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CEO

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Assens Fjernvarme

About Assens Fjernvarme

- Cooperative established in 1960
- Non-profit, i.e. profit and loss is transferred to the heatprice of the coming year
- 4.000 district heat customers (“Shareholders”)
- Of totally ~350 district heat companies, we offer some of the lowest heatprice in Denmark

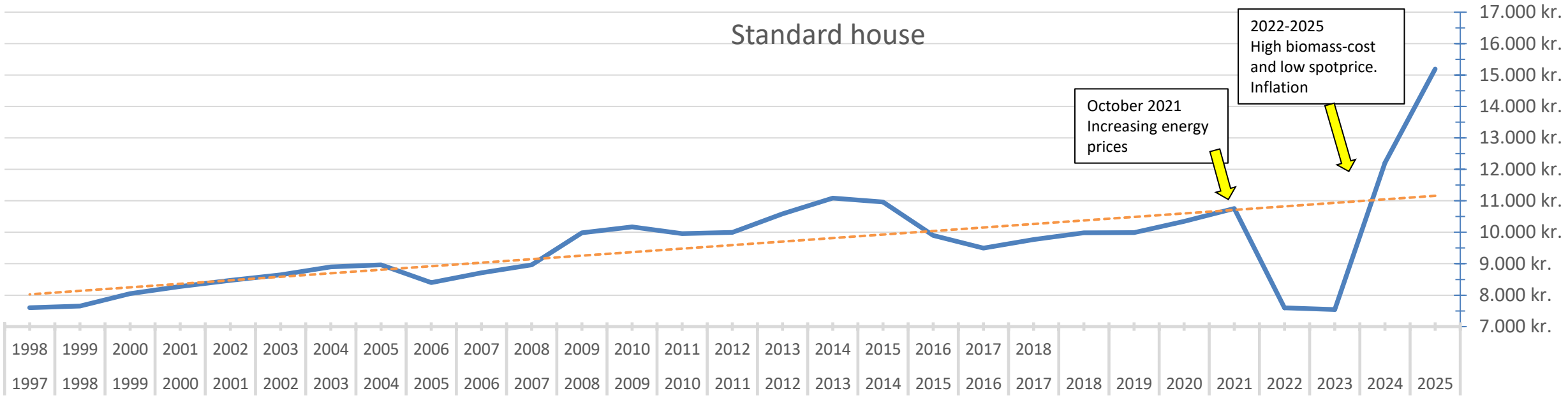
~2.040€ budget 2025 standard house

(Standard house 130m2; 18,1 MWh/year)

Price

25 years with a low and (mainly) stable heatprice

Standard house: 130m^2, 18,1 MWh



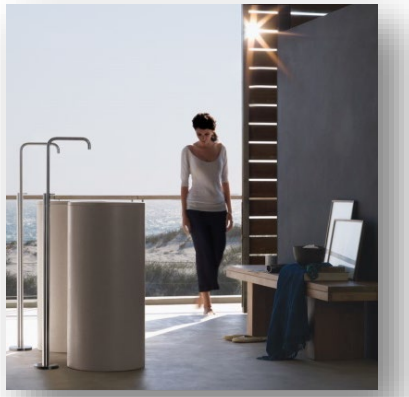
About Assens Fjernvarme

- 100% CO_2 neutral since 1988 due to biomass, heatpump, solar- and windpower
- One of Denmark's first combined heat & power plants based on biomass
    - Certified woodchips are sourced locally within a radius of 50 km
- 7,8MW Heatpump
- 6,2MWp Photo Voltaic park
- 1,3MW Windturbine
- Heat-production 120.000 MWh
- Power-generation 36.000 MWh

Sustainability

Assens Fjernvarme production is equivalent to:

