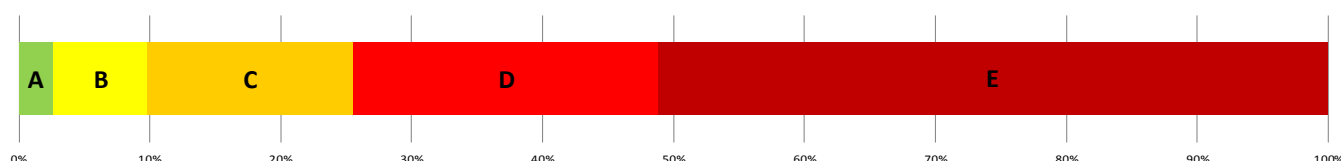


97% OF BUILDINGS IN THE EU NEED TO BE UPGRADED

Factsheet

Distribution of the building stock in the EU per EPC class



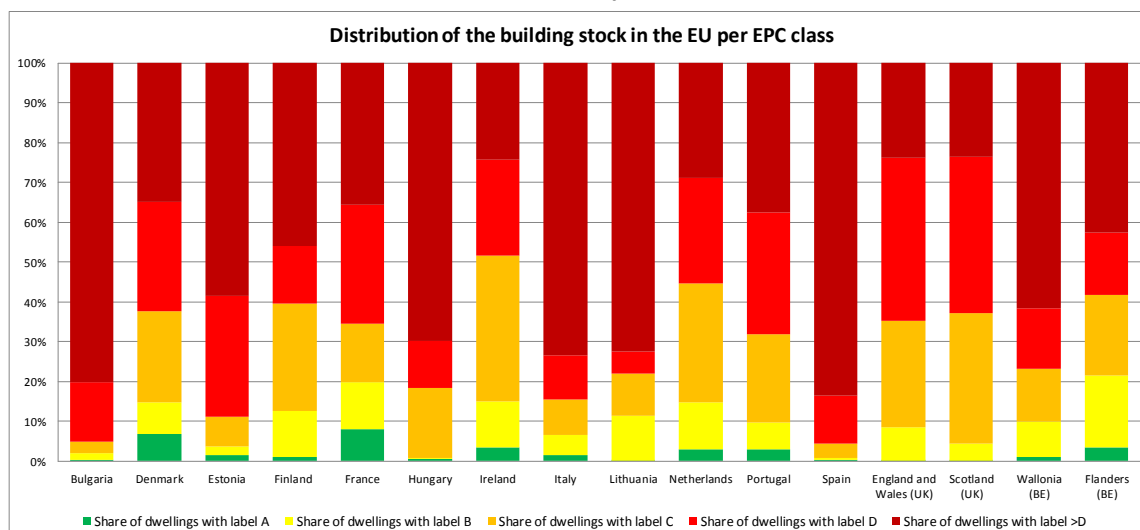
A decarbonised building stock by 2050 requires the big majority of buildings in the EU to be highly energy efficient, complying, at least, with an Energy Performance Certificate (EPC) label A. BPIE's analysis of available EPC data finds that less than 3% of the building stock in the EU qualifies the A-label.

National EPC data is currently the only source of detailed information on the energy performance of the building stock in the EU. An analysis of data for 16 countries/regions¹, covering 66% of the European total floor area, shows that **over 97% of the building stock^{2,3} must be upgraded to comply with the 2050 decarbonisation vision**. France and Denmark have the biggest share of highly efficient buildings according to EPC data (7% and 8% respectively). While no comprehensive EPC data is

publicly available for Germany, designed energy performance data tells a similar story with just 2% of buildings compliant with 50 kWh/m² ([DENA](#)) (i.e. very efficient).

It is frequently concluded that "75% of the building stock is energy inefficient", implying that $\frac{3}{4}$ ought to be renovated to a higher energy efficiency class. The figure is based on a simplified assumption that all buildings built before 1990, i.e. before any EU building regulation, are inefficient and that all buildings built after this date are efficient. The relationship is not that simplistic; some countries had building regulations in place long before 1990, e.g. in Denmark, already from 1961. At the same time, many newly-constructed buildings cannot be considered as highly efficient.

Figure 1 - Latest available EPC data retrieved from the EU Building Stock Observatory ([BG, FR, ES, NL, IT, FI](#)), national databases ([DK, HU, PT, EN & WAL, IE, LT, FL](#)) and reports by the Concerted Action EPBD ([EE, SL, WL](#)). The sample covers half of the EU Member States with a minor bias toward Western European countries



¹ Countries were excluded because no central database is available for research purposes (e.g. Germany and Poland) or it was not possible to extrapolate from the limited/skewed population of EPCs (e.g. Romania and Slovakia).

² Share of EPCs for residential buildings according to rating (countries weighted based on size of building stock): A=2.67%, B=7.13%, C=15.79%, D=23.25%, >D=51.14%.

