



Energy efficiency for the residential and hospitality sectors

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Clean Energy for EU islands





BUILDINGS PERFORMANCE INSTITUTE EUROPE

Who we are, what we do



EUROPEAN
NON-PROFIT
THINK-TANK



POLICY ADVICE
ON BUILDING
REGULATION,
FROM DESIGN TO
IMPLEMENTATION



BRUSSELS
AND
BERLIN



INDEPENDENT
RESEARCH AND
ANALYSIS



IMPROVING THE
ENERGY
PERFORMANCE
OF BUILDINGS
ACROSS EUROPE



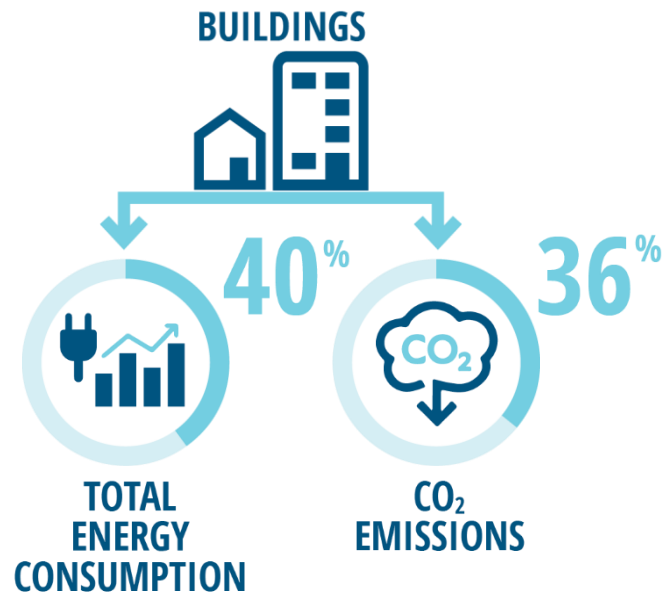
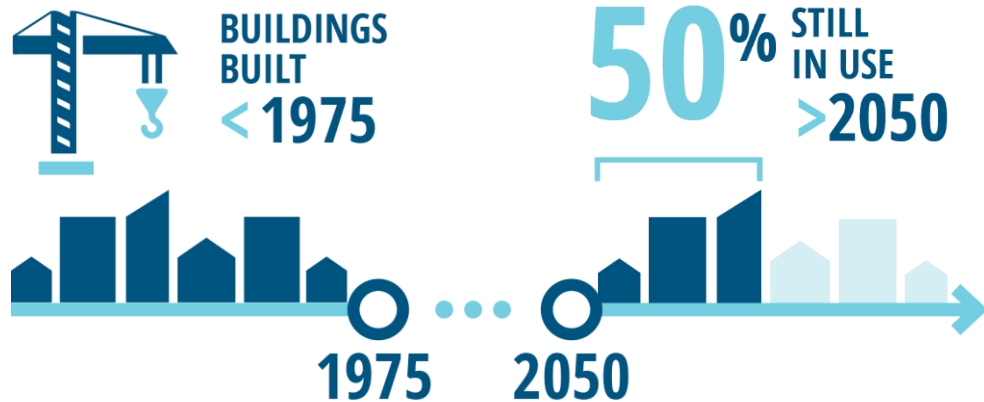
IN OPERATION
SINCE 2010





