

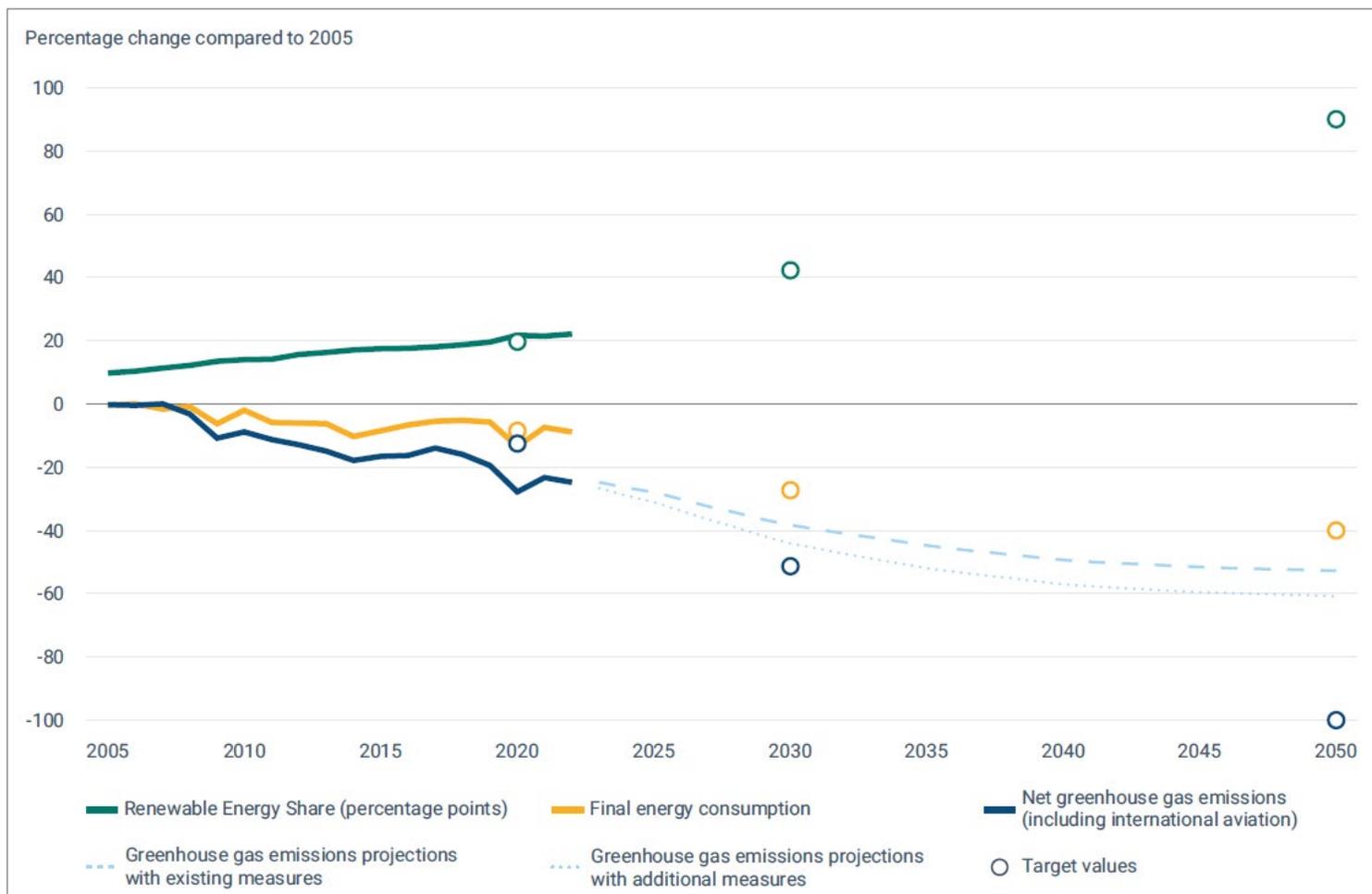
Making Energy Transition Happen – Trends, Challenges and Necessities from the Perspective of Climate Targets

3rd International Sustainable Energy Conference

Veit Bürger | Graz | 10/04/2024

EU target architecture and compliance (Are we on track?)

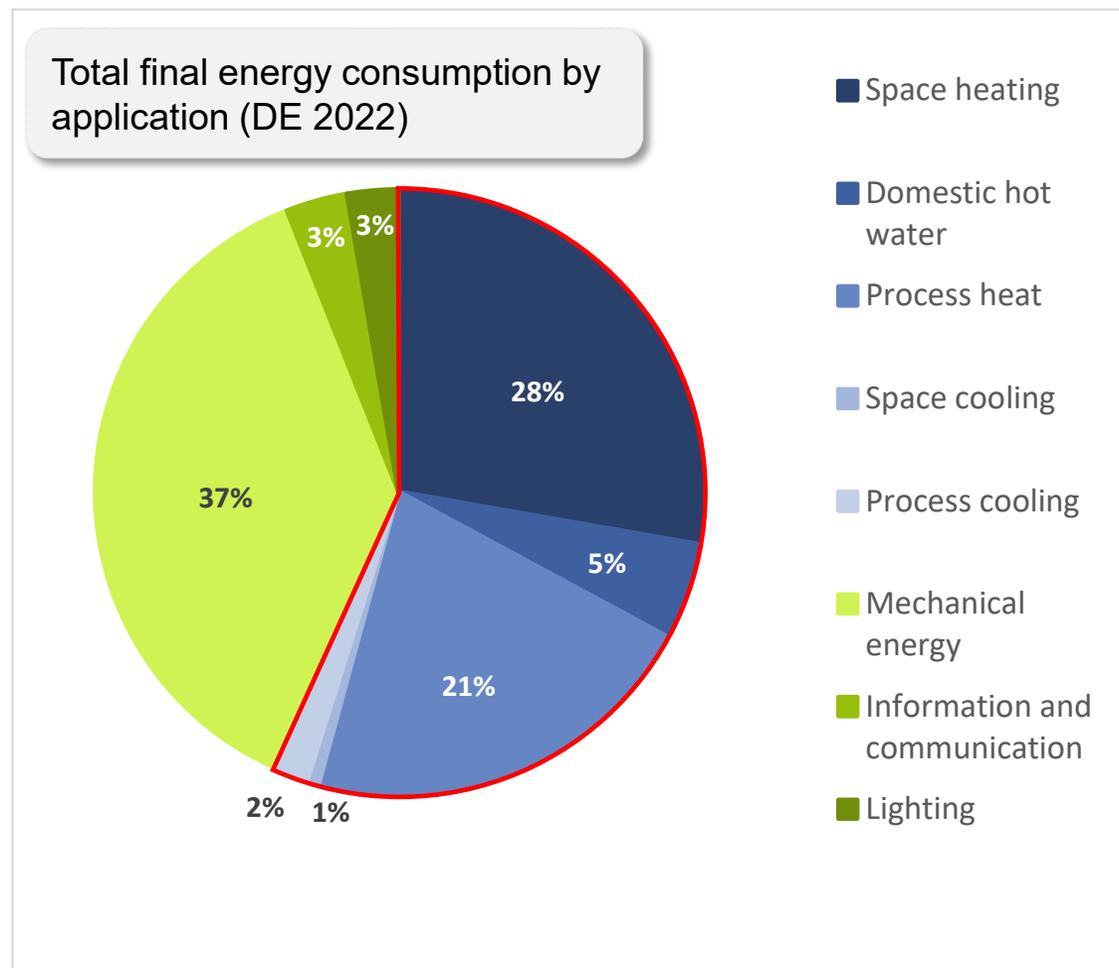
- GHG emissions fall, energy consumption decreases, share of renewable energies increases
 - However, existing measures (WEM-scenario) are not sufficient to achieve 2030 EU target
- In order to achieve the 2030 and the long-term targets, we need significantly more momentum



