



Response to the consultation on

“The Evaluation of the Energy Performance of Buildings Directive”

OCTOBER 2015

Glass for Europe is a registered organization on the European Commission's register of interest representatives under the ID number 15997912445-80.

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.

A. Overall Assessment

Currently, about 35% of the EU's buildings are above 50 years old. Buildings are responsible for 40% of energy consumption and 36% of CO₂ emissions in the EU, and consume, on average, about 25 litres of heating oil per square metre per year. Some buildings even require up to 60 litres.

The Energy Performance of Buildings Directive (EPBD) aims to:

1. improve the energy performance of buildings in the EU, taking into account outdoor climatic and local conditions, as well as indoor environment requirements and cost-effectiveness.
2. require Member States to set energy performance standards for buildings,
3. require Member States to issue buildings with energy performance certificates, and
4. require Member States to ensure that, by the end of 2020, all new buildings are 'nearly zero energy' buildings

It sets out concrete ways of achieving the great untapped potential for energy savings in buildings and reducing the large differences in results that exist in energy saving outcomes between Member States.

1. How successful has the EPBD been in achieving its goals?

The EPBD has created a good framework for the improvement of energy performance of buildings and has helped grasp energy savings when new buildings or major renovations take place. In particular, the EPBD has been successful in setting a vision for new buildings (NZEBS). It has also helped improved national and local buildings codes when it comes to minimum performance levels for buildings undergoing major renovations and for building components. Finally, it delivered when it comes to generalizing Energy Performance Certificates.

That being said, some pragmatic improvements of the existing EPBD are needed for the framework to fully tap into the energy efficiency potential in the building sector. At the same time, more focus is needed on good implementation and enforcement.

2. Has it helped to improve energy efficiency in buildings?

Thanks to improvements and stricter minimum performance requirements in national / local building codes, the EPBD certainly contributed to improving the energy efficiency of buildings, be it new or after renovation, if it was to be compared with a scenario without a recast EPBD. When analyzing the case of window products for example, it was observed in some countries that stricter minimum performance requirements were established after the national implementation of the EPBD. However, not all countries established minimum performance requirements for building components such as windows while in other countries, these requirements remain set at very low levels. Improving the EPBD and its implementation by way of much clearer guidance are therefore key for the future.

3. Has it helped to increase renovation (more than 25% of the surface of the building envelope) rates?

No but the EPBD cannot be blamed for not fostering a higher renovation rate. The EPBD contains only very limited instruments to ensure that more renovations take place. Today's low level of activity

in No but the EPBD cannot be blamed for not fostering a higher renovation rate. The EPBD contains only very limited instruments to ensure that more renovations take place. Today's low level of activity in construction is mostly attributable to wider macro-economic considerations and not to the EPBD itself. That being said, one should consider whether or not the various instruments in the EPBD, the EED or other pieces of legislations need to be revisited, made more coherent and self-reinforcing, and whether or not they need strengthening.

4. In your view, has the EPBD sufficiently contributed to accelerating investment in improving the energy performance of the EU's building stock? Why/Why not?

No but as explained above, Glass for Europe does not believe that the EPBD was ever conceived to accelerate investments. If this was the intention, the directive lacked proper instrument. The EPBD should therefore not be judged on the ground of an objective which it was never equipped to deliver.

5. Overall, do you think that the EPBD is contributing to cost-effective improvements in energy performance? Why/Why not?

Provisions prescribing that minimum performance levels for renovation or building components must be set based on cost-optimal calculations, when adequately implemented, ensure cost-effective improvements in energy performance. For cost-effective improvements to take place, provisions on 'cost-optimality' need to be adequately and more uniformly implemented than is the case today.

In terms of pragmatic improvements, it would be advisable to develop more harmonized guidance on cost-optimal calculation to ensure greater convergence in parameters used, more transparency on input data (e.g. costs), the accounting of societal benefits of increased energy performance, the need to input energy consumption generated by lighting for calculations on residential buildings, etc. Without greater convergence, the EPBD fails to deliver cost-efficiency across all Member States since all these parameters which are left at the discretion of Member States can have a great influence on the outcome of cost-optimality calculations.

Improved cost-efficiency requires more focus on good implementation and enforcement of the EPBD by Member States and local authorities. As explained on question 2, it is evident when looking at the case of windows that not all Member States abide by the requirement to establish minimum performance requirements for components with a significant impact on energy performance when they are being replaced or retrofitted, as enshrined in article 6 of the EPBD.

6. Do you think that the aim of ensuring the same level of ambition across the EU in setting minimum energy performance requirements within the EPBD has been met? Why/Why not?

