GREEN TRANSITION
DENMARK

Emission free heating in Denmark

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Heating supply in Denmark

60% of the households have district heating
The rest: natural gas boilders, biomass (wood chips, straw, and firewood), heat pumps, (few) oil boilers

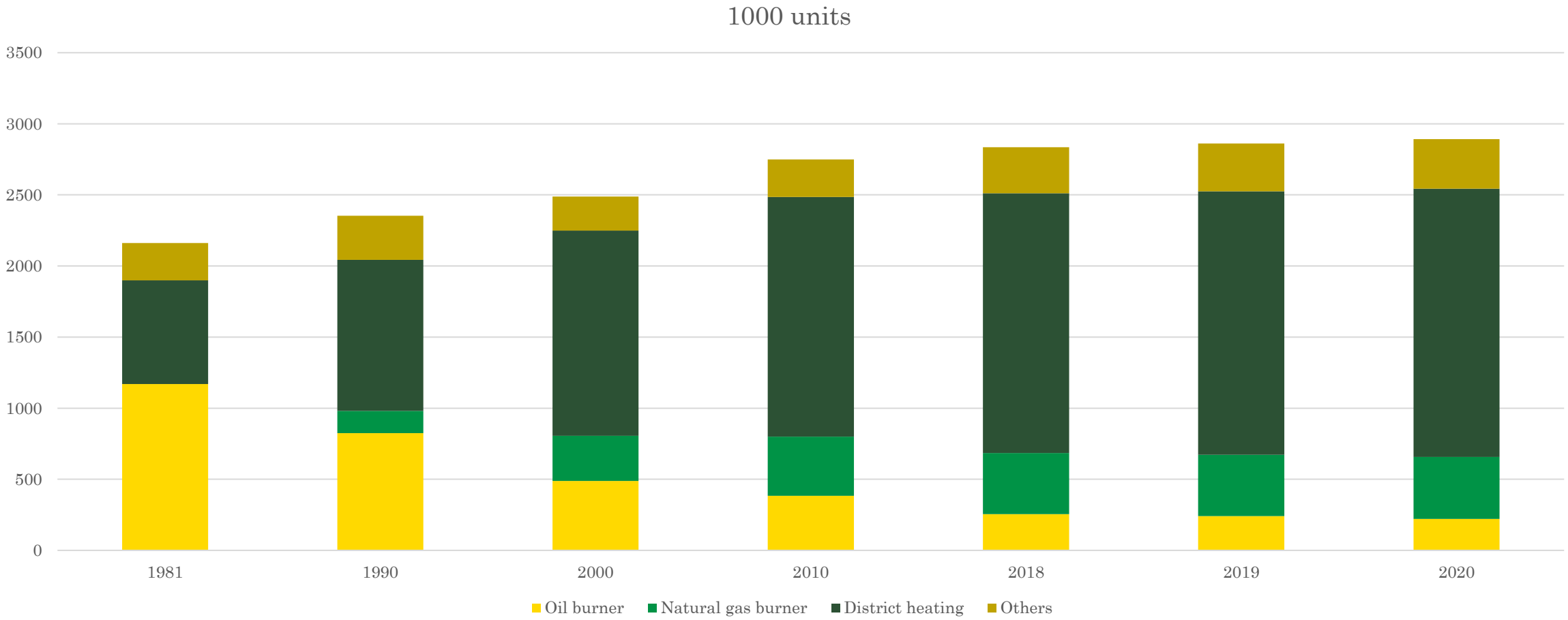
Heating planning from the 1980'ies – to reduce oil dependence and avoid nuclear power.
DK divided in area with:

1. **District heating – cities, most towns, some suburbs and villages**
2. **Natural gas, from the gas grid – the rest of the towns and suburbs**
3. **Individual: biomass, oil etc. – country side**

District heating and Natural gas often mandatory – but not in new residential areas after 2019