Source: EEA Trends and projections in Europe 2023

Why is heating and cooling so important (Why does heat matter?)

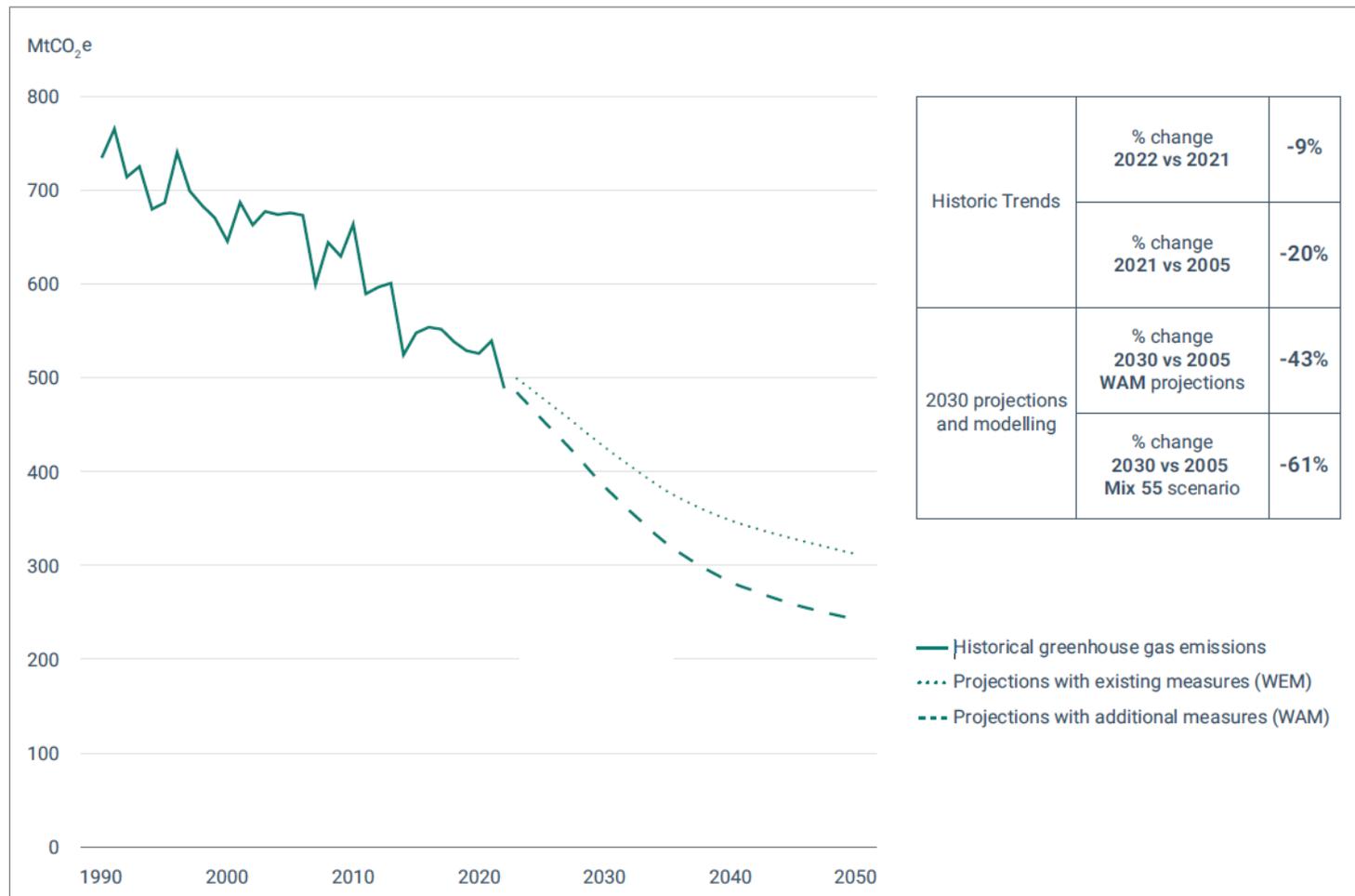
- Heating and cooling account for a large part of the final energy demand (für example DE: 57%)
- The GHG contribution of this field of application is correspondingly high



