

## Key results in the scenarios

	LowEff	MediumEff	HighEff
<b>Building energy demand in 2050 in [TWh]</b>	3,488.2	3,060.2	2,812.2
• of which heating & cooling [TWh]	2,498.4	2,099.5	1,865.4
• of which electrical appliances [TWh]	989.7	960.7	946.8
<b>Total energy savings compared to 2020 [%]</b>	-21.1%	-30.2%	-35.5%
<b>Building renovation rate (2050-2020) [%/a]</b>	0.7%	1.4%	1.7%

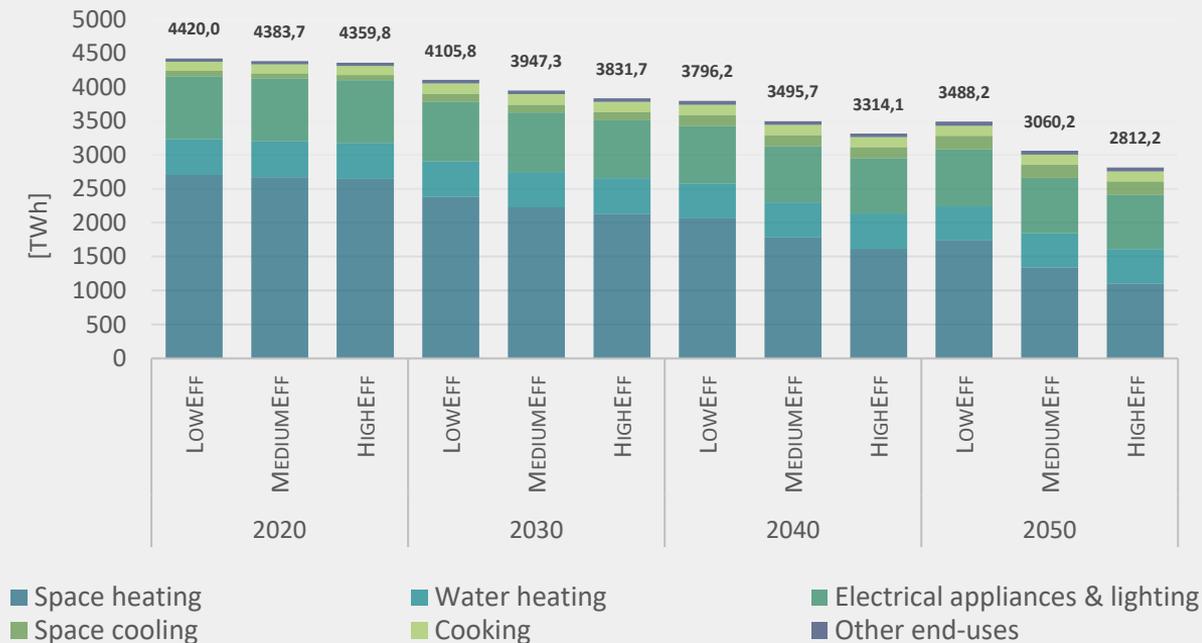


### Buildings

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## Final energy demand by end-use



Final energy demand by end-use in EU-27 [TWh]

## Results

- Relative to 2020, final energy demand reduces by 21.1% (LOWEFF), 30.2% (MEDIUMEFF), 35.5% (HIGHEFF) until 2050
- Space heating remains biggest end-use in 2050 (39-50%)

