Decarbonising buildings without gas: policy options in the context of FF55 and RePowerEU

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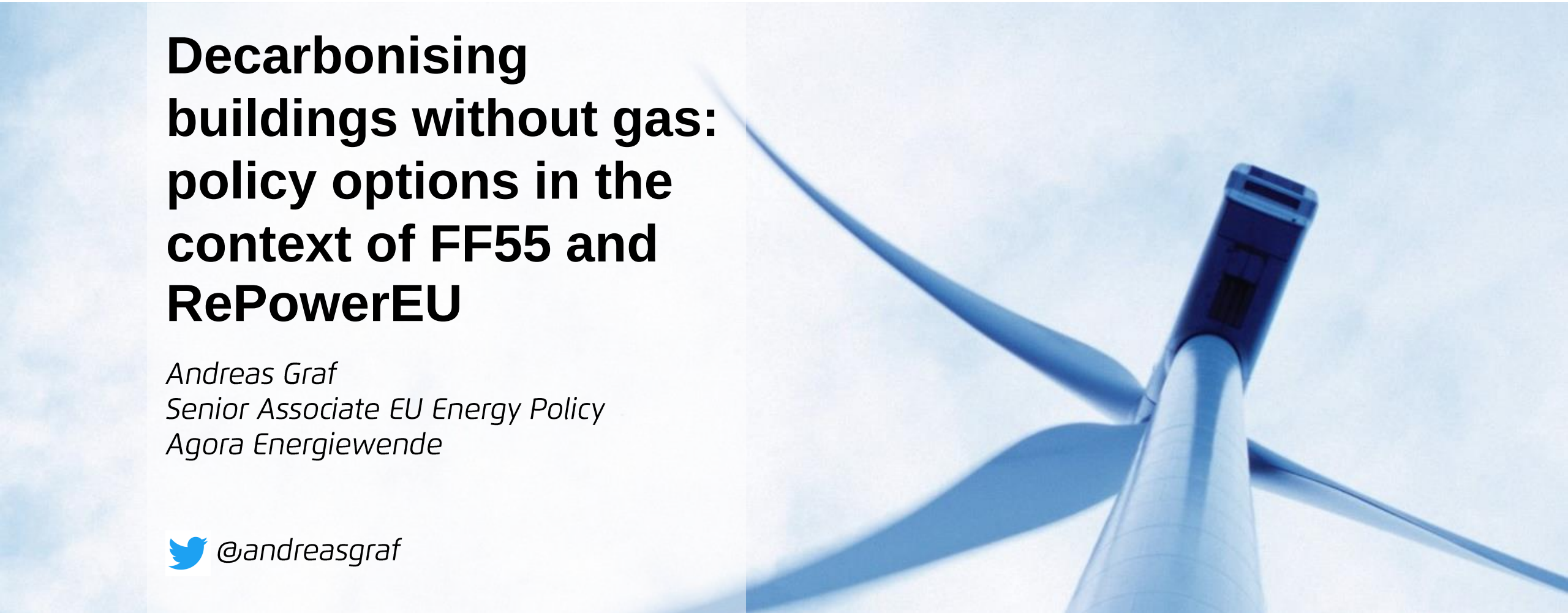
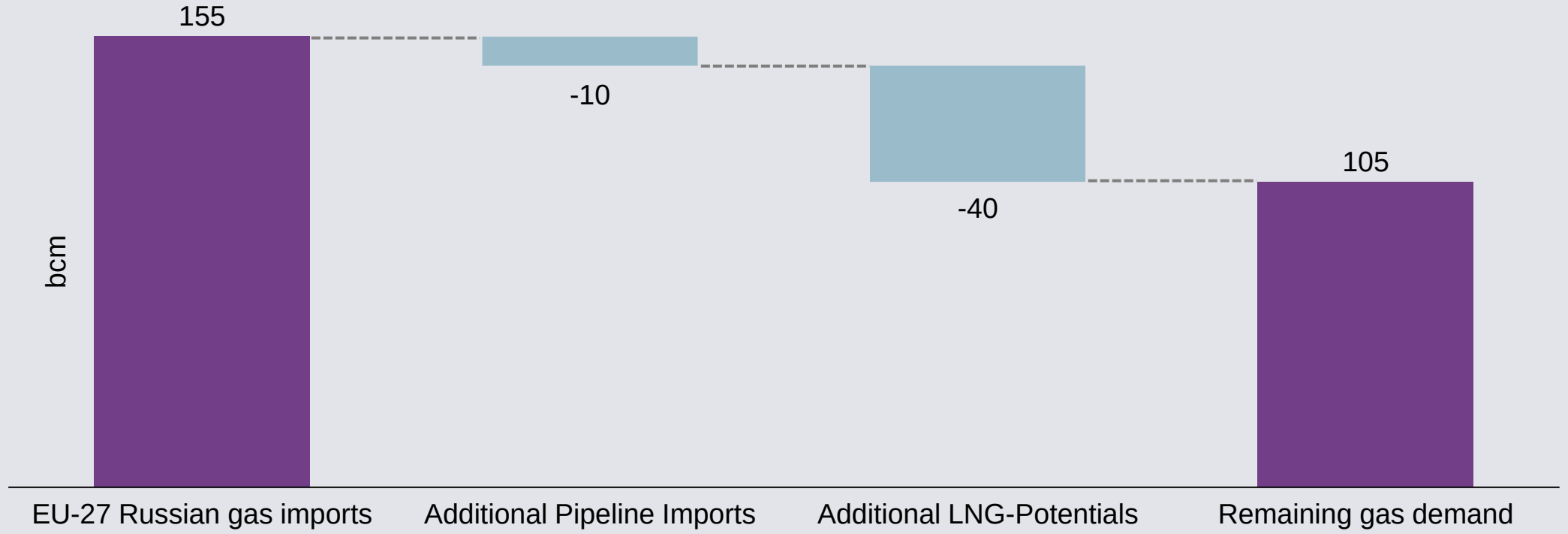


