Setting the scene

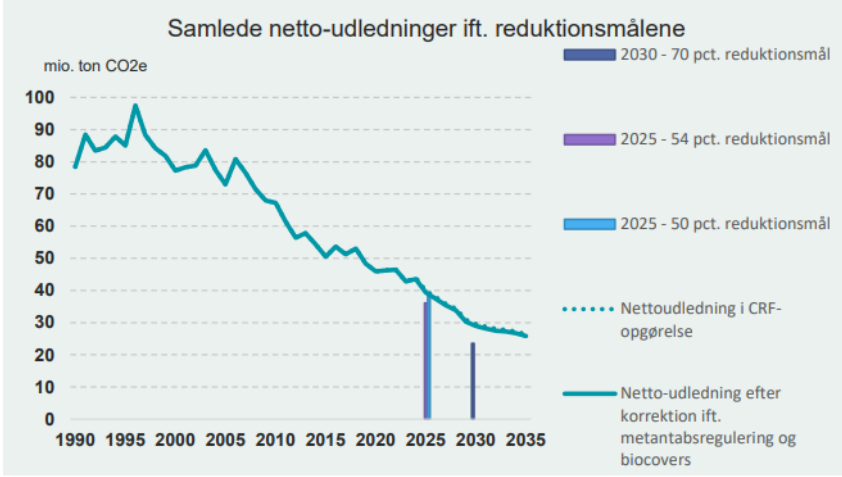
Building's role in the Danish green transition

Vincent Rudnicki,
Director,
Danish Energy Agency

THE DANISH VISION OF A CLIMATE NEUTRAL SOCIETY

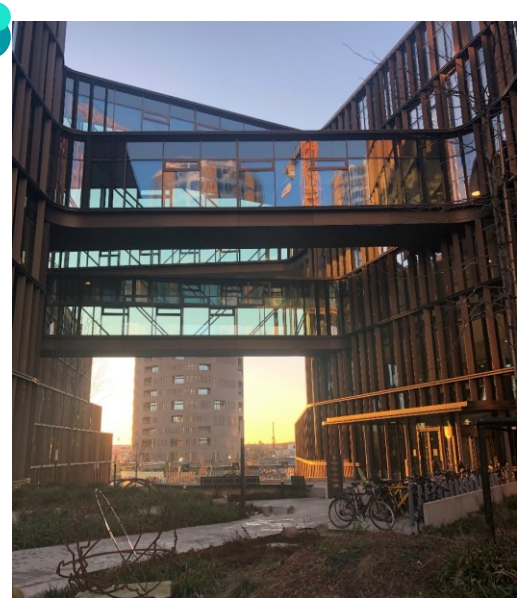
Source: Energinet, IPCC

ON OUR WAY – BUT STILL WORK TO DO…



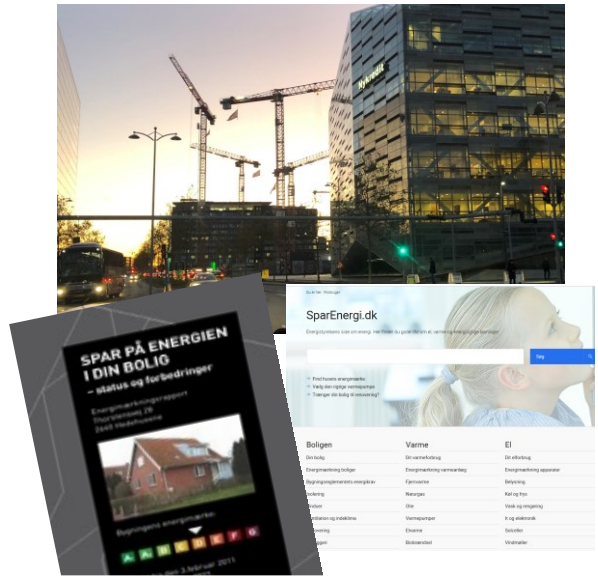
FOR BUILDINGS THIS MEANS

- Buildings should be highly energy efficient – both new and existing
- The total CO_2 footprint of a building should be very low
- The remaining energy demand should be decarbonised