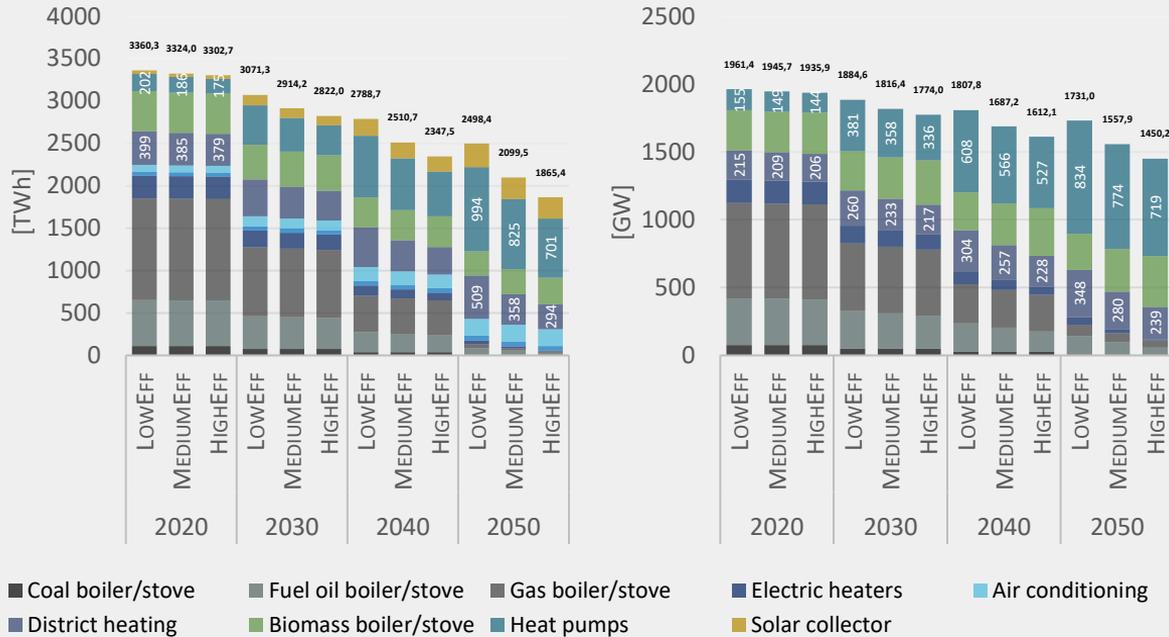
## Key message

Even in the LOWEFF scenario, substantial energy demand reductions are needed to contribute to net-zero emission levels by 2050.



# Heating & cooling technologies in buildings

## Results



- Substantial reduction in energy demand for heating
- 38-40% share of heat pumps in heat demand in 2050
- Heating demand reflects in technology capacities