Already before 24 February, the EU was experiencing energy price inflation and debating significant additional action on buildings in the context of the Fit for 55 Package.

- **Energy Performance of Buildings Directive:** Introduces minimum energy performance standards for buildings that would require Member States to ensure that the worst 30% of the building stock in terms of energy performance (classes F and G) is renovated to a harmonized energy class E standard by 2030 (non-residential buildings) and 2033 (residential buildings).
- **Energy Efficiency Directive:** introduces obligation for the public sector to reduce its energy consumption by -1.7% per year and ensure that 3% per year of the public building stock larger than 250m2 are renovated (as much as 15% of the public building stock - including social housing). Member States must also undertake comprehensive heating & cooling assessments and encourage municipalities with more than 50.000 people to prepare local plans. The criteria for highly efficient DHC networks are also progressively strengthened.
- **EU ETS & Social Climate Fund:** Introduces a new separate ETS for buildings and transport, accompanied by a social climate fund whose revenues should prioritize low-income households.
- **Renewable Energy Directive:** sets targets to increase RES in heating and cooling by 1.1%-1.5% per year and RES and waste heat in district heating by 2.1% per year.

The escalation of Russia's war against Ukraine has exposed the EU's structural dependency on fossil gas imports from Russia and created a new sense of urgency.

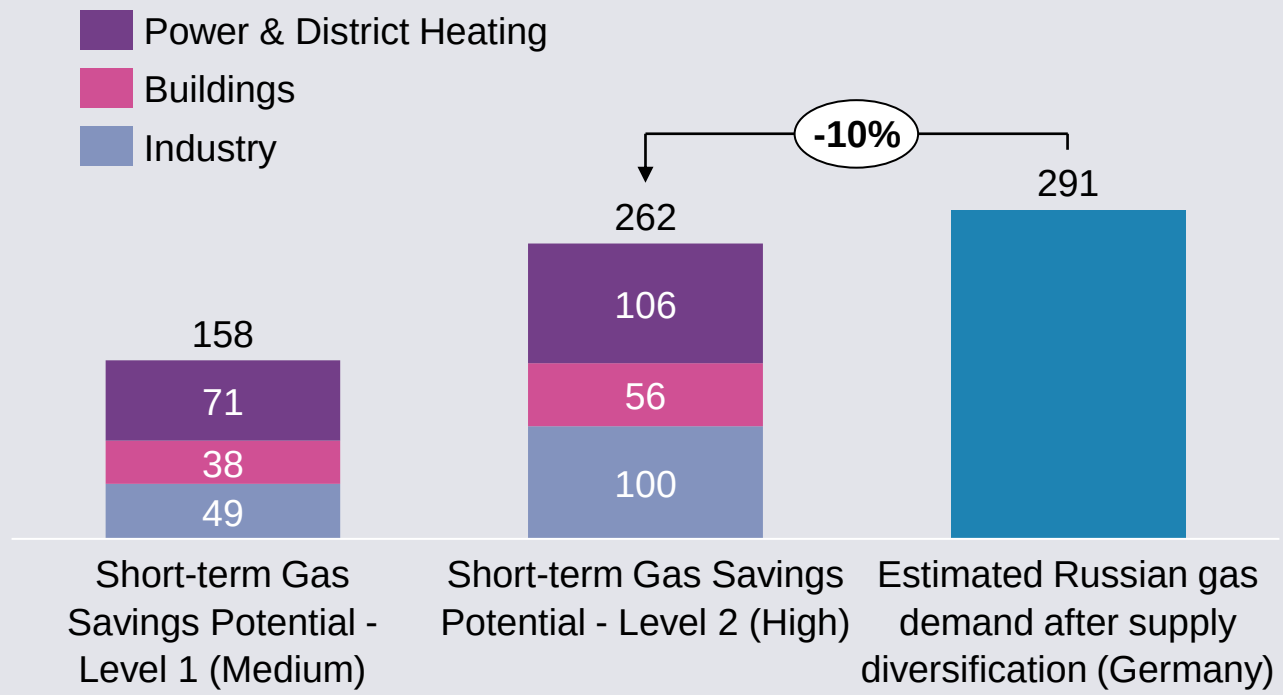
Russian natural gas imports (EU-27) in 2021 and alternative natural gas import sources