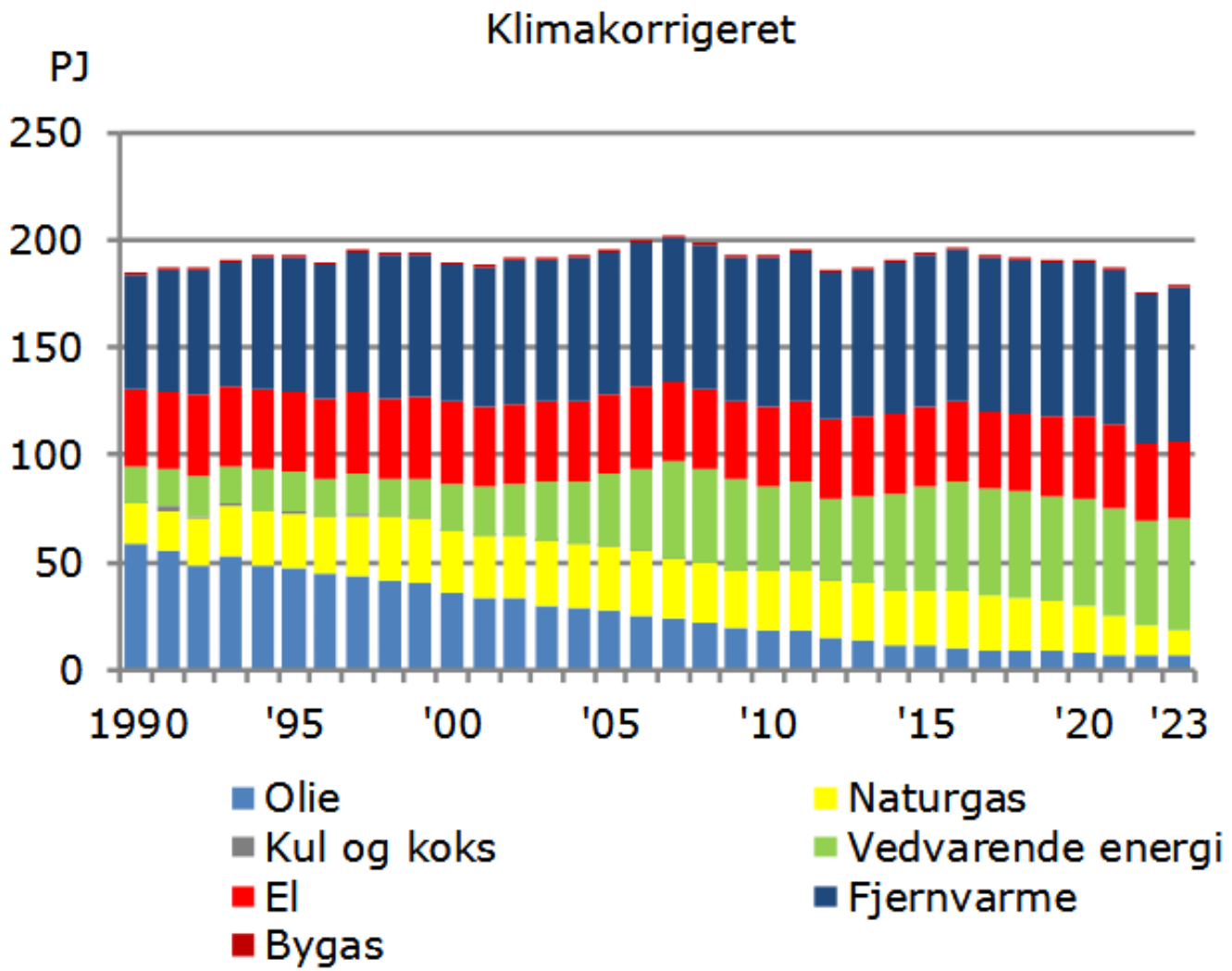
Later revisions: fase out of oil boilers, expand district heating pipes for many towns and villages, that had gas, oil or biomass before. Heat pumps where no district heating pipes.
Enhanced from 2022 (Ukraine war)

Heating installations in dwellings



Ban against installation of oil boilers in new buildings in 2013
No installations of oil boilers in existing buildings in 2016
Building regulations 2018: ”*Heating of new buildings must be based on renewable energy*”