This objective may have been met for new constructions and the requirement that they achieve NZEB standards. Nevertheless, this is less evident for major renovations and performance requirements derived from the cost-optimal calculations. As explained above, the current methodology leaves too many parameters and input data at the discretion of Member States to the extent that outcome of calculations vary greatly due to different approaches rather than due to differences in local realities. This ultimately means very different levels of ambitions. More harmonized guidance on calculation methods and input is needed. Additionally, one needs to

consider that cost-optimality calculations are only meant to define minimum energy performance criteria.

Ultimately, a revised EPBD needs to steer ambitions beyond those minimum performance requirements to evolve towards a truly nZEB building stock by 2050.

7. Has the EPBD effectively addressed the challenges of existing buildings' energy performance?

See response to question 2.

8. Has the EPBD set effective energy performance standards for new buildings?

By way of introducing the requirement on new buildings to achieve NZEB levels, the EPBD has effectively set standards for new buildings. This has nevertheless led to different performance levels across the Member States for NZEBs due to relatively loose guidance given to Member States.

In order to evolve towards a single standard, the definition of Nearly Zero Energy Buildings (NZEBs) could be improved by way of setting dual performance levels: first on Final Energy Demand (alternatively heating and cooling demand) and in addition in primary energy demand. This will avoid locking energy demand savings due to artificial trade-offs between efficiency of the building envelope and renewables. This will also pave the way for an evolution towards 'Energy Positive' buildings where all technologies deliver their fullest contribution to the EC energy and climate objectives.

11. What has worked well in the EPBD? What needs to be improved?

The EPBD has been particularly successful at:

1. triggering national / local debates on the contribution of buildings to an energy-efficient economy
2. forcing Member States to establish or review national or local building codes
3. defining a more ambitious energy performance requirement for new buildings
4. generalizing EPCs

The following improvements are nevertheless needed:

1. The EPBD must be the occasion for revisiting all instruments to support a higher rate of energy-efficient renovation of buildings and thus ensure they are made more coherent and self-reinforcing.
2. The EPBD must seek complementarities in ways to achieve greater energy performance of buildings rather than seeking trade-offs between efficiency of the envelope, renewables and heating and cooling technologies. This requires for example adding a final energy demand criteria for implementing NZEBs.
3. The EPBD must raise levels of ambitions to achieve a nZEB level for the entire building stock by 2050 and to support technology deployment, innovations and know-how in construction. This can be achieved: - In new buildings by a requirement for new buildings to become 'energy positive' by 2028 / 2030. - In major renovation and component replacement requirements, by asking Member States to provide timelines for the gradual increase in minimum performance

requirements. This is meant to ensure that cost-optimality drives evolution towards NZEB standards. Mechanisms to go beyond minimum performance requirements must also be designed.

4. The EPBD must invite Member States to properly assess the performance of glazed areas in buildings: - By asking Member States to evaluate glazed areas on the basis of an 'energy balance' equation taking into account both heat losses and heat gains. The latter is a specificity of transparent glazed areas, which too many Member States do not take into account so far. - By emphasizing the importance of natural light in reducing energy consumption for artificial lighting and inviting Member States to consider, first, to delete existing maximum limits to glazed areas in buildings and, second, to set minimum requirements on glazed areas to floor ratio in national and local building codes.
5. The EPBD must seek all ways to make renovations easier from the consumer standpoint. In particular, EPCs should be strengthened and transformed into a building passport including technically grounded recommendations for gradual energy efficiency improvements.

12. Is the EPBD helping to contribute to the goals of EU climate and energy policy (Reduce greenhouse gas emissions by at least 40%; increasing the share of renewable energy to at least 27%; increasing energy efficiency by at least 27%; reform of the EU emission trading system)?

As stated in the EC introduction: 'Buildings are responsible for 40% of energy consumption and 36% of CO₂ emissions in the EU, and consume, on average, about 25 litres of heating oil per square metre per year.' It is therefore essential to improve the energy efficiency of the building stock to deliver energy savings and reduced GHG emissions to levels compatible with the EC objectives for 2030 and 2050. The current EPBD already helps to achieve this and a strengthened and improved directive will help this sector contribute even more to these essential objectives. This is in fact essential since EU 2050 objectives can only be met with a nZEB building stock.

14. Are the objectives of the EPBD delivered efficiently?

Glass for Europe considers that the EPBD's objectives are delivered efficiently, particularly when it comes to inviting Member States to review and updates their building codes. Although some Member States may lack behind in terms of implementation, an EU directive remains the most efficient and flexible instrument to trigger regulatory reviews in Member States.

As explained above, for the directive to fully tap into the energy efficiency potential in the building sector, not only reinforced implementation is needed but also some pragmatic improvements (see question 11) and the development of more and better instruments to support a higher energy-efficient renovation rate.