Source: AGEBA Anwendungsbilanz 2022

GHG emission trends and projections in the buildings sector

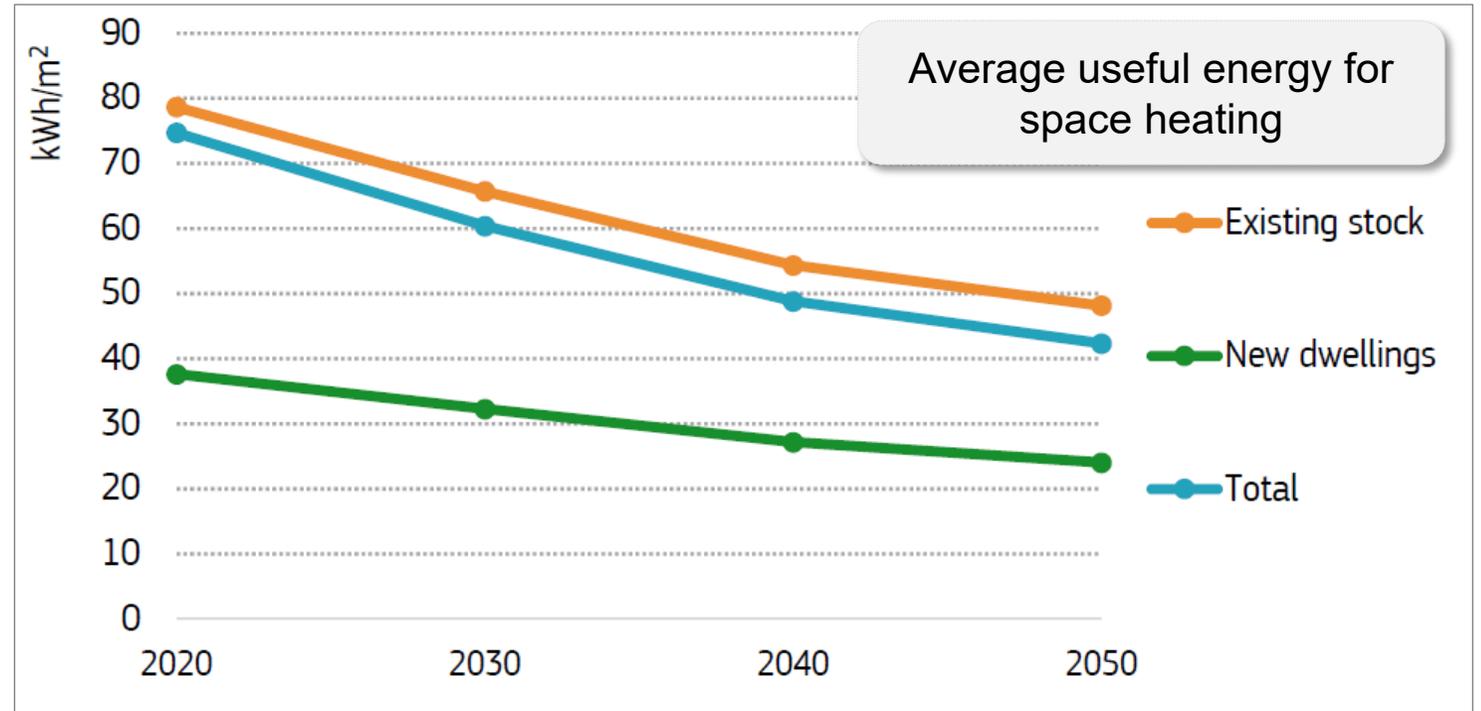
- Both, the scenario with existing measures (WEM) as well as the scenario with additional measures (WAM) miss the long-term target of a climate neutral building stock
- So, the same applies to buildings: we need more momentum



Source: EEA Trends and projections in Europe 2023

Key measures and key technologies to transform the building sector

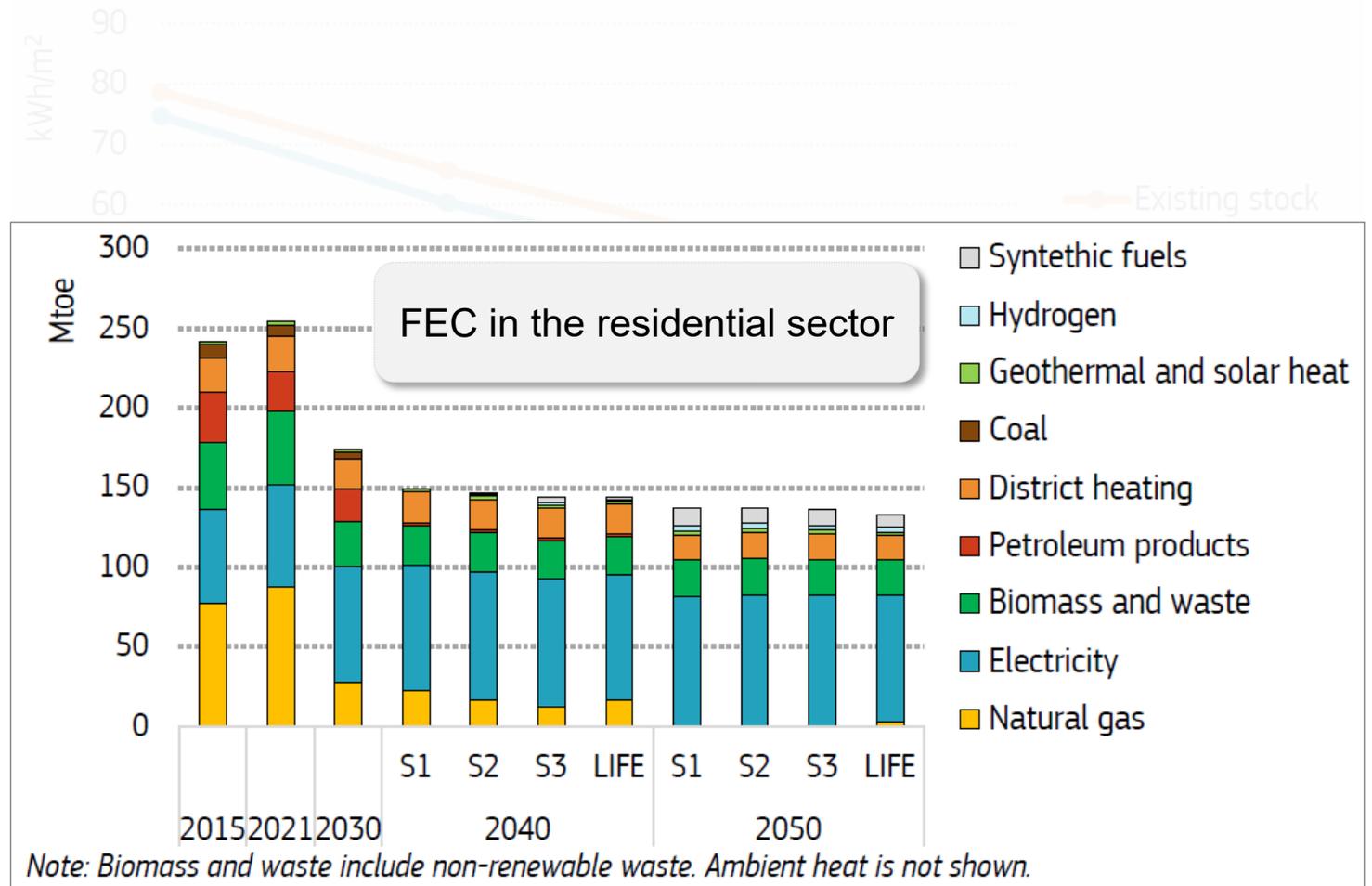
- Efficiency (envelope, efficient heating technologies)
- Fuel switch
 - Electrification (heat pumps)
 - Biomass (by replacing inefficient stoves by efficient conversion technologies)
 - Clean district heating



