

Building renovation rates

Disclaimer: The graphs below show data available in the EU Building Stock Observatory: a country not represented only means data was not available for this specific country.

Introduction

Several legislative initiatives relating to building renovation were put into place. The 2010 Energy Performance of Buildings Directive (EPBD, 2010/31/EU) introduced the requirement of implementing energy efficiency measures when undertaking major renovations to encourage more ambitious renovation levels. The EPBD also asked EU Member States (MS) to introduce **cost-optimal energy performance requirements** for new buildings as well as for renovation activities. It also encourages the elimination of market barriers that prevent the full cost-effective potential from being achieved; and it pushes for economic support instruments to stimulate the renovation of the existing building stock.

The 2012 Energy Efficiency Directive (EED, 2012/27/EU) complemented the EPBD by encouraging ambitious renovations through the requirement for MS to establish **strategies for the renovation of their national building stocks** (to be submitted by April 2014 and every three years afterwards), as well as **to annually renovate 3 % of the central governments' building stock** to a high energy performance level.

Minimum energy performance requirements for all buildings that undergo major renovation

Article 7 of the EPBD states that "Member States shall take the necessary measures to ensure that when buildings undergo major renovation, the energy performance of the building or the renovated part thereof is upgraded in order to meet minimum energy performance requirements set in accordance with Article 4 in so far as this is technically, functionally and economically feasible".

Major renovations, as defined in Article 2 of the EPBD recast, include the renovation of a building when:

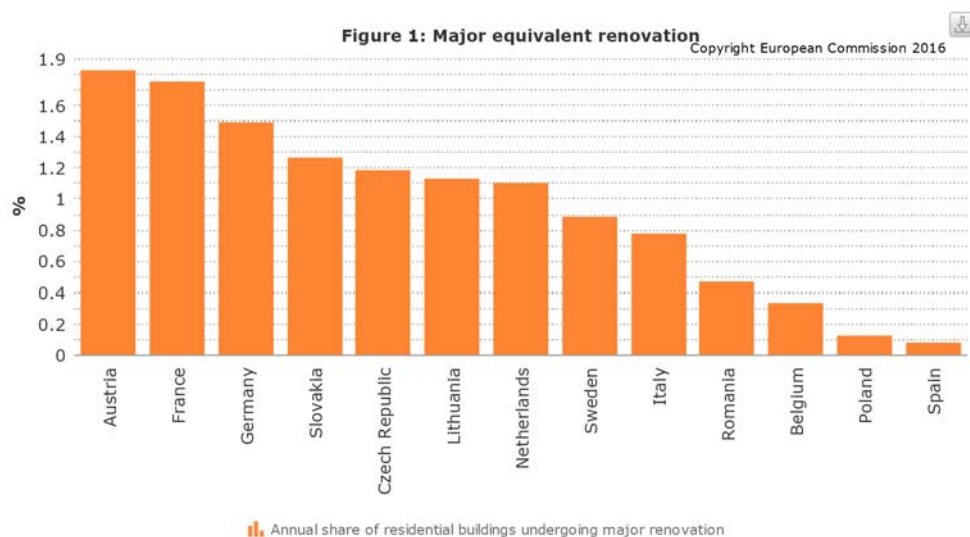
- the total cost of the renovation relating to the building envelope or the technical building systems is higher than 25% of the value of the building, excluding the value of the land upon which the building is situated; or
- more than 25% of the surface of the building envelope undergoes renovation;

Member States may choose to apply option (a) or (b).

Again, this Article 2 allow each MS to interpret and define differently major renovations. Countries have indeed chosen different ways to define and monitor them. Hence, it's very difficult to compare the outcome of different renovation measures between countries.

Because of the lack of an official European definition, to ease comparisons the EU ZEBRA2020 project developed the indicator of "major renovation equivalent". In ZEBRA2020, three renovation levels have been defined: "low", "medium" and "deep". However, these 3 level definitions are different across countries and do not correspond to the same level of energy savings. Therefore, the data is hardly comparable. For that reason, the ZEBRA2020 consortium assumes that, with major renovations, a building's final energy demand for heating can be reduced by 50 to 80% (range depending on the country and defined by national experts according to the current efficiency of the building stock). The "major renovation equivalent" is based on assumptions regarding the type of measures considered for the different levels of renovation and is determined by country. For example, the Dutch rate for medium level renovations also includes minor (light) measures. For Germany, however, figures for minor (light) measures are not included and therefore, not considered in the renovation rates. The "major renovation equivalent" considering all renovation activities should therefore be higher than the one presented here. For each country, national experts defined the national renovation level and determined to which extent the allocated renovations fulfil/over-fulfil the predefined major renovation level (experts' guess).

If countries adopt definitions on the different levels of renovation (most of the time "deep" or "medium" renovation), there has to be an ongoing process for data monitoring of these levels and, for the moment, only a few sets of data were published. The following table shows the major equivalent indicators stemming from the ZEBRA2020 research. The share of the annual building stock that undergoes a major renovation is very low: it is below 1% in Spain, Poland, Italy or Sweden; around 1% in the Netherlands or Lithuania; above 1.5% in other countries like Germany, France or Austria.



Sources: ZEBRA - ZEBRA2020 Notes

Article 7.3 of the EPBD on existing buildings adds: "Member States shall in addition take the necessary measures to ensure that when a building element that forms part of the building envelope and has a significant impact on the energy performance of the building envelope, is retrofitted or replaced, the energy performance of the building element meets minimum energy performance requirements in so far as this is technically, functionally and economically feasible." As can be seen in the factsheet on building envelope, the U-values are increasingly more stringent.

Cost optimality level

The recast of the EPBD also requires Member States to set the abovementioned requirements based on a cost-optimal methodology. This methodology introduces the prerequisite to consider the global lifetime costs of the buildings and to shape their future energy performance requirements.

The methodology to calculate the cost-optimal levels of the minimum energy performance for buildings and building elements was established in the Cost-Optimality Commission Delegated Regulation (2010/31/EU), while an additional guidance document on how to implement the methodology at national level was published by the EU Commission in April 2012. Nevertheless, the EU regulation and the guidelines leave a very large degree of flexibility for Member States, regarding, for example, the selection of input data for the calculation, the selection of reference buildings, the energy costs, etc..

Setting the 3% target for public building renovation

While the EPBD sets minimum energy performance requirements for all buildings that undergo major renovation, Article 5 of the EED sets a binding renovation target for public buildings and imposes related obligations. It also stresses that governments shall undertake an exemplary role in the energy retrofit of their countries' building stock. Article 5 of the EED stipulates that all MS shall ensure, as of January 1, 2014, that 3% of the total floor area of heated and/or cooled buildings owned and occupied by its central government is renovated each year to meet at least the minimum energy performance requirements.

Again, renovation monitoring is poor and for the moment there is no data to assess if the 3% target has been reached. However, some studies reveal that the current average building energy renovation rate in the EU for non-residential is below 1%. The objective of the EED Article 5 (and the closely related Articles 4 and 6) is to boost energy refurbishment in the central government sector, this way showcasing deep renovation of public buildings and inspiring the sub-national government level. Therefore, Article 5 is seen by NGOs and construction sector organisations advocating energy refurbishment and an increased energy performance of the European building stock, as a great opportunity (<http://www.buildup.eu/news/45412>) to kick-start the deep energy retrofit market.