Consumption in house-holds, energy sources - heat and power



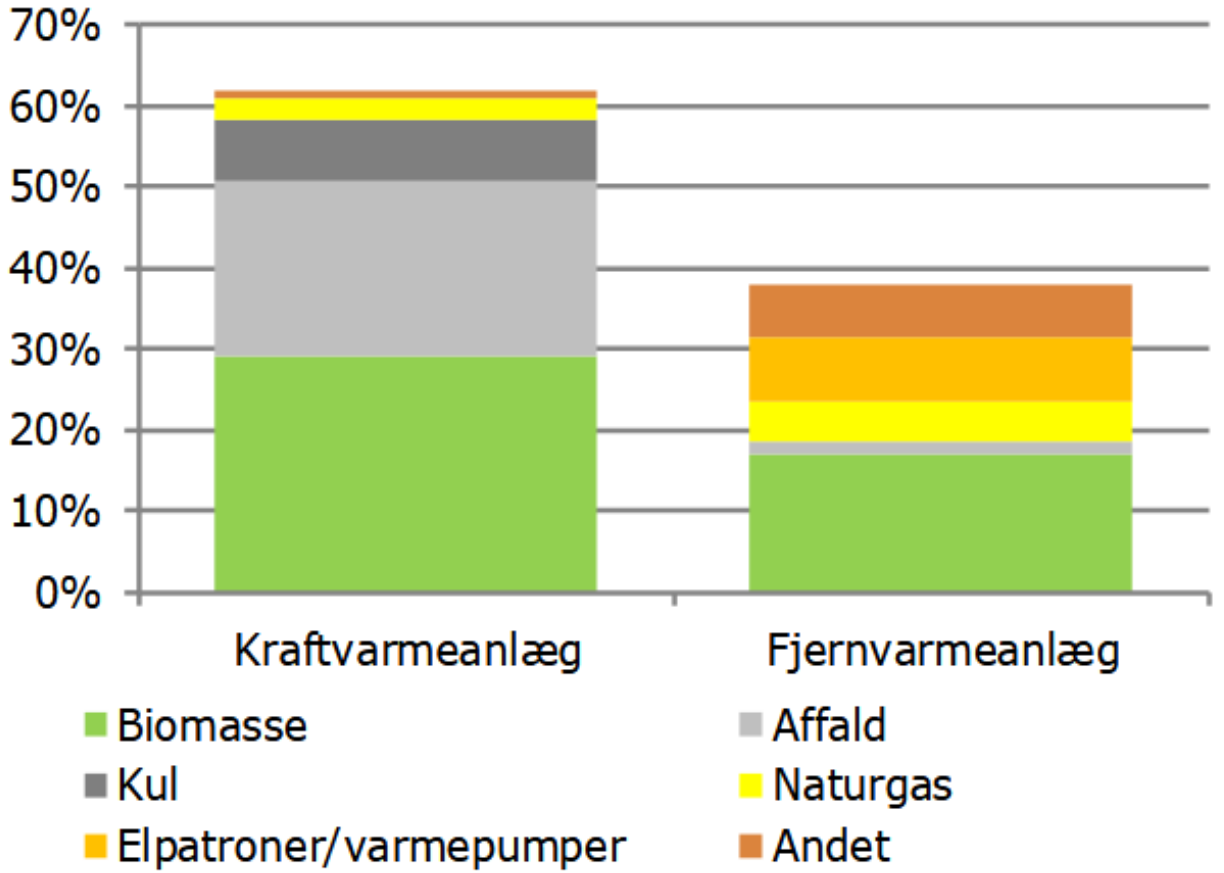
Source and share (%)

- Oil 3.6 Natural gas 6.7
- Coal 0 Renewables 29.5
- Electricity 19.8 District heating 40.2
- Urban gas (with CO2) 0.2

Energy sources used, 2023 - except wind and (PV)solar

Co-generation plants **District heating plants**

- **Biomass** **Waste**
- **Coal (stop 2028)** **Natural gas**
- **Heatpumps** **Other**



Biomass must be phased out

- DK one of the countries with the highest share of biomass – wood pellets & chips, straw – a large share is imported
- Large climate problem – official 0-emission of CO2
- In reality: emissions are hastened compared to if the wood stayed in the forest or was used for construction materials
- Also a threat to biodiversity
- Energy efficiency is crucial, also if you use district heating or renewables
- GT-DK: No more new biomass plants. Phase out existing before 2040

GT-DK campaign 2022-23 for phasing out natural gas for heating

Demands:

- **Fast heat planning in municipalities during 2022**
- **Quick ban against installation of new oil and gas boilers**
- **Expiration date for oil and gas boilers no later than 2028**
- **In future District Heating Areas:**
  - **Sustainable temporary solutions if boilers stop working: temporary heat pumps or used gas boilers**
  - **Enhance expansion of district heating pipes**