SEVERAL POLICIES ALL AIMING TO DO MORE WITH LESS

- Building regulation for new buildings – nZEB, LCA requirements and increased focus on indoor environment
- EPC's for new and existing buildings
- EE-targets for public buildings
- Information to private house owners
- Training and information to installers and consultants
- Funding of energy renovation projects



WHAT'S NEXT?

Four things stand out

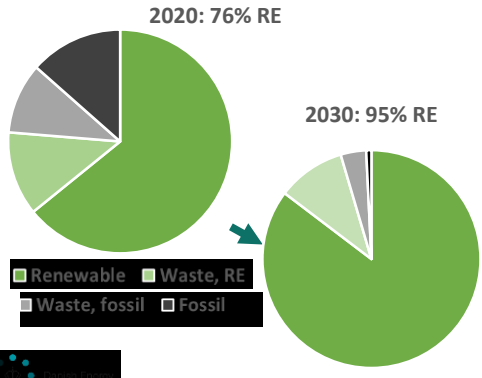
- Increased focus on LCA requirements in the building regulation -> continuous reduction of total CO_2 footprint
- Decarburization of remaining heat demand
- Flexibility – stability services to the energy grids
- Digitalization and data-driven solutions

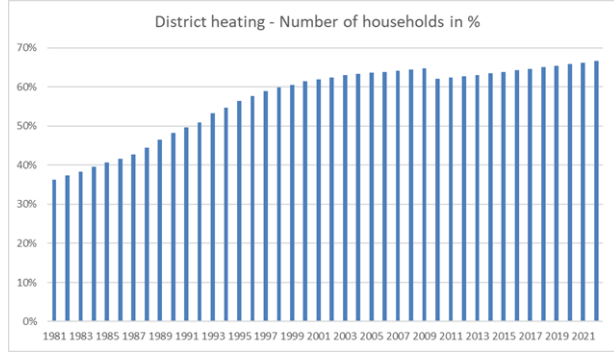
CHALLENGES

- Ensuring enough skilled installers and consultants
- Increase the renovation rate
- Introducing more flexible demand
- EU targets and requirements need to be better support the requirements of the green transition

DISTRICT HEATING - CENTRAL TO OUR GREEN TRANSITION

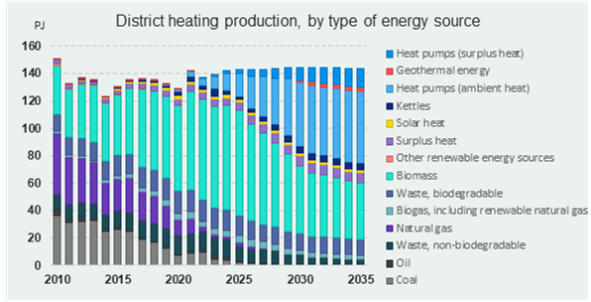
District heating status (2021)
- ≈ 65% of all households
- ≈ 50% of all heating demand





ELECTRIFICATION OF HEATING

- Danish power supply will in the future mainly come from large off-shore windfarms
- Wind power is highly fluctuating
- Therefore, a need for a transition from "supply on demand" to "demand adjusted to supply"
- For heating of buildings this means
  - Large scale heat pumps and electric boilers for district heating
  - Heat pumps for individual households outside district heating grids
  - The energy demand of buildings need to be flexible