4.000 Households with CO_2 neutral district heating



4.000 Households with CO_2 neutral electricity

4.000 Electric cars with CO_2 neutral electricity to drive 25.000 km/year

Paradigmshift in the powermarket

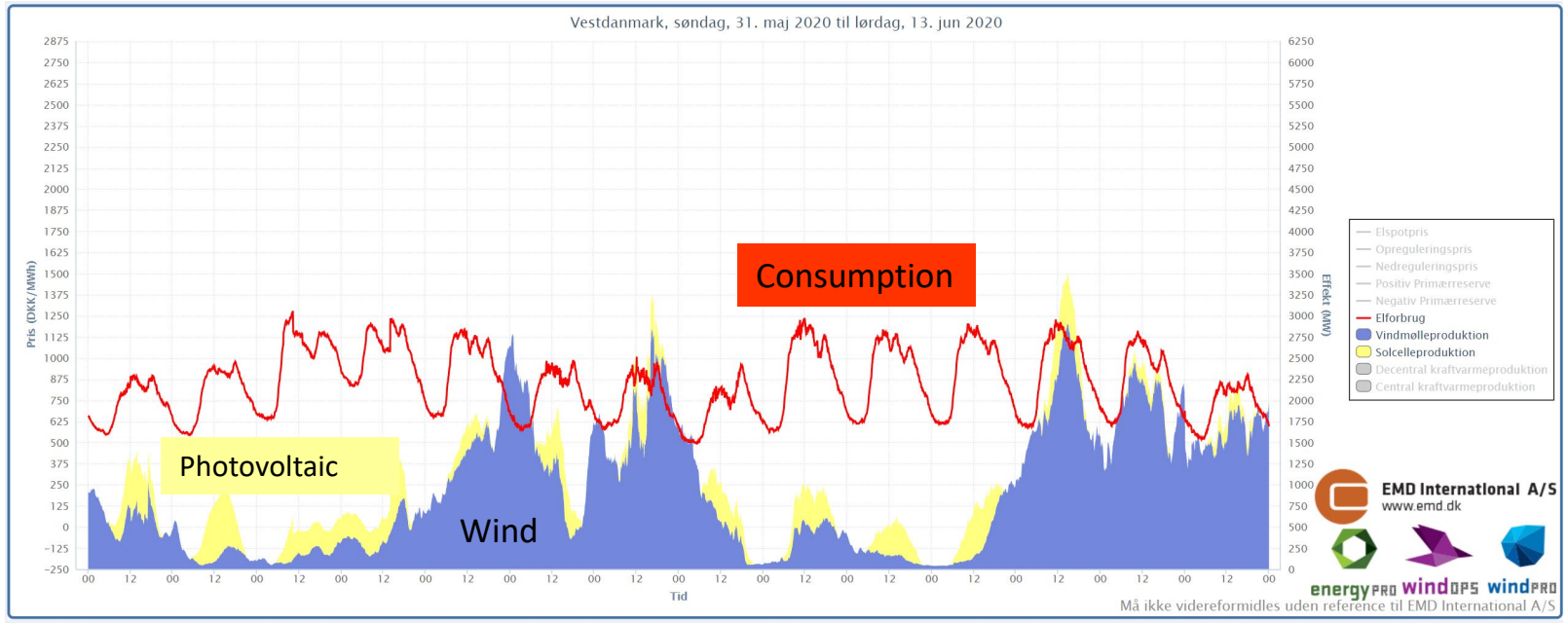
Danish photovoltaic- and wind plants produces power equal to +50% of the market demand.

