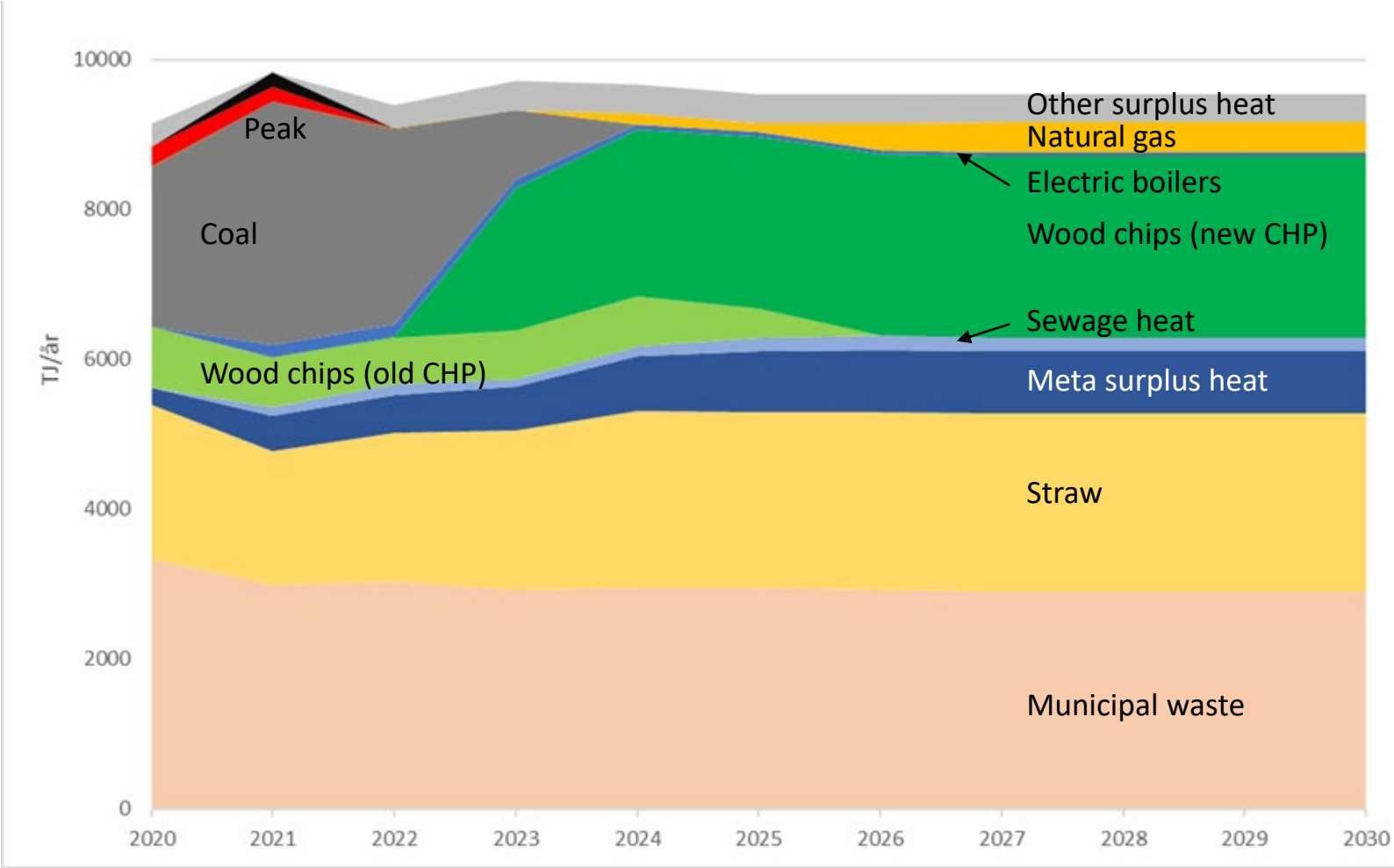
The Fjernvarme Fyn and Meta heat recovery project