Note: Biomass and waste include non-renewable waste. Ambient heat is not shown.

Key measures and key technologies to transform the building sector

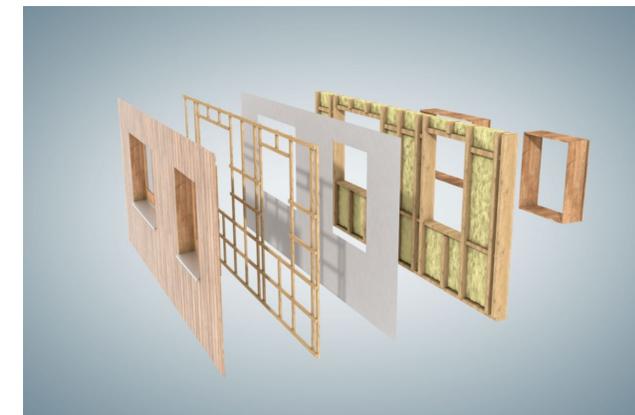
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Source: EU COM, SWD(2024) 63 final (2024)

Spotlight Renovation: Promising new initiatives

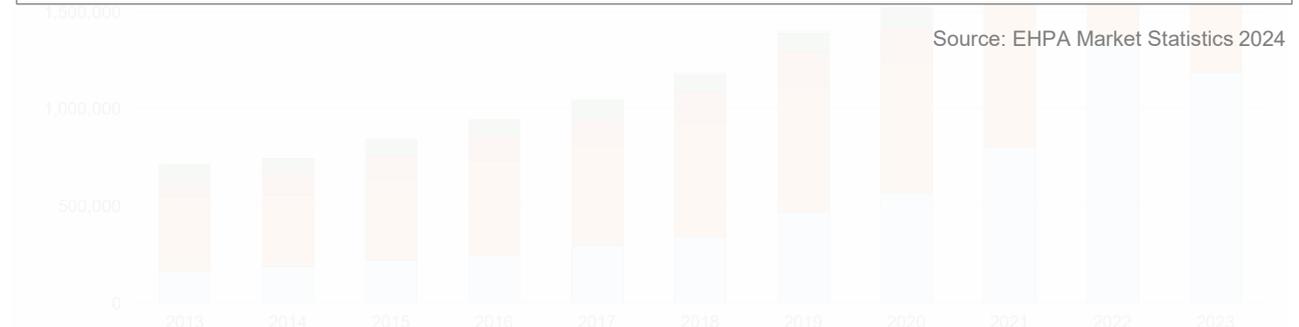
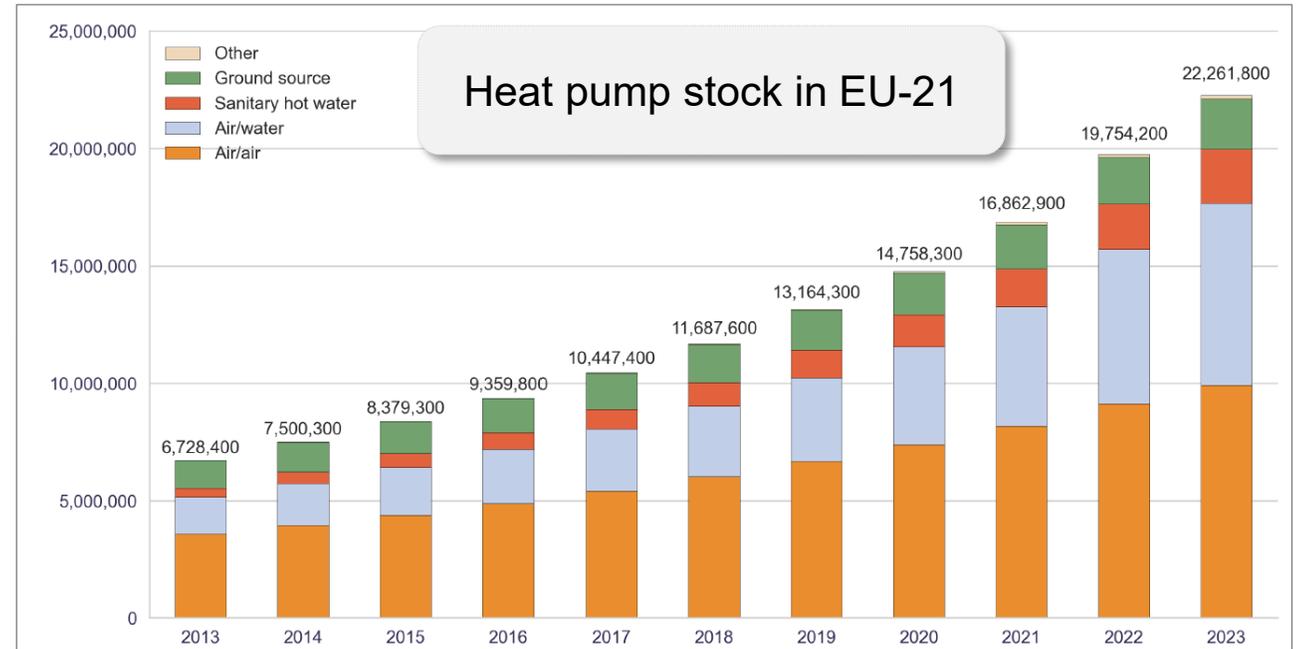
- Modernization activity still too low, especially for deep renovations
- Some promising initiatives/developments about to enter the refurbishment market
 - Energiesprong: Refurbishment with a high degree of prefabrication on an industrial scale
 - Refurbishment sprint: One-stop shop approach with multi-disciplined construction teams / onsite refurbishment coach / standardisation
- To be considered: Every kWh of final energy savings through refurbishment reduces the pressure for expansion of RES systems and infrastructure