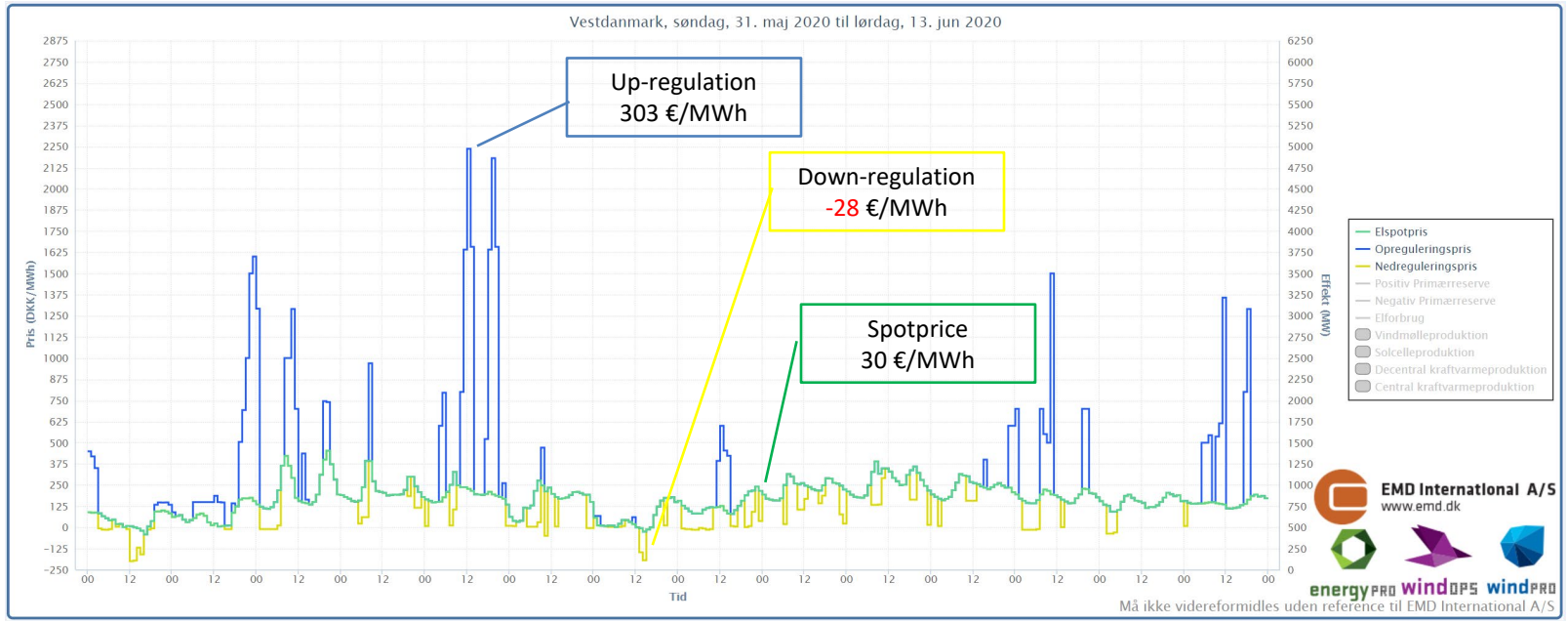
That's a doubling in 10 years.

The development in sustainable production causes very big fluctuations in the market.