EUROPE'S BUILDINGS

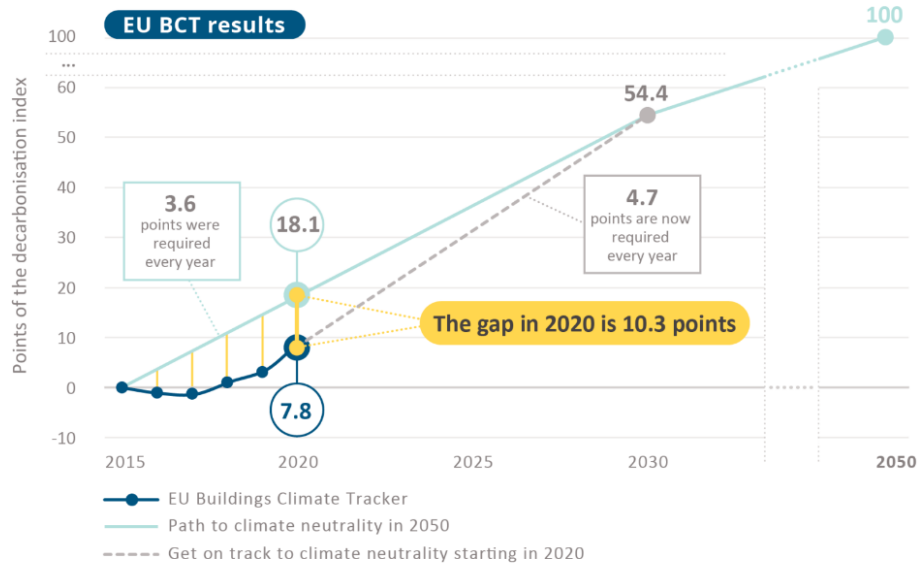
Nearly 75% of the stock is energy inefficient



HOW IS THE BUILDING STOCK DOING?

OFF TRACK ON MOST FRONTS

The tracker finds that the **EU building stock** remains off track to achieve climate neutrality by 2050.



Source: *EU Buildings Climate Tracker (BPIE 2023)*

Strategies and policies to invest in EE and RES equally needed

Indicator	Current Status 2020	Current Status 2020
1 CO ₂ emissions	OFF TRACK	<p>a. Emissions from energy use in households reached 301 Mt CO₂, which was 20.7% higher than the required value.</p> <p>b. Emissions from energy use in service sector buildings reached 121 Mt CO₂, 13.2% higher than the required value.</p>
2 Final energy consumption	OFF TRACK	<p>a. Final energy consumption in households was 2,886 TWh, 7.6% higher than the target.</p> <p>b. Final energy consumption in service sector buildings was 1,410 TWh, meeting the target (1,462 TWh).</p>
3 Renewable energy share	OFF TRACK	<p>a. The share of energy from renewable sources for heating and cooling reached only 23%, 11.4 percentage points lower than the target.</p> <p>b. The share of energy from renewable sources in gross electricity consumption reached 37.4%, 1.6 percentage points below the target.</p>
4 Investments in renovation	OFF TRACK	Accumulated to €1,771 billion, ⁵ 41.2% lower than the target .
5 Domestic energy expenditure	ALMOST ON TRACK	Reached €1,406 per household. ⁵



WHY ENERGY EFFICIENCY MATTERS

- ▶ Europe is the **fastest-warming continent**, and its temperatures are rising at roughly twice the global average
- ▶ Global mean near-surface temperature between 2013 and 2022 was 1.13 to 1.17°C warmer than the pre-industrial level, which makes it **the warmest decade on record**. European land temperatures have increased even faster over the same period by 2.04 to 2.10°C (EEA, May 2024)
- ▶ To achieve climate neutrality by 2050, **the EU needs to boost its energy efficiency and reduce its energy consumption faster.**





EFFICIENCY FIRST PRINCIPLE

A guiding principle for the EU

- ▶ While taking full account of security of supply and market integration, the Energy Efficiency First principle aims to ensure that:
 - only the energy really needed is produced
 - investments in stranded assets are avoided
 - demand for energy is reduced and managed in a cost-effective way
- ▶ Introduced in 2015: energy efficiency first
- ▶ Definition in art. 3 EED: obligation for EU countries to ensure that EE solutions are considered in planning, policy and investment decisions in both the energy and non-energy sectors.