15. Has the EPBD created any unnecessary administrative burdens? If so, please provide examples

Should administrative burdens have derived from the EPBD, it cannot be considered unnecessary in light of what the EPBD has already delivered and the vast untapped potential for the building sector to contribute to greater energy efficiency and a decarbonized competitive economy. At the same time, when simplification can be achieved without adverse effects, it should be pursued.

16. Has the EPBD created any unnecessary regulatory burdens? If so, please provide examples

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B. Facilitating enforcement and compliance

Compliance is recognised as being of critical importance in achieving the full energy efficiency and carbon savings potential of buildings. Strong local and regional verification of compliance with national building codes is required in order to reassure consumers of the quality of buildings.

The 2010 recast EPBD introduced targets for Near Zero-Energy Buildings (NZEBs) and more ambitious minimum energy performance requirements for new buildings. The EPBD defines NZEBs as a building that has a very high energy performance as determined in accordance to Annex I of the directive. The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby. The EPBD sets the target for Member States to ensure that by 31 December 2020, all new buildings are nearly zero-energy buildings, and after 31 December 2018, new buildings occupied and owned by public authorities are nearly zero-energy buildings.

The EPBD also considerably reinforced the provisions for existing buildings, broadening the scope to all existing buildings (removing the 1000 m² threshold). It set and applied minimum energy performance requirements for the renovation of parts of the building envelope (roof, walls, etc.) with a view to achieving cost-optimal levels. It also set and applied minimum energy performance requirements for technical building systems (large ventilation systems, air conditioning, heating, domestic hot water system or combination of these) whenever they are installed, replaced or upgraded. It applied minimum energy performance requirements to all types of building works. The EPBD introduced a benchmarking system (the 'cost-optimal methodology' which calculates the energy performance level which leads to the lowest cost during the estimates economic lifecycle) to improve the level of ambition of the energy efficiency requirements contained in national or regional building codes while ensuring that these obtain the best value for money and that they are regularly reviewed.

A key aspect to be examined as part of the EPBD evaluation is how proper enforcement of the energy efficiency requirements in regional and national building codes is ensured.

17. Is compliance with the provisions of the EPBD adequate?

No: more focus is needed on good implementation and enforcement as explained in section A.

When analyzing the case of window products for example, it was observed in some countries that stricter minimum performance requirements were established after the national implementation of the EPBD. However, not all countries established minimum performance requirements for building components such as windows while in other countries, these requirements remain set at very low levels. Improving compliance with the EPBD and its implementation are therefore key for the future. This requires more harmonized guidance on cost-optimal calculation to ensure greater convergence in parameters used, more transparency on input data (e.g. costs), the accounting of societal benefits of increased energy performance, the need to input energy consumption generated by lighting for calculations on residential buildings, etc. Without greater convergence, the EPBD fails to deliver cost-efficiency since all these parameters which are left at the discretion of Member States can have a great influence on the outcome of cost-optimality calculations.

18. Is the definition of NZEBs in the EPBD sufficiently clear?

The NZEB definition should be made more precise and specific in order to set a more consistent standard for new buildings. Implementation of the current directive has led to different performance

levels across the Member States for NZEBs. Although guidance provided by the EC on NZEB is more robust than for cost-optimality calculations, it still leaves much room for interpretation and different methodological choices which lead to discrepancies and very different levels across the Member States. In order to evolve towards a single standard, the definition of Nearly Zero Energy Buildings (NZEBs) could be improved by way of setting dual performance levels: first on Final Energy Demand and in addition in primary energy demand. This will avoid locking energy demand savings due to artificial and politically-created trade-offs between efficiency of the building envelope and renewables. This will also pave the way for an evolution towards 'Energy Positive' buildings where all technologies deliver their fullest contribution to the EC energy and climate objectives.

A revisited EPBD must also raise levels of ambitions to achieve the EC energy objectives and to support technology deployment, innovations and know-how in construction. In new buildings, this can be achieved by a requirement for new buildings to become 'energy positive' by 2028 / 2030.

19. Is the NZEB target in the EPBD sufficiently clear to be met?

If one leaves aside the above considerations on the different levels induced by the NZEB definition, the target can be considered very clear, time-wise.

20. If not, what, in your view, are the missing factors that would ensure compliance with:

a. Minimum energy performance requirements in new buildings?

Regarding nZEBs, there should be a greater convergence in levels of performance, in national quality control requirements, as well as in national definitions with the introduction of some benchmark values in order to facilitate cross-national comparability. The Energy Efficiency First principle shall be applied in defining NZEBs, which in essence should be buildings with the lowest final energy demand levels. This could be achieved by setting dual performance levels: first on Final Energy Demand and in addition in primary energy demand. Better bridges between the nZEB standard and EPCs levels as well as access to financing should be made.

b. Minimum energy performance in major renovations of existing buildings?