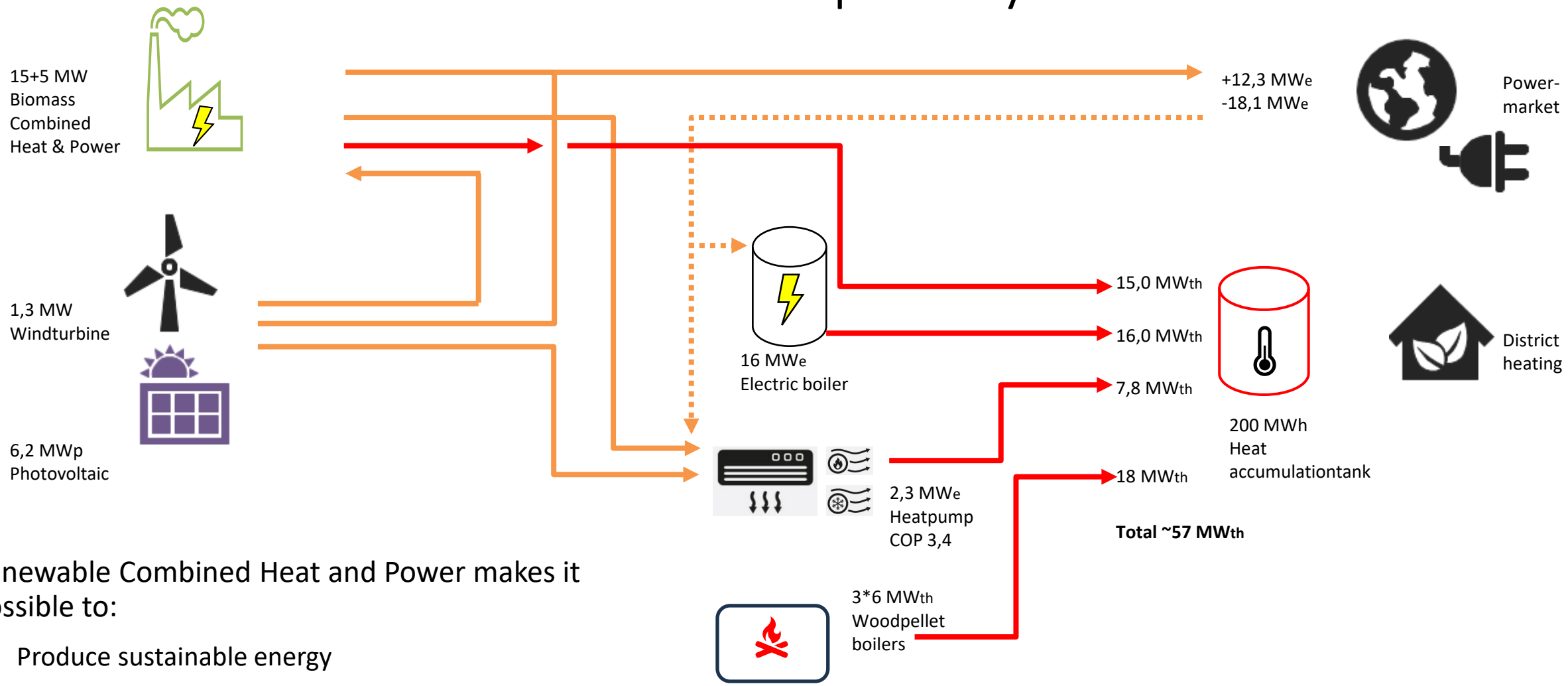
There’s a need for:

- High flexibility in consumption
- High flexibility in production (thermic whereas there is neither wind or sun)
- Avoid over- and underproduction (market balancing)





A sector-coupled system



Renewable Combined Heat and Power makes it possible to:

- Produce sustainable energy
- Sell sustainable power when the price is high-level
- Purchase sustainable power when the price is low-level
- Use own power to gain efficiency when the price is mid-level

A complex system requires complex planning

A seven-day forecast software dynamically optimizes the optimal production based on the following forecasts:

- Spot price
- Outdoor temperature
- Heat requirement
- Wind
- Sun

The software controls and regulates production independently, including up and down regulation in relation to the power balance market