Images: Ecoworks (1/2), Energiesprong (3/4)

Spotlight Heat-Pumps: Market Development

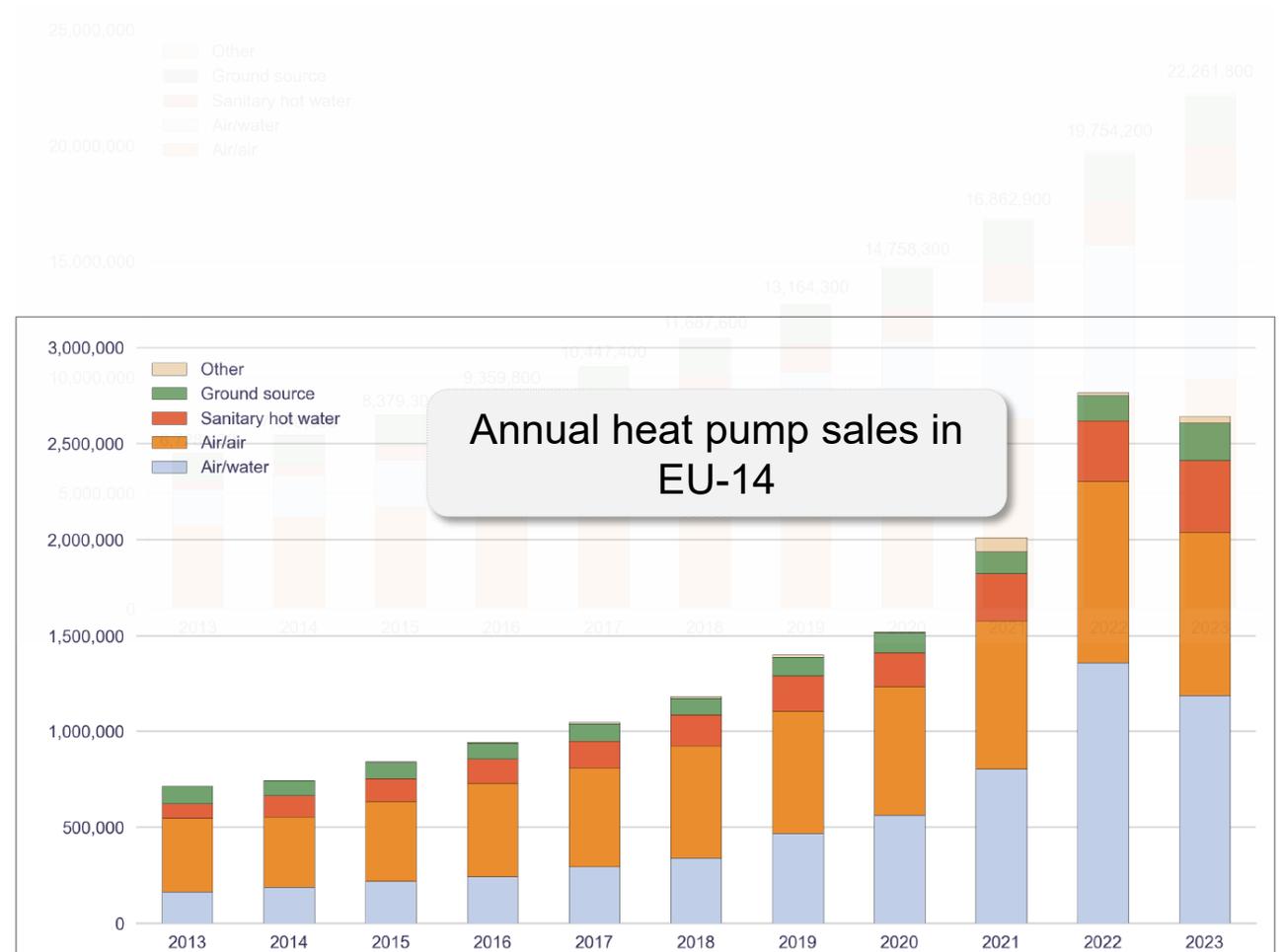
- Growing market volumes for heat pumps; heat pump stock in Europe steadily increasing; but slight decline in sales in 2023
- Manufacturers are investing heavily in expanding their production capacities (or have announced plans to do so)
- This will also increase the degree of automation/industrialisation of production
- New concepts of selling and installing are also emerging (e.g. rental models, one-stop-shop approaches)



