

Making Europe's buildings highly energy efficient

Improvements needed to the EU Winter Package: EED and EPBD

Glass for Europe supports the proposal for a 2030 binding target for energy efficiency. However, the level of 30% of the proposed target illustrates the inertia on the energy efficiency agenda while the thermal renovation of Europe's ageing building stock alone could deliver higher savings. Beyond the political headlines, Glass for Europe regrets that little is proposed to enable the massive transformation needed to make Europe's buildings really energy efficient, starting with clearly defined objectives.

To Glass for Europe, improving the energy efficiency of European buildings is both desirable and achievable provided efforts are stepped up. The revisions of the *Energy Performance of Building Directive* (EPBD) and *Energy Efficiency Directive* (EED) offer precisely that possibility.

TARGETED MEASURES IN FOUR ESSENTIAL AREAS ARE NEEDED TO ADDRESS THE WELL-KNOWN MARKET AND REGULATORY FAILURES HAMPERING THERMAL RENOVATION OF BUILDINGS.

1. **Support building renovation** to deliver clearly defined final energy savings objectives and thus move towards a decarbonised building stock which fully grasps the energy savings potential of buildings.
2. **Prioritize measures on building envelopes** to ensure long-term energy savings, improve building occupants' comfort and health conditions and combat energy poverty.
3. **Maximize energy savings from windows and glazed facades** by respecting technological-neutrality in the energy performance assessment and by taking into account all energy-related aspects impacting the performance of buildings and building elements.
4. **Ensure adequate enforcement** of existing provisions through more harmonised guidance.

1. Support building renovation to achieve a decarbonised building stock by 2050

Glass for Europe embraces the vision of a decarbonised building stock by 2050 and is ready to enable this massive transformation by providing cutting-edge glazing technologies. **A decarbonised building stock needs foremost highly energy efficient buildings.** The benefits *deriving* from building's interaction with the grid and the stabilization of the energy supplied by integrated renewables can only be maximised in a cost-effective manner if the building stock gradually moves towards nearly-zero energy standards.

Most of today's buildings will be part of the building stock in 2050. The policy framework must be reformed to ensure that renovation activities taking place today deliver high energy savings, comfort and well-being to European citizens in order to achieve clearly defined objectives for 2030 and 2050.

- ▶ **A clear definition of a decarbonised building stock needs to be introduced in art. 2 of the EPBD** to ensure that the directive delivers optimal energy efficiency and CO2 emissions reduction. This definition should be aligned with the EPBD impact assessment which addresses the decarbonisation of the EU building stock ‘up to a nearly zero energy standard by 2050’.
- ▶ **The final energy savings expected from building renovation should be introduced as an objective in the EPBD.** The EC’s Impact Assessment for the EED provides that net final energy savings of 96 Mtoe between 2005 and 2030 should be achieved in both the residential and tertiary sectors, thanks to higher building renovation rates .

Most renovations, and this is particularly true in the residential sector, are delivered gradually through various improvement works over the years. For this reason, citizens need to be empowered with adequate information and step-wise recommendations to ensure that renovation activities deliver energy efficient and resilient buildings so as to maximise their later integration in the energy system. National long-term renovation strategies must support stage-deep renovation of buildings with a coherent pathway and self-reinforcing measures.

- ▶ In their long-term renovation strategies, **Member States should define the absolute energy savings objective they expect to achieve by way of their proposed national measures and, a posteriori, report on the savings achieved.** At regular intervals, these figures should be assessed by the European Commission.
- ▶ **Energy Performance Certificates (EPCs) should evolve into building passports** providing tangible information and technically-grounded recommendations for gradual improvements.

2. Prioritize performance in the building envelope and the fight against energy poverty

The EPBD review must remain focused on achieving highly performing building envelopes. Because they last for decades building envelopes should be the cornerstone of any renovation strategy. **Improving the thermal performance of the building envelope delivers the greatest long-lasting final energy savings** and enables ancillary technologies such as renewable energy, building automation and electronic monitoring to deliver their full benefits.

- ▶ **The cost-optimality methodology defined in Annex III should introduce ‘final energy demand for heating, cooling and lighting’ as an additional evaluation indicator to properly assess energy-savings technologies.**
- ▶ **Renewable energy generation should not be factored in the cost-optimal calculations** so as to avoid creating artificial trade-offs between efficiency and renewable and to avoid market distortion with renewable technologies, already supported by way of the RES directive¹.

Building envelopes also have the greatest impact on building occupants’ health conditions and comfort². It is also demonstrated that learning capacity, concentration, productivity as well as comfort and well-being are higher in buildings providing ample daylight and views to the outside³. All these social benefits should be taken into account in cost-optimal calculations to properly ‘value’ investments in renovation of building envelopes.