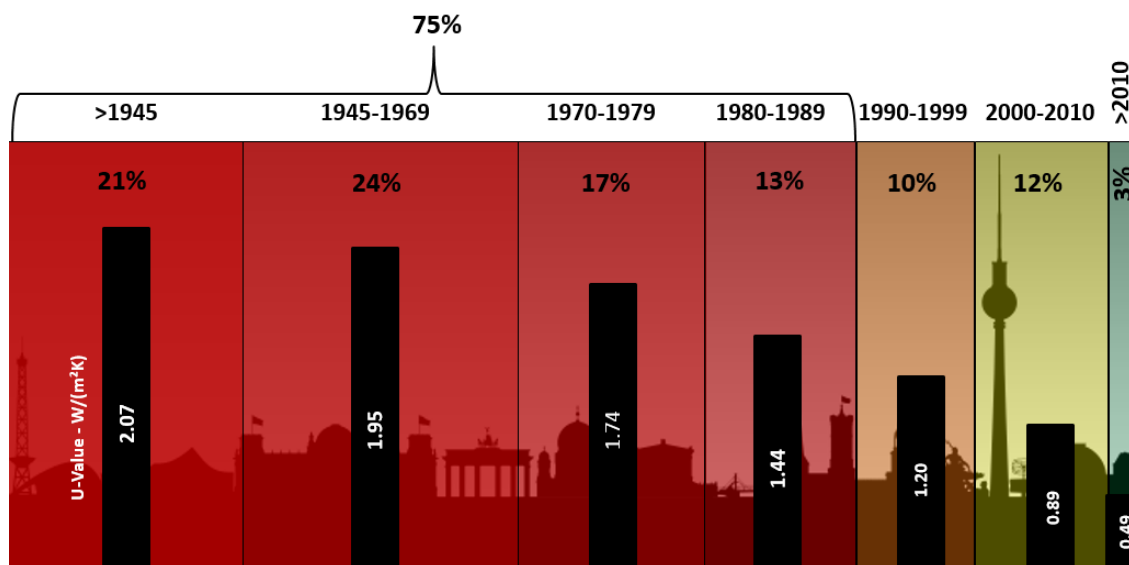
³ Label A is, in every country, viewed as a 'very efficient' building, but requirements and calculation methods for EPCs differ among countries.

Figure 2 shows that building performance is constantly improving in the EU, but only after 2010 the average building was built to a standard that can be considered efficient (0.49 W/m²K for the building envelope), amounting to around 3% of the building stock.

The figure corrects the “75%” postulate that all buildings built before 1990 are inefficient, as the standard of building envelope insulation in the 1990s and 2000s is not efficient enough.

The challenge to eliminate CO₂ emissions from the building sector is possibly even greater than what the EPC distribution (Figure 1) or the average U-value (Figure 2) illustrates. The [Qualicheck Project](#) has shown that the declared EPC is often better than what is achieved in reality, leading to a gap between designed and actual energy use of a building. Achieving the Paris Agreement calls for a transition to a highly efficient building stock, in terms of real energy performance.

Figure 2 - Age of the EU building stock and corresponding average U-value (illustrated by the black bars) for building envelopes. The 2010 data for U-Value is based on an average of just 7 countries, while the others are based on average of all 28 Member States
(Source: EU Building Stock Observatory)



Data for buildings energy performance lacks a deep level of granularity across the continent, with a few exceptions (Ireland and Denmark). Lack of data gathering, problems with compliance, different calculation methods and reliability make comparison at the European level challenging. The findings presented here should be regarded as an indication of the reality, as better data is required to comprehensively depict the building stock.

Buildings are responsible for around 40% of the energy consumption. 75-90% of the current ones will still stand in 2050, while the construction rate is overall low. A faster and deeper (in terms of energy savings) renovation rate is crucial for Europe to achieve its commitment to the Paris Agreement.

The current political discussion in the context of the Clean Energy Package provides a unique opportunity to deliver Europe's commitment.

- The future Energy Performance of Buildings Directive (EPBD) should provide clear and effective plans for the renovation of the building stock, including milestones and a progress tracking system.
- Member States should introduce support tools which allow citizens to develop their individual renovation plans and ensure a reliable performance of their buildings. These support tools should include individual building renovation passports, effective financing instruments (e.g. fiscal incentives), regular checks and updates of the technical building systems and the whole building as such.
- In order to monitor progress, Member States should establish a transparent and comprehensive national database for individual building data, while respecting data privacy concerns of citizens.

The Buildings Performance Institute Europe is a European not-for-profit think-tank with a focus on independent analysis and knowledge dissemination, supporting evidence-based policy making in the field of energy performance in buildings. It delivers policy analysis, policy advice and implementation support.