Source: EHPA Market Statistics 2024

Spotlight Heat-Pumps: Market Development

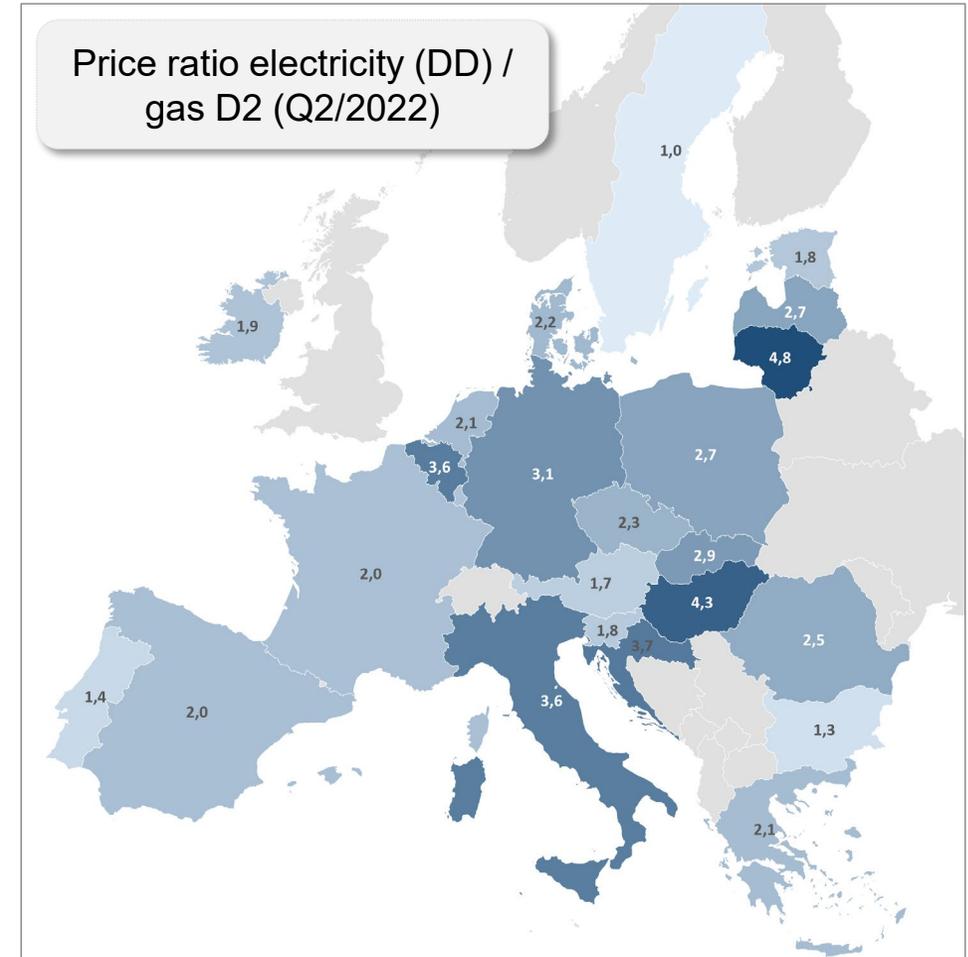
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Source: EHPA Market Statistics 2024

Spotlight Heat-Pumps: Operation Costs

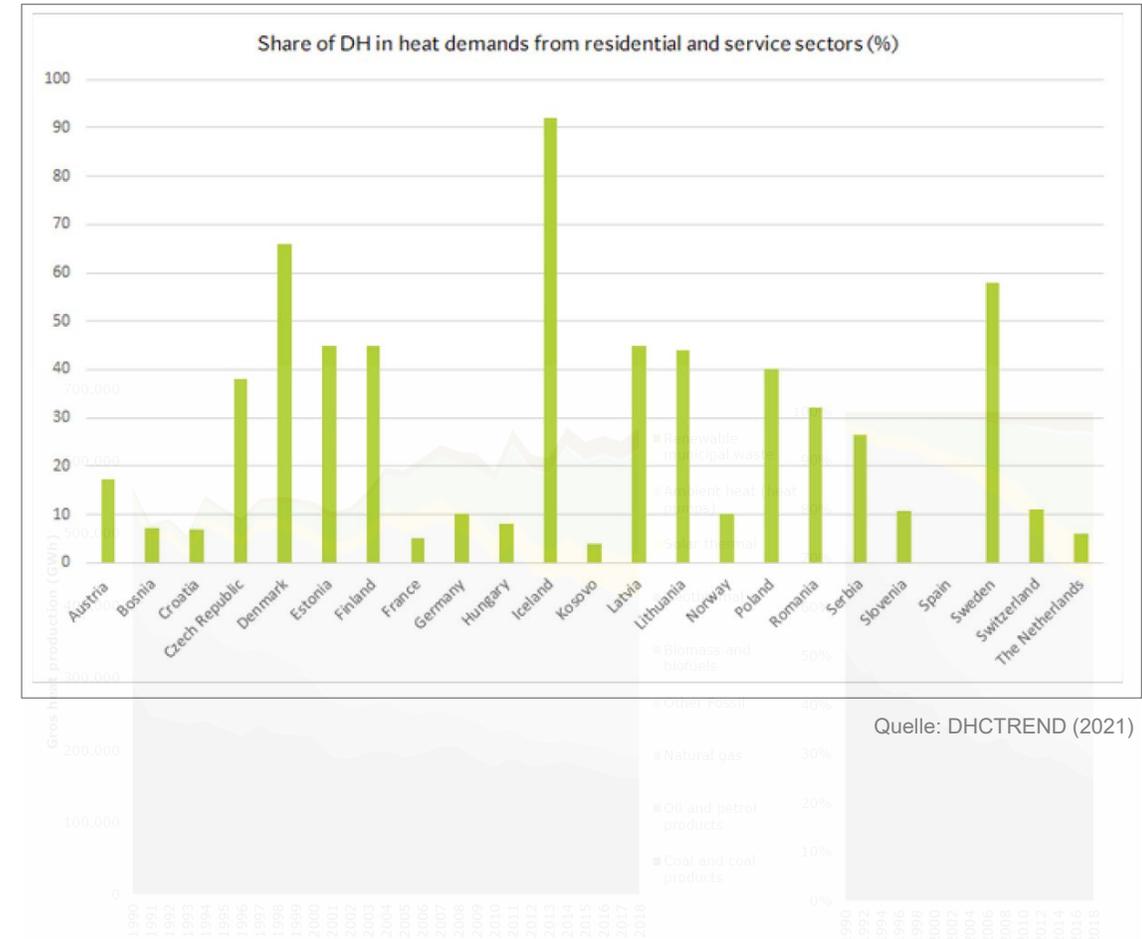
- In terms of operating costs, the competitiveness of heat pumps depends mainly on the correlation between gas and electricity prices
- In Q2 2022, the electricity/gas price ratio (household demand) is above 2.5 in 10 out of 24 Member States. Above this value, a heat pump is no longer competitive with a gas boiler in a typical existing building
- High-temperature heat pumps can reduce dependence on the heating system's temperature and refurbishment state, improving competitiveness