Facts:

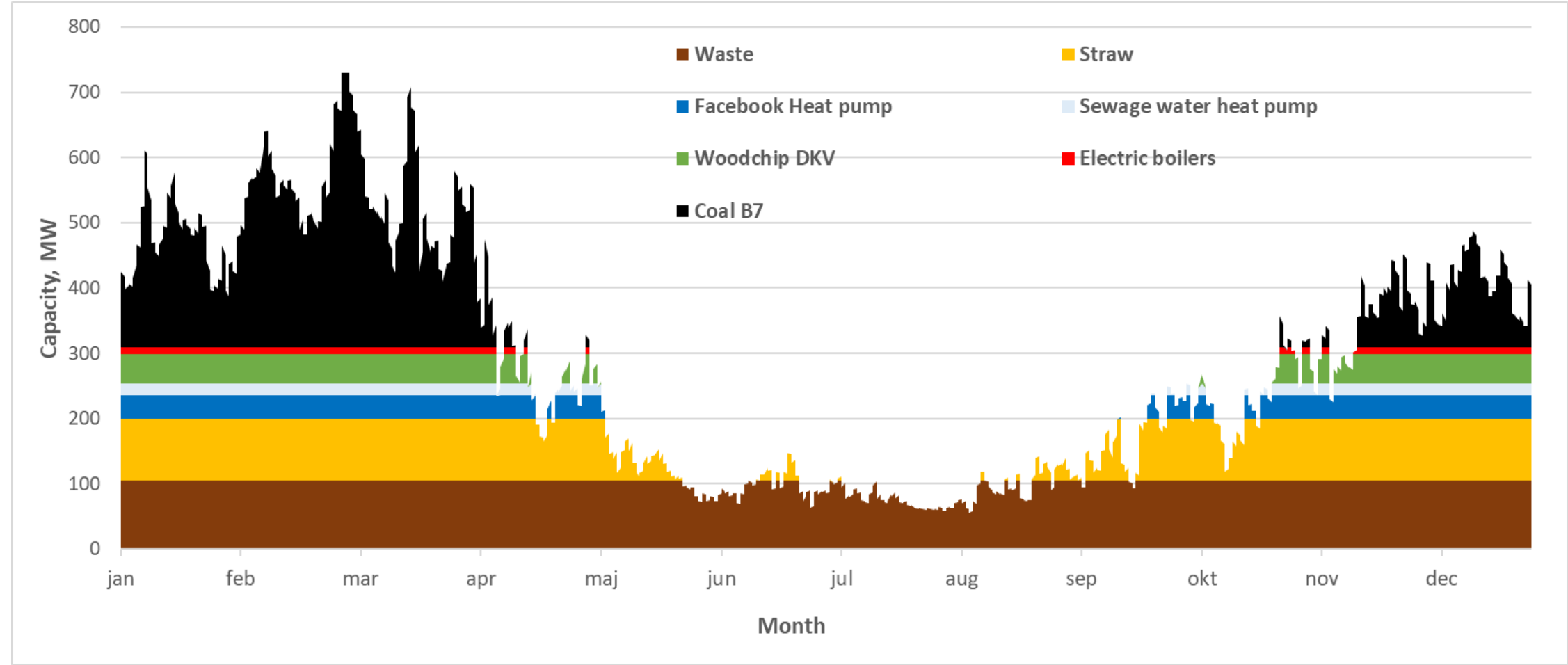
- Data center owned and operated by Facebook/Meta
- Heat pump plant (TBV) owned and operated by Fjernvarme Fyn
- Both facilities supplied by renewable energy
- 160.000 MWh surplus heat ~ 11.000 households
- 2017: Investment decision
- 2020-2021: Commissioning of TBV1 and TBV2

We replace coal with surplus heat, power and biomas



Heat production today

Heat load in 2021 (simplified)



Heat production after coal phase out

Heat load in 2025 (simplified)