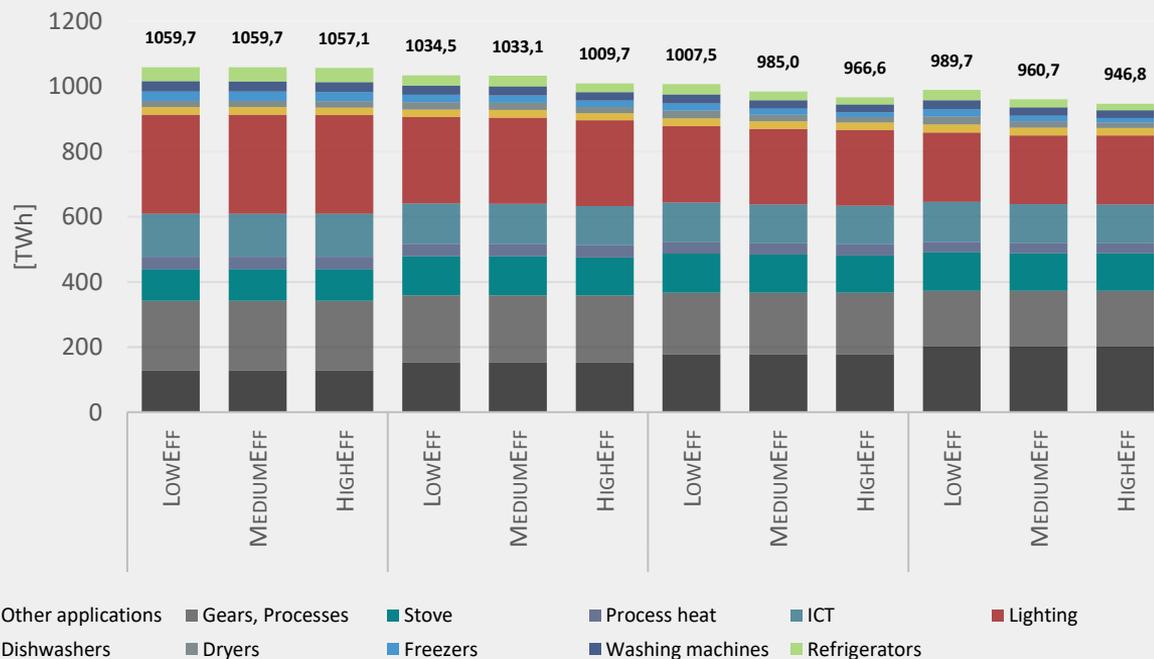
## Key message

Ambitious building performance levels result in substantial reductions in final energy demand for heating.

Note: Heat pump energy use includes electricity plus ambient heat



## Electrical appliances & lighting in buildings



Final energy demand for electrical appliances and lighting in EU-27 [TWh]

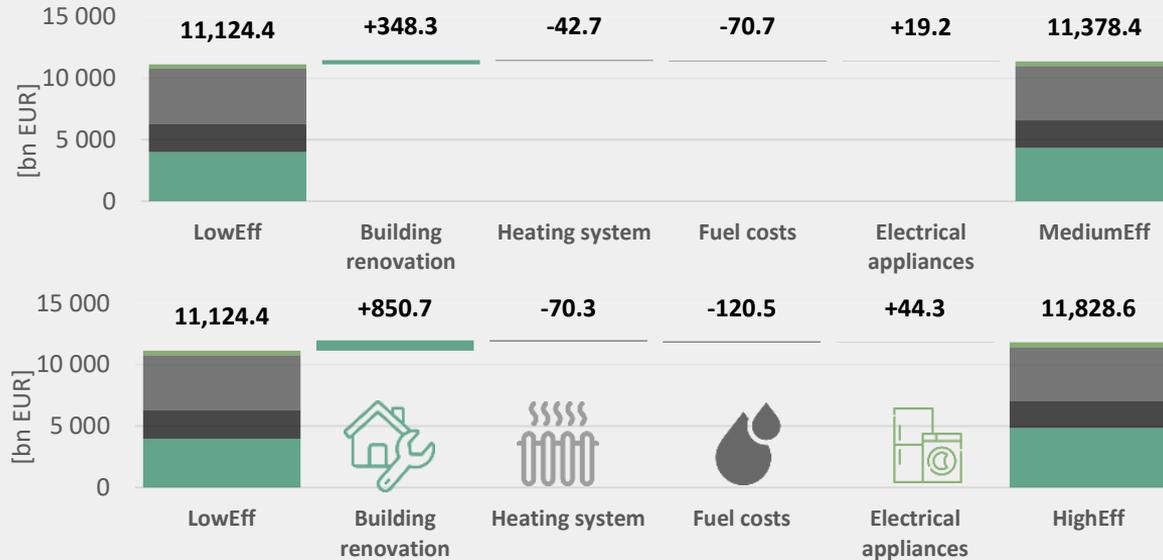
### Results

- Relative to 2020, appliance energy demand reduces by 6.6% (LOWEFF), 9.3% (MEDIUMEFF), 10.4% (HIGHEFF) until 2050
- Some efficiency gains are counteracted by changing consumer preferences

### Key message

Energy savings for appliances are limited in the scenarios. However, many processes were not explicitly modelled due to a lack of reliable cost data.

## Cost balance within the building sector



Analysis of cumulative differential costs compared to LOWEFF for EU-27 (2020–2050) [bn EUR]

Fuel costs = wholesale costs for natural gas, fuel oil, coal, biomass

### Results

- Substantial capital costs for building renovation
- Moderate reduction in capital costs for heating systems
- Overall: additional cost in MediumEff (+293 bn EUR) and HighEff (+793 bn EUR) by 2050

### Key message

MEDIUMEFF and HIGHEFF result in additional system cost as long as the supply costs for electricity and district heating are not factored in.