¹ COM(2016) 767 final

² For example : International Energy Agency – [Capturing the multiple benefits of energy-efficiency](http://www.iea.org/publications/Capturing%20the%20multiple%20benefits%20of%20energy%20efficiency) – 2014 - www.iea.org/publications/

³ For example : David Strong Consulting – [The distinctive benefits of glazing: the social and economic contributions of glazed areas to sustainability in the built environment](http://www.glassforeurope.com/images/cont/225_12633_file.pdf) – 2012 - http://www.glassforeurope.com/images/cont/225_12633_file.pdf

- ▶ **Social benefits should be included within the ‘cost-optimal’ methodology** with guidance from the European Commission how these benefits should be monetised.

Art. 7 of EED⁴ needs to be strengthened **to encourage energy suppliers, distributors and/or energy retail companies to develop cost-effective long-term measures** to achieve their energy savings goals. Experience shows that energy efficiency obligation schemes too often favour short term solutions to the detriment of building renovation works, which are more cost-effective over the long term.

- ▶ **Art. 7 of EED should be improved to guarantee a minimum percentage of investments in long-term measures** (20 years or more).
- ▶ **In Art. 2a of EPBD⁵, a special chapter listing measures and financing mechanisms available to tackle energy poverty and renovation of social housing should be included** within Member States’ national renovation strategies.

3. Unleash the potential of modern windows

Annex 1 of the EPBD foresees that **the assessment of energy performance in buildings should take into account both insulation properties and passive heating**. However, evidences show that passive heating is mostly not taken into consideration in the calculation methods applied to windows, while glazed areas are the only building material providing free solar heat gains. It results that the benefits of all innovative glazing products meant to modulate heat gains are disregarded, e.g. innovative coatings, electrochromic or switchable glazing.

In order to embrace 21st century technologies, **the revised framework needs to cover all energy-related impacts of building materials and technologies**. The added value of existing and future technologies, such as smart windows and building integrated photovoltaic windows, will otherwise not be adequately reflected. Energy losses (related to heat loss) as well as energy gains, (related to passive heating from solar irradiance), shall be taken into account when calculating the energy performance of buildings and building elements that form part of the building envelope⁶.

- ▶ Adjustments to articles 3 and 4 are necessary to **ensure that the methodology of annex I also applies to building elements**.
- ▶ **Annex I needs to be improved to ensure a proper evaluation of all energy-related aspects** impacting the performance of building elements, including the provision of natural daylight.

Minimum performance requirements set at national and/or local level for building elements should be updated more regularly. An analysis of the requirements in place for windows across the EU shows that these requirements tend to be old, not often updated and way below actual market standards.

- ▶ **Minimum performance requirements set at national or local level for building elements should be updated more regularly** according to the methodologies defined in annexes I and III.

4 Under the Energy Efficiency Directive, EU countries should set up an energy efficiency obligation scheme. This scheme requires energy companies to achieve yearly energy savings of 1.5% of annual sales to final consumers.

5 Former art.4 EED on long-term renovation strategies.

6 This would be fully compliant with the energy balance approach, which is widely recognised as the only effective way to assess the energy performance of windows, e.g. see eco-design preparatory study Lot 32 on windows. ‘Energy Balance’ means taking both energy losses and energy gains from passive solar irradiance into account when calculating the energy performance of a building or building element.



4. Ensure adequate enforcement

In spite of the fact that, under the EPBD⁷, Member States must define cost-optimal level to guide gradual renovation works, **installing a window not meeting the minimum performance requirement is a common practice in the EU**. This happens either because minimum energy performance requirements are not in place for windows (in contravention with Art. 4 EPBD) or they are enforced only in case a permit is requested.

- ▶ **Cost-optimality needs to be properly enforced at building and building component level.** Adequate market surveillance is urgent to avoid that windows not meeting energy performance requirements are installed.

After the implementation of the EPBD, only in a few Member States were observed stricter minimum performance requirements. In many countries, these remain set at very unrealistically low levels of performance. **More guidance to the Member States** when it comes to interpreting some of the key provisions of a revised directive is needed.

- ▶ Measures to ensure **the convergence of parameters used in cost-optimal calculation and guaranteeing more transparency on input data** are needed.

Windows of energy efficiency opportunities

100 million tonnes of  could be saved annually thanks to  energy efficient windows

1 Billion  of new windows are expected to be sold by  **2030**

Glass for Europe is the trade association for Europe's flat glass sector. Flat glass is the material that goes into a variety of end products, primarily in windows and facades for buildings, windscreens and windows for automotive and transport as well as solar energy equipment, furniture and appliances. Glass for Europe brings together multinational firms and thousands of SMEs across Europe, to represent the entire building glass value-chain. It is composed of flat glass manufacturers, AGC Glass Europe, Guardian, NSG-Group, Saint-Gobain Glass Industry and Siseçam-Trakya Cam, and works in association with national partners gathering thousands of building glass processors and transformers all over Europe.

⁷ EPBD, art. 4 §2: Member States shall take the necessary measures to ensure that minimum energy performance requirements are set for building elements that form part of the building envelope and that have a significant impact on the energy performance of the building envelope when they are replaced or retrofitted, with a view to achieving cost-optimal levels