Source: Öko-Institut based on Eurostat data

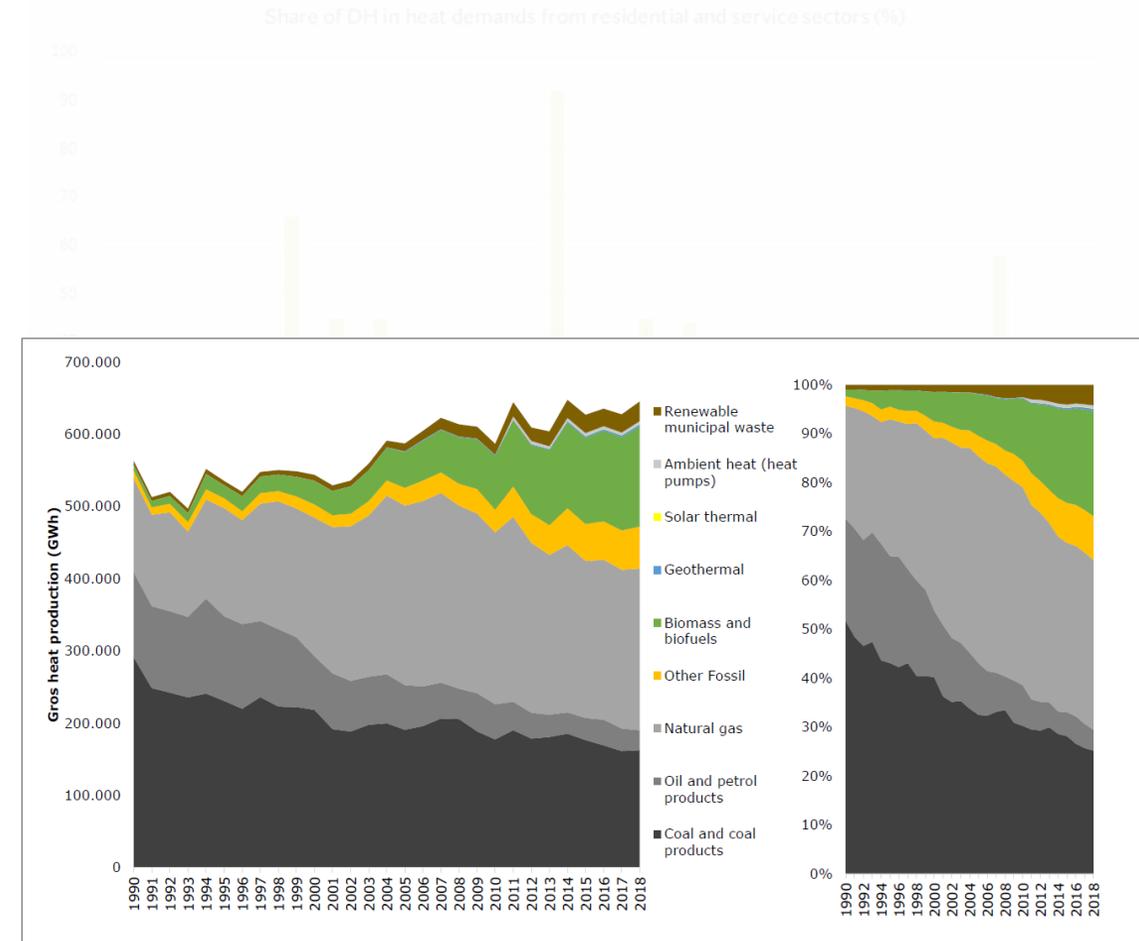
Spotlight District Heating

- High shares of DH in Scandinavia, the Baltic states and some Eastern European countries
- Currently, there is a noticeable expansion momentum in countries like the Netherlands and Germany, which is the result of municipal heat planning and an active gas phase-out strategy/policy
- District heating generation dominated by fossil fuels in many Member States. In cases where renewable energy is used, biomass dominates the renewable energy share
- Substitution of coal with natural gas and/or biomass (co-firing) in recent decades



Spotlight District Heating

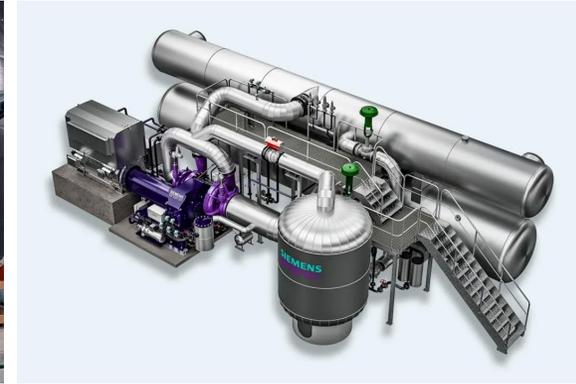
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Quelle: DHCTREND (2021)

Spotlight District Heating

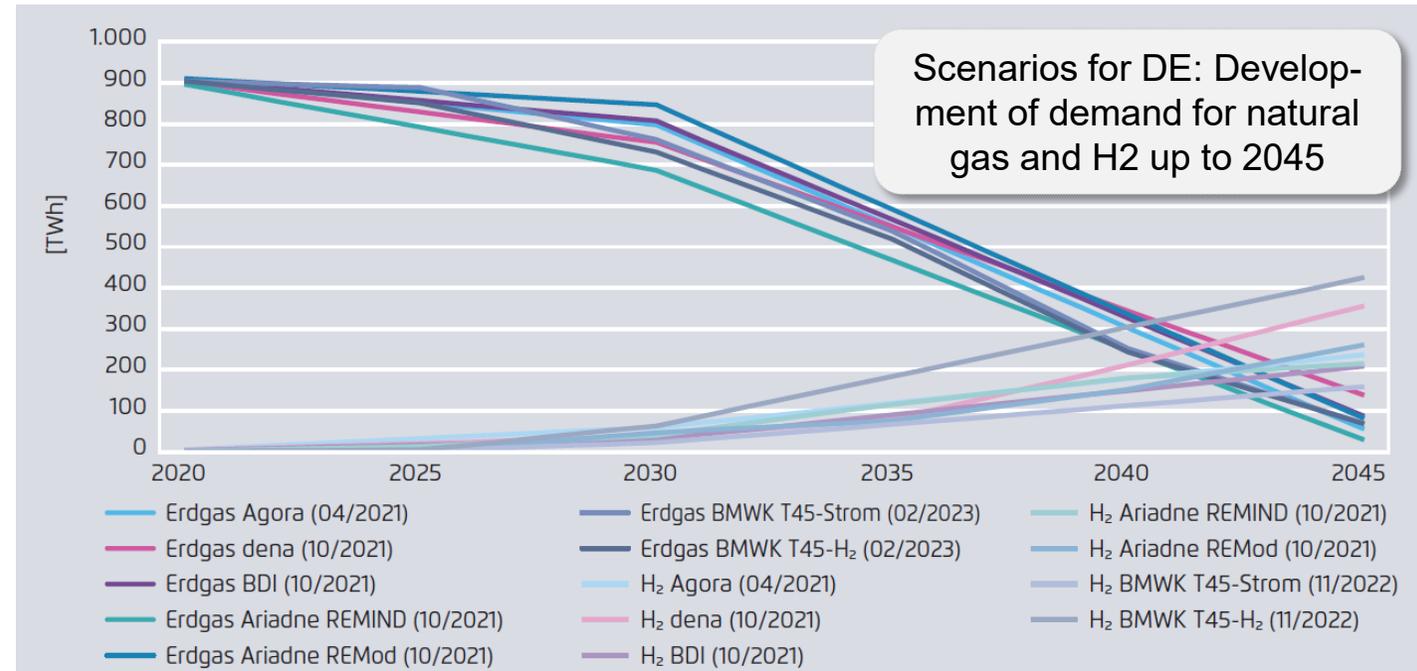
- "New" renewable energy technologies still without major market shares
- However, this will change in the course of decarbonization. The DH infrastructure will no longer be fed from a few central sources, as is currently the case. Instead, it will collect heat from various available sources., e.g.
 - Large heat pumps
 - Unavoidable waste heat
 - Geothermal
 - Solar thermal
 - Hydrogen (CHP)
 - Storage capacities (short- and long-term storage)