WHY ENERGY EFFICIENCY MATTERS

Cooling demand rising

- ▶ Demand for cooling in Europe is increasing
- ▶ Share of energy used for cooling, both in residential and non-residential buildings, could be **between 8% and 9% of total energy used in buildings**, in 2050 (2% in 2012)
- ▶ **Demand for cooling will increase the most in southern EU countries:** Greece, Italy, Portugal and Spain could represent 71% of total average annual energy use for cooling in residential buildings in the EU.
- ▶ EU-27 only 0,4% of total final energy consumption for cooling in **residential** buildings in 2019 (Eurostat).
 - Malta, Cyprus and Greece, at 11%, 10% and 5%, respectively.
 - Summer 2022, the need for cooling became a serious issue in Greece, Italy, Spain and other countries as a result of long-lasting and repeated heatwaves combined with high energy prices

Source [EEA 2022](#)





WHY ENERGY EFFICIENCY MATTERS

Finding the balance in managing supply and demand

- ▶ Deep energy renovation of building envelopes can reduce energy use, improve resilience and decrease GHG emissions
- ▶ Newly constructed or renovated buildings can also overheat, even if they are well insulated. This can occur if building design does not adequately consider the combination of solar gains, internal gains and ventilation strategies.
- ▶ Sustainable cooling strategy:
 - **first, prioritise all practices that reduce the energy need** for cooling in buildings, including approaches that reduce cooling load, passive cooling options and nature-based solutions in the surrounding area of buildings.
 - **tailored to local contexts**
 - prioritise investments in **passive cooling techniques**
 - promotes collective cooling solutions
 - uses active cooling systems rationally and moderately
 - develops low-energy cooling systems that are suited to future warmer climates



WHY ENERGY EFFICIENCY MATTERS

Drawbacks of using air conditioning extensively

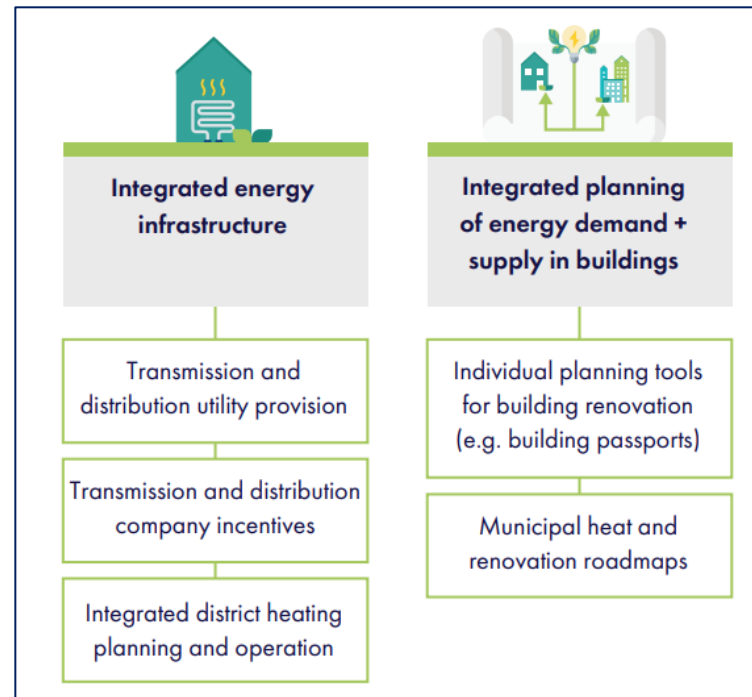
- ▶ Can be seen as a ‘maladaptation’
- ▶ Increase electricity consumption, peak electricity demand, and heat generated by equipment (urban heat island effects)
- ▶ Social and individual dependence on overusing air conditioning:
 - can cause to forget traditional know-how and good practices (e.g. using natural ventilation at night and blinds during the hottest hours).
 - can create psychological dependence
 - adequate and safe indoor temperatures in buildings with a poorly insulated envelope may be disrupted in cases of power outages. (UNEP DTU, 2021).



WHY ENERGY EFFICIENCY MATTERS

WHAT'S NEXT?