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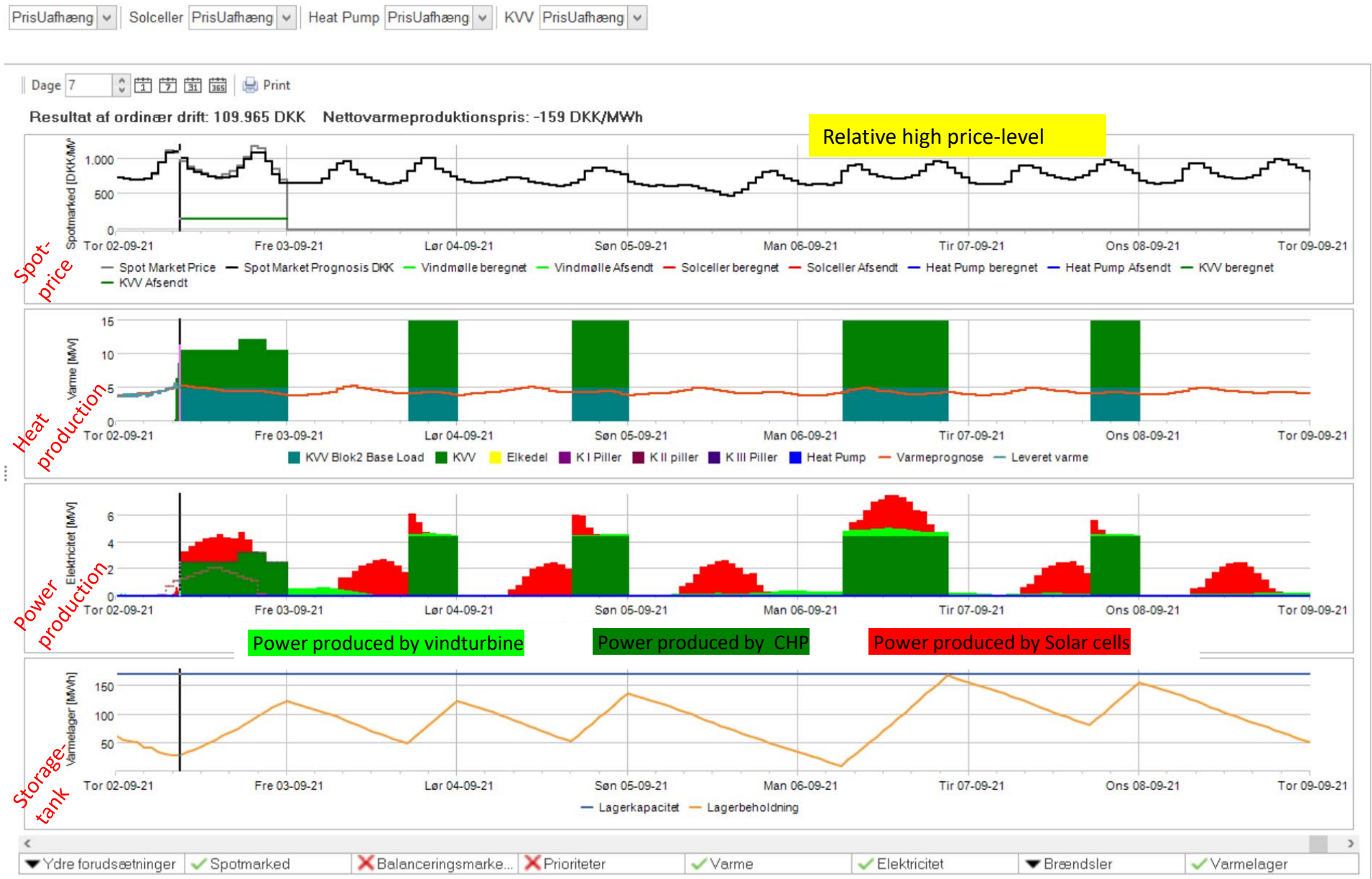


Result

Clima & environment:

- Up to 50% reduction of biomass
- Self-sufficient of water (condensate)
- $CO_{2\ eq}$ emission 2,04 kg/MWh heat
  - Assens: Standardhouse 36,9 kg CO_2/year
  - Heatpump: Standardhouse 1700 kg CO_2/year
  - Gas: Standardhouse 3900 kg CO_2/year
  - Oil: Standardhouse 5600 kg CO_2/year
  - (10 km fossil car emission ~1,1 kg CO_2)

Outcome

- Low heatprice. Actual 2.040€ per year.
- Stable heatprice
  - Less sensible due to spotprice
  - Less sensible due to (biomass)taxes
- Efficiency increase from 88% to 150%
- Investment 10,5 M€
- Payback on investment less than 10 years