Images: Philip Pramer/STANDARD (1), Siemens Energy (2), Markus Schlaf/SWM (3), Marstal Fjernvarme (4)

Spotlight Gas Infrastructure

- Demand for natural gas must fall quickly
- Broad scientific consensus: role of hydrogen in building heating very limited, even in the long-term perspective
- Gas distribution grids will be successively decommissioned, electricity distribution grids must be strengthened
- It is essential to quickly make the regulatory framework fit for these developments

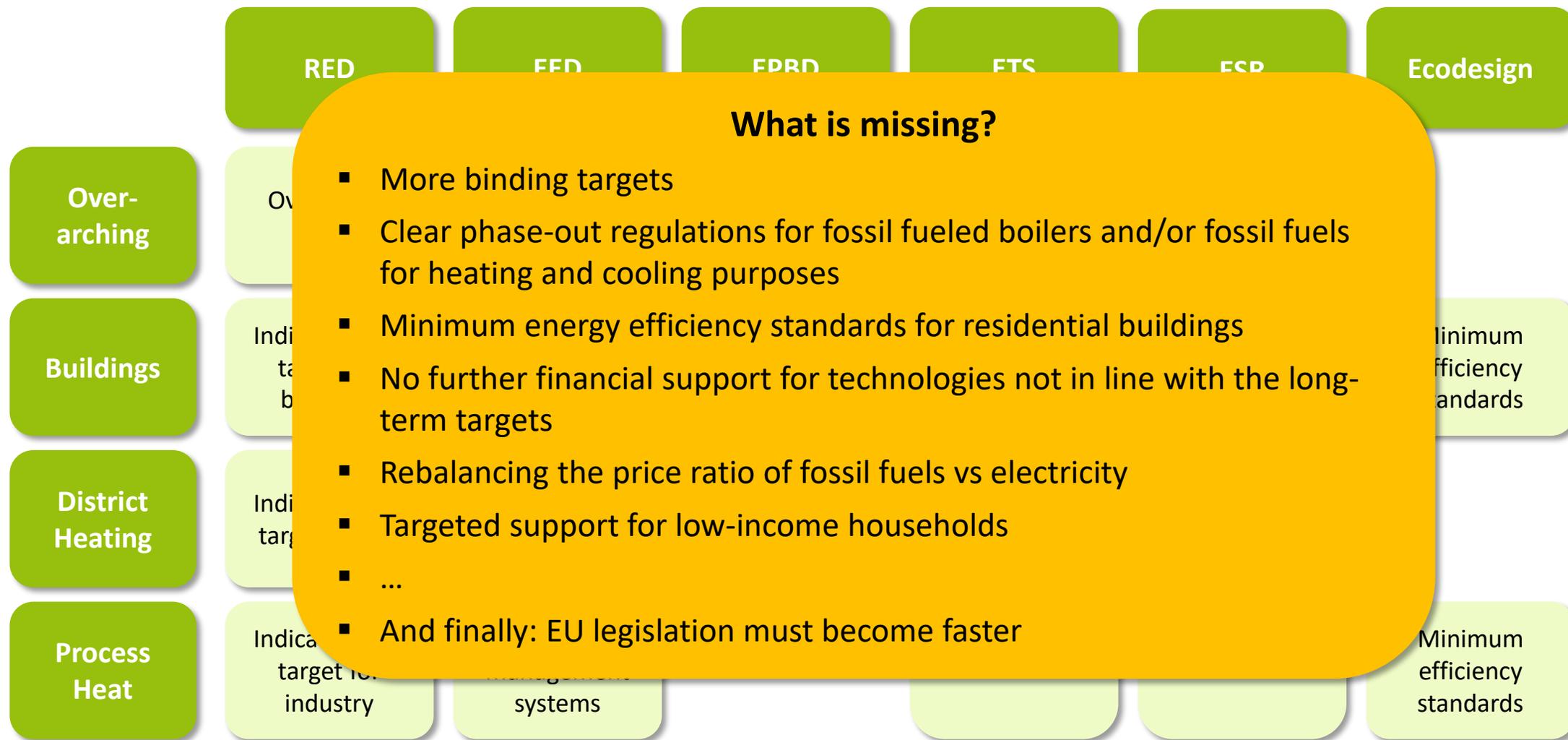


Source: Agora Energiewende (2023): Ein neuer Ordnungsrahmen für Erdgasverteilnetze

Is the EU framework sufficiently fit with regard to climate targets in the heating sector?

	RED	EED	EPBD	ETS	ESR	Ecodesign
Over-arching	Overall RES target	Overall efficiency target; ESOs; heat planning				
Buildings	Indicative RES target for buildings	Role of public buildings	Minimum efficiency requirements incl. MEPS, NBRPs	ETS II for buildings/transport; social climate fund	Targets for non-ETS I sectors/applications	Minimum efficiency standards
District Heating	Indicative RES target for DH	Efficient DH; data centres				
Process Heat	Indicative RES target for industry	Energy management systems	ETS I for large combustion plants	Minimum efficiency standards		

Is the EU framework sufficiently fit with regard to climate targets in the heating sector?



Vielen Dank für Ihre Aufmerksamkeit!
Thank you for your attention!

Haben Sie noch Fragen?
Do you have any questions?