Agora Energiewende (2022) with data from Eurostat (2022), IEA (2022), EU-Commission (2022)

Short-term gas savings potentials in case of a disruption of gas supplies are significant, but will also need to rely on fuel switching to carbon intensive fuels, as well as difficult behavioural and demand rationing measures.

Short-term gas savings potential in Germany by sector vs residual demand for Russian gas supplies after supply diversification (in TWh)



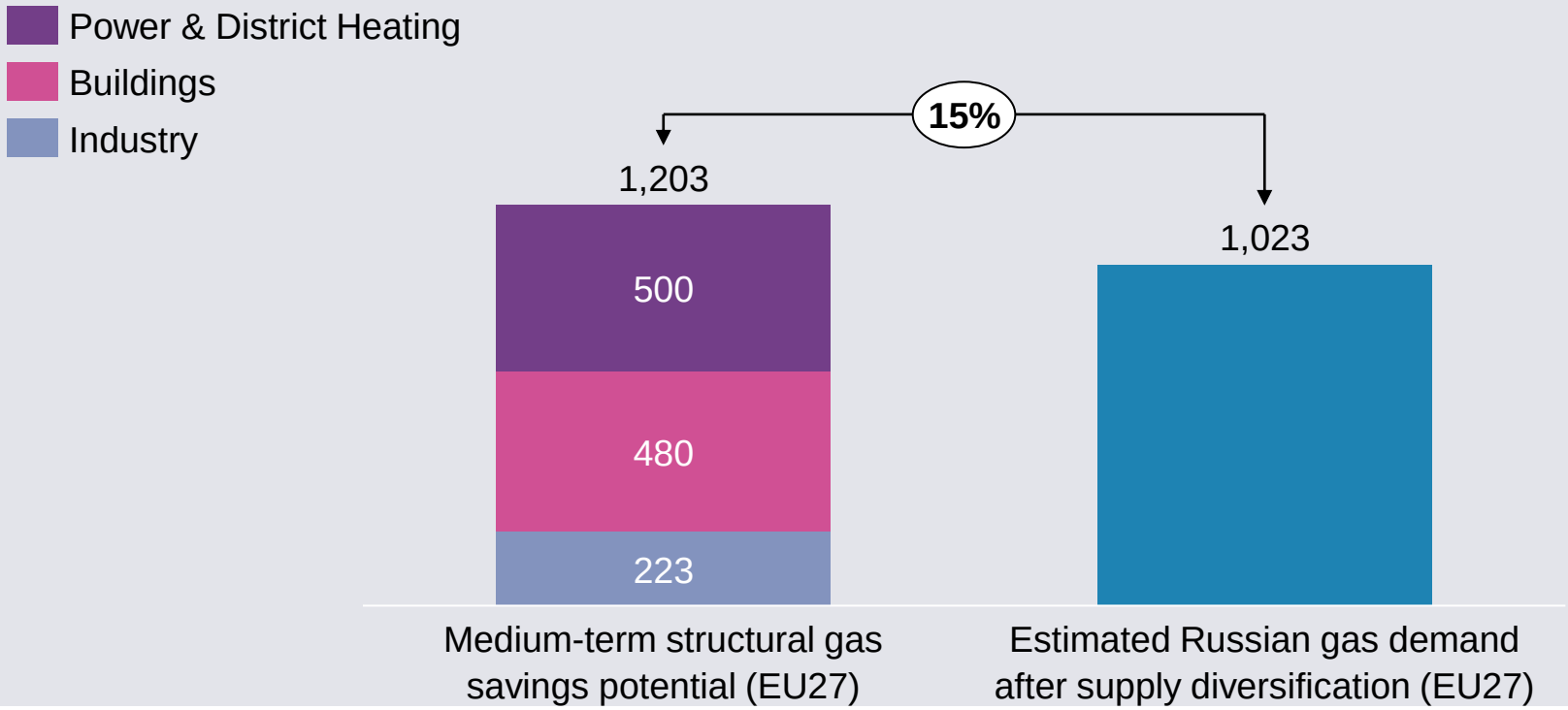
Agora Energiewende (2022)