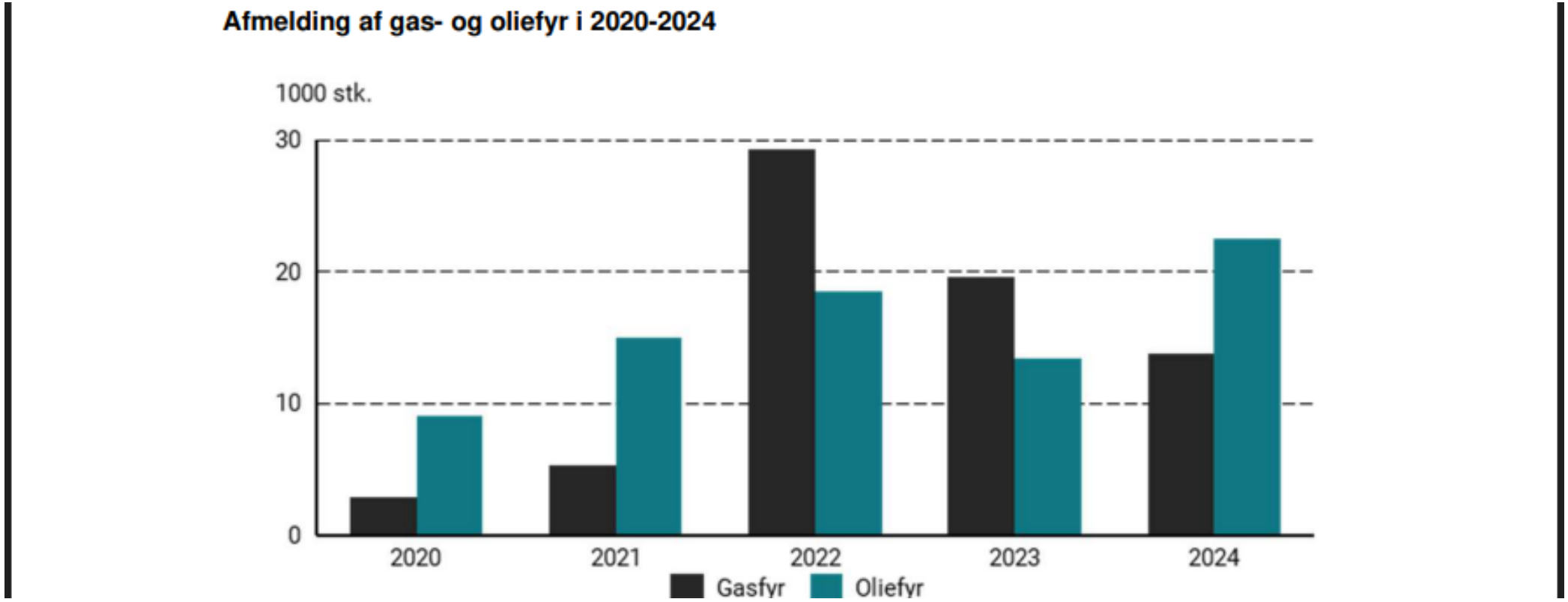
DK Government plan for phase-out of gas and oil stoves

Number of households with:
Blue: Gas boilers
Grey: Oil boilers

Fast phase out – Recommendations for the public

- Turn down the heat
  - 5 % of the energy consumption is reduced by turning down the heat by 1 degree
- Save hot water
  - through shorter baths and no dishwashing with tap water running
- Ask your municipality about district heating plans in your area
- Energy efficiency by insulation

Shut-down of gas and oil burners



Boom in 2022 – high gas price. Then slow-down – decrease in gas price. Increase in construction price for district heating pipes – labour shortage

District heating with the lowest costs

Socio-economic costs in heating supply scenarios

Columns:
1. **Individual heat pumps**
2. **High temperature district heating with biomass**
3. **High temperature district heating with heatpump**
4. **Low temperature district heating with heatpump**
5. **Low temperature district heating with surplus heat (CHP)**

Green: maintenance
Light blue: CO2-costs
Dark blue: Environment costs
Pink: fuel costs
Yellow: capital costs

Figur 4.6 Totale samfundsøkonomiske omkostninger i varmeforsyningsscenarier

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Thank you for your attention

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