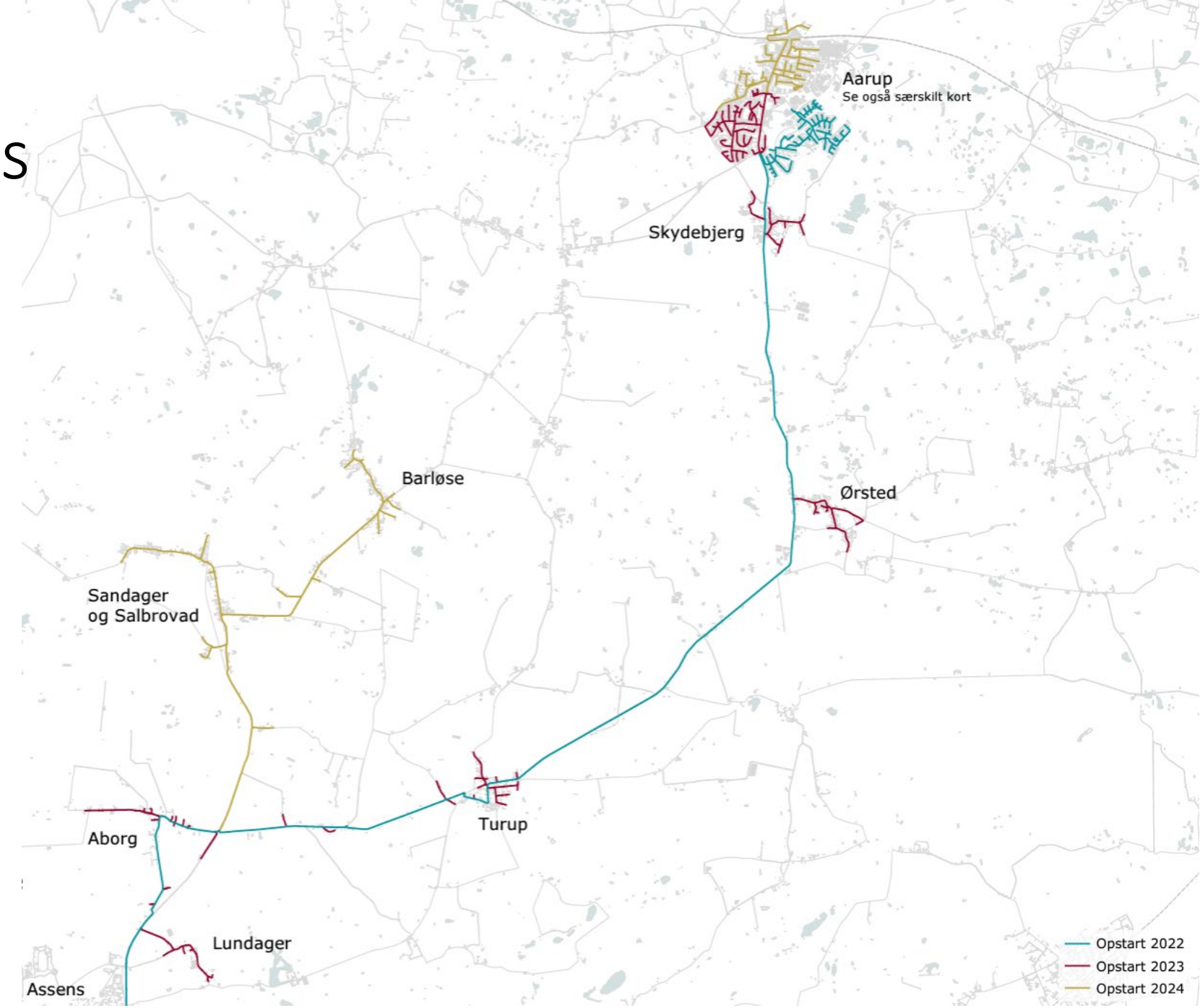
On-going projects

Conversion of oil- and natural gas areas

The project

- Start 2022, finish 2026
- +2.000 new customers
- Yearly reduction of 10.000 ton CO_2
- Investment total +500 mio. kr. (65 Mill. €)
  - +19 km transmission-line.
    Investment 180 mio. kr. (24 mill. €)
- Economy new customers
  - Sign-on fee 5.000 kr. (675€)
  - Heat-cost standardhouse 130 m^2 og 18,1 MWh
    15.200 kr. (2.040€/year)
    Additional transmission-cost 29 kr./m^2 (3,90€)
    Total 18.950 kr. (2.550 €)

- *Calculation based on current 72% customer enrollment. In the long term, 98% customer enrollment is expected, which will reduce the price.*



Thanks for listening