Measures assumed in level 2:

- Average reduction of room temperatures by 1-1,5 °C in across all buildings.
- Market and regulatory driven displacement of electricity and heat production from gas plants
- Fuel switch to other (largely fossil) fuel sources for one third of industry process heat installations
- Reduction of gas consumption in the basic chemicals sector to 25% of pre-crisis levels
- Significant deployment of short-term efficiency measures in buildings and industry

By contrast, if the EU fully mobilises all available means to structurally reduce gas demand, it can fully regain its energy sovereignty by 2027.

Medium-term gas savings potential for EU27 by sector vs residual demand for Russian gas supplies after supply diversification (in TWh)



Agora Energiewende (2022)

Roughly 480 TWh can be saved in buildings by improving boiler efficiency, renovating buildings, replacing gas boilers with renewable heating solutions and limited fossil switching

Estimated saving potentials in the buildings sector (TWh)

Sector	Minimum potential (TWh)
Improve energy efficiency of existing gas boilers	72
Renovate buildings	72
Replace gas boilers with heat pumps	140
Replace gas boilers with district heating	125
Replace gas boilers with biomass	47
Switch fuels for existing boilers	24

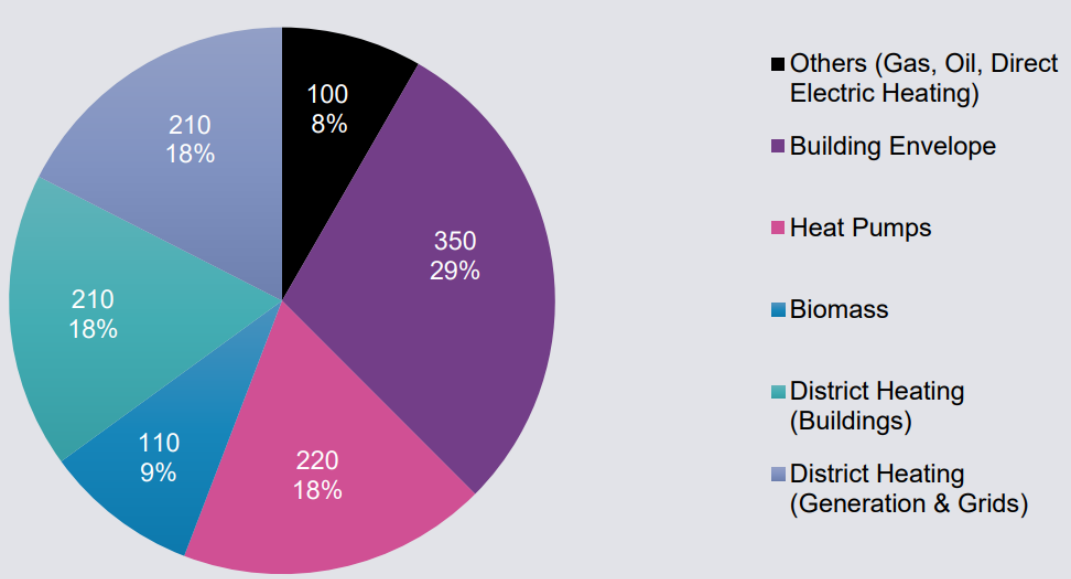
Agora based on modelling from Artelys, Wuppertal Institute and TEP Energy

7 Priority actions for the buildings sector:

1. Introduce an EU-wide Check & Act campaign and mobilize a Civilian Energy Corps.
2. Make the training of skilled professionals for the energy transition a key priority.
3. Stop installing new gas boilers.
4. Rapidly scale up the production and installation of heat pumps.
5. Rapidly scale up building renovation.
6. Connect more homes to district heating networks and make them greener and more efficient.