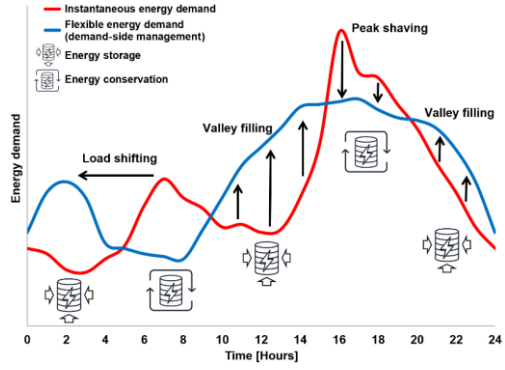


Source: Climate status and projection 2023 (DEA, 2023)

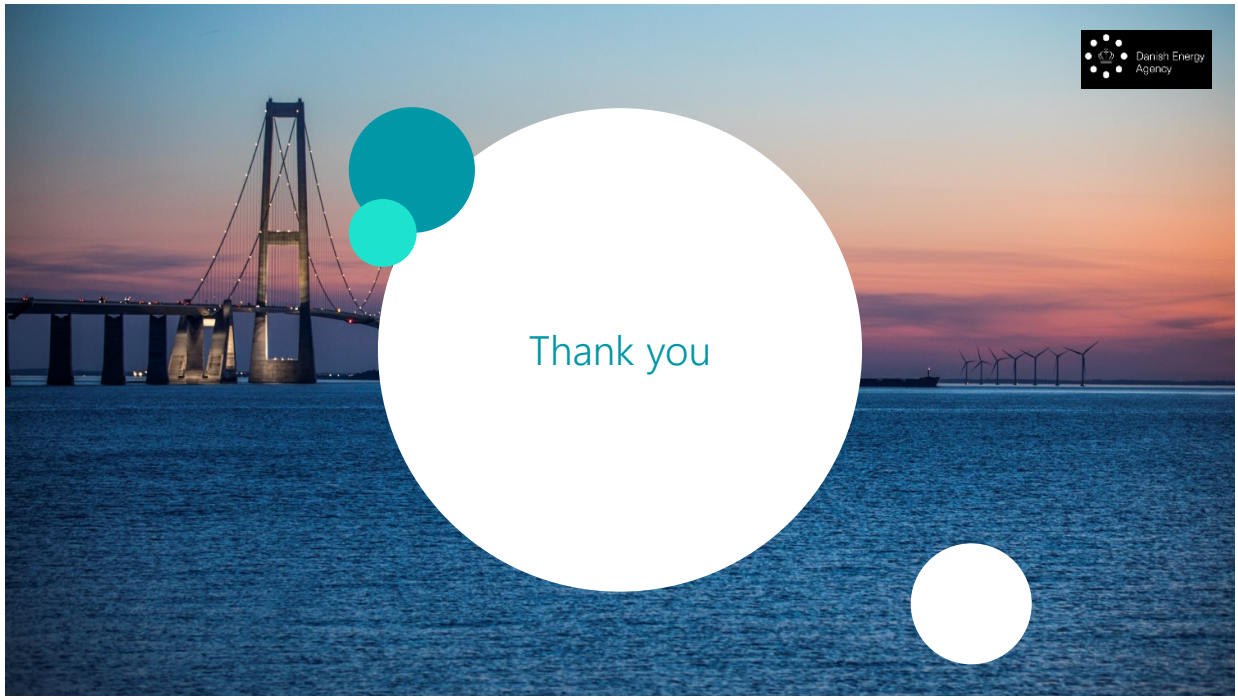
FUTURE: FLEXIBILITY AND DATA-DRIVEN SOLUTIONS

Buildings can deliver stability to the energy grids:

- Buildings need to align their energy use according to the state of the energy grids:
  - Decrease loads when there is less energy in the grids
  - Increase or store energy when there is surplus of energy in the grids
- Buildings need to respond to control signals (e.g. price signals) from utilities or aggregators
- The control of buildings need to be able to forecast future loads in order to dispatch these for supporting the grids
- This demands for data-driven solutions



Source: https://doi.org/10.1016/j.energy.2022.124075


Danish Energy Agency
Thank you