- Understand your future energy needs
- Integrate forecast for all sectors (e.g. tourism, health, retail)
- Adopt integrated solutions: identify strategies to reduce energy needs and increase supply by RES
- Avoid lock-in effect: what, when, in which order matters





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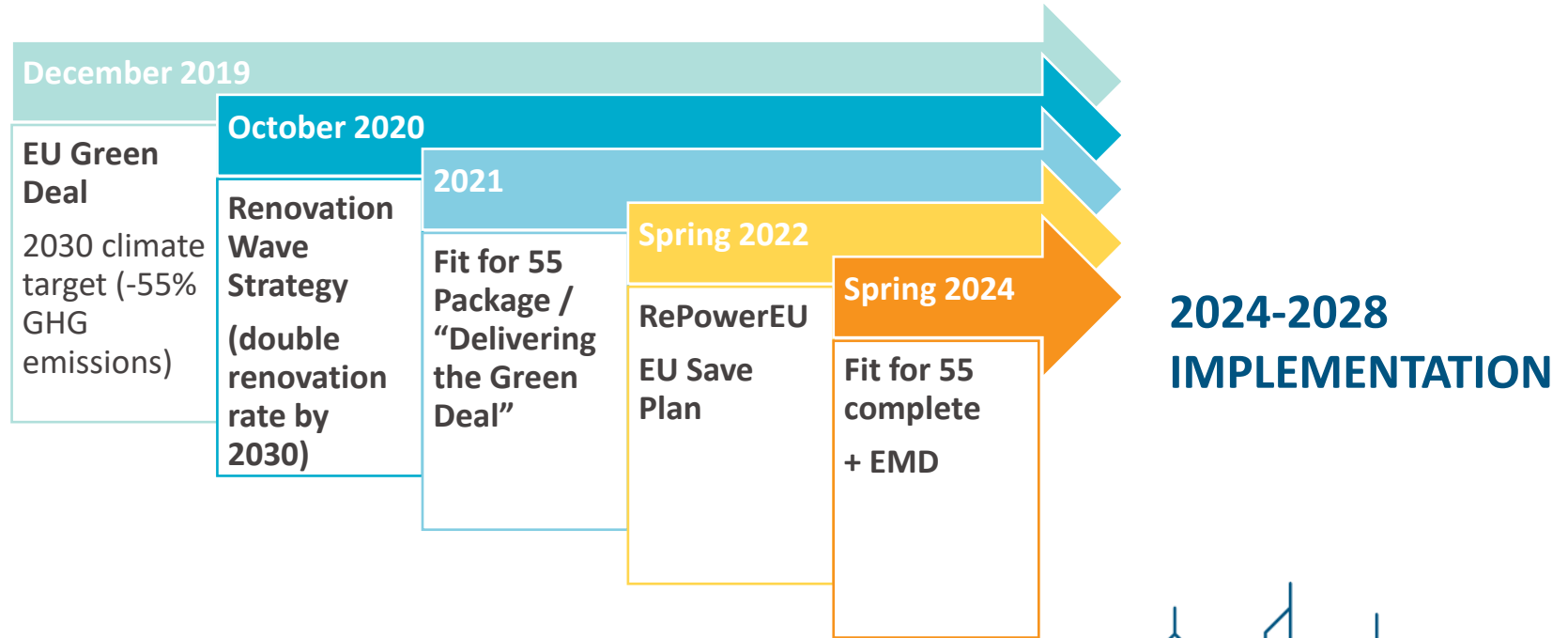


THE EPBD DECRYPTED

A TREASURE CHEST OF OPPORTUNITIES TO
ACCELERATE BUILDING DECARBONISATION



EU FRAMEWORK FOR BUILDINGS





RECAST EPBD

Four main building blocks

Updated standard for new buildings

Renovation policies for existing buildings

Social fairness considerations

Planning for the 2050 vision and H&C decarbonisation

A stronger enabling framework
(information, advisory, and financial support)