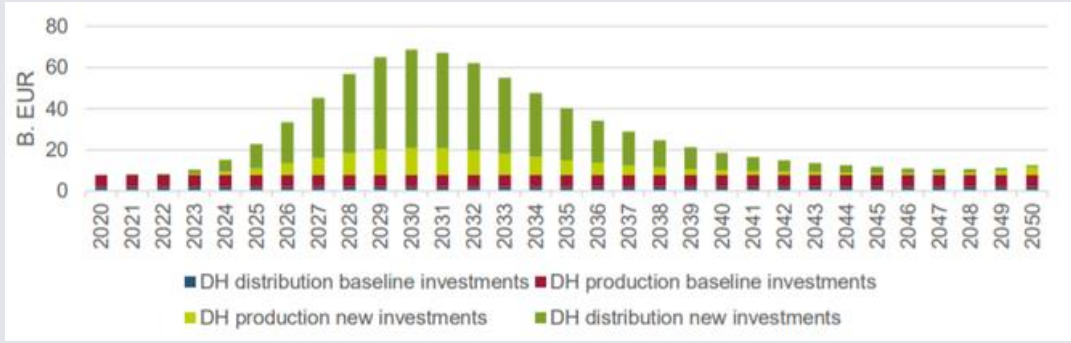
The investment needs in the building sector are huge and require a significant frontloading of investments, especially in district heating. European solidarity calls for enabling all EU countries to deliver the RePowerEU Plan.

Investments between 2022-2027 in the EU27 buildings sector in billion Euros, including district heating.



Agora Energiewende 2022

Estimated distribution of district heating investments to reach the Heat Roadmap Europe 2050 Scenario



Mathiesen et al (2019)

Since the initial REPowerEU communication we have seen some positive signals on buildings from Member States

- Germany plans to strengthen new-build standards from 1 January 2023 and require 65% renewable heating systems for new installations in all homes from 1 January 2024.
- The Netherlands has announced that it plans to require hybrid heat pumps for new installations for all homes that are not connected to a heat network from 2026.
- Denmark is aiming to switch the remaining 400,000 homes on natural gas to district heating and heat pumps by 2028.
- Austria, Flanders and Luxembourg are planning to ban gas boilers in new buildings.
- Italy is taking regulatory measures to reduce air conditioning in public buildings

The European Commission‘s REPowerEU package makes a number of important new proposals and recommendations.

- → Recommends:
  - Phasing out stand-alone fossil fuel boilers via Ecodesign standards by 2029 and introducing national bans on boilers based on fossil fuels
  - Phasing out fossil fuel subsidies for fossil-fuel boilers by 2025
  - Strengthening the target of minimum energy performance standards from “G” to “D”
  - Strengthening national energy requirements for new buildings before 2030
- → Proposes requiring solar rooftop PV for new public and commercial buildings by 2026, existing public and commercial buildings by 2027 and all **new residential buildings by 2029**, as well as limiting permitting times to 3 months.
- → Member States and regions must now embrace and implement them!
- → But REPowerEU also offers little additional financing (€20 billion in new revenues from the EU ETS). In the short-term, RePowerEU will only make a difference if underpinned with additional public funding based on EU solidarity. The proposed shifting of already available funds is not enough.

Since the release of REPowerEU the draft EPBD Report by Rapporteur Ciaran Cuffe calls for further action

Fossil Fuels in Heating & Cooling

- → Explicit prohibition of fossil fuel heating in new and existing buildings from entry into force
- → Explicit prohibition of fossil fuel subsidies from entry into force
- → **Phase out of fossil fuels in heating and cooling by 2035 at the latest.**

Solar Rooftops

- → Requirement for new buildings to optimize design for solar energy generation
- → Solar rooftop obligation for existing buildings in case of major renovation, rooftop renovation or replacement of technical building systems, as well as for new (2025) and existing (2027) public and commercial buildings and **all existing buildings (31 December 2030)**.

Minimum Energy Performance Standards for existing buildings

- → EPC Class C for public and non-residential buildings by 2030 and residential buildings by 2033

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