Pragmatic improvements are needed to reach better compliance with the cost-optimality approach developed for major renovations. It would be advisable to develop more harmonized guidance on cost-optimal calculation to ensure greater convergence in parameters used, more transparency on input data (e.g. costs), the accounting of societal benefits of increased energy performance, the need to input energy consumption generated by lighting for calculations on residential buildings, etc.

c. Minimum energy performance for the replacing/retrofitting parts of the building envelope (roof, wall, window, etc.) and replacing/upgrading/installing technical building systems (heating, hot water, cooling, etc.)?

Above comments in section b are equally applicable for the replacing/retrofitting of components, which is also based on cost-optimality calculations.

Specifically on windows, the directive could be greatly improved by two means:

1. Be unequivocally clear that minimum energy performance for the replacing / retrofitting of windows is needed across all Member States.

2. By asking Member States to evaluate glazed areas on the basis of an 'energy balance' equation taking into account both heat losses and heat gains. The latter is a specificity of transparent glazed areas, which too many Member States do not take into account so far.
3. By defining more detailed and harmonized input data and calculation method for determining cost-optimal points and minimum performance requirements.

e. Certification of the energy performance of buildings, including tailor-made recommendations for the improvement of the energy performance of buildings?

This can be achieved by way of reinforced EPCs, gradually evolving towards a building passport comprising technically grounded recommendations for energy efficiency upgrades. The quality of recommendations should however be improved. From the glass industry's experience, quality of information provided on windows is usually very poor. Too often assessment is limited to the number of panes (single vs. double vs. triple glazing) without consideration for the energy balance of the glazed area or for the performance of the frame materials. To change this situation, many initiatives from industry and Member States will be needed for EPCs and building passports to become very efficient tools.

21. Do you think the cost-optimum methodology gives sufficient evidence regarding the actual cost of renovating buildings on top of the additional cost for Near Zero-Energy Buildings?

No: cost-optimum calculations from Member States are affected by too many 'uncontrolled' input parameters and methodological choices to deliver robust results. Anyhow, both methodological choices and outcome of calculations are not very transparent. It would be advisable to develop more harmonized guidance on cost-optimal calculation to ensure greater convergence in parameters used, more transparency on input data (e.g. costs), the accounting of societal benefits of increased energy performance, the need to input energy consumption generated by lighting for calculations on residential buildings, etc.

24. What measures are missing that could simplify the implementation of building regulations to make sure that buildings meet the required high energy performance levels?

As for the definition of NZEB, cost-optimal calculations should be done in a dual way to produce building code requirements both in terms of final and primary energy demand. Both indicators, and most particularly the final energy demand one, are easy to manage by construction professionals. This would not only help compliance but would also help ensure that the level of ambition remains robust so as to efficiently upgrade the energy performance of buildings.

C. Energy Performance Certificates (EPCs) and stimulating energy efficient renovation of the building stock

Building energy efficiency has been increasing at 1.4% per year. This relatively low rate is owed largely to low renovation rates. To reap the benefits of energy efficiency and the use of renewables in buildings, the biggest challenge is to accelerate and finance upfront investments and speed up the renovation rate of the existing stock to above 2% annually. The aim of EPCs is to transform the building sector by setting ambitious energy efficiency standards and incentivise investment in renovating buildings to improve their energy efficiency, and facilitate a single market in and the free circulation of highly specialised workers, solutions and technologies and investments in energy efficiency and renewables in buildings. These aims have been identified as drivers for investment in renovation. In addition, the Energy Efficiency Directive (2012/27/EU, 'the EED') required Member States to establish, by April 2014, a long-term strategy for mobilising investment in the renovation of the national building stock.

26. Are the long-term national renovation strategies adopted sufficient to stimulate the renovation of national building stock? What examples of best practice could be promoted across the EU and how?

In light of the low levels of renovation in the EU, one can come to the conclusion that the national renovation strategies have not delivered their fullest potential. As such, this does not mean that the instrument is of little added-value. Instead, it should be reinforced and be made more credible and robust. For instance, building stock data, proper planning of new measures, the horizon for evolution of building codes, etc. should be made mandatory information in the renovation strategies. Most importantly, these strategies should be regularly revisited and assessed to check whether or not announced measures were effectively put in place and whether or not progress is made.

27. Have EPCs played a role in increasing the rate of renovation, the extent of renovation, or both? For instance, are EPC recommendations being defined as the most effective packages of measures to move the performance of buildings and/or their envelopes to higher energy classes?

The EPBD should be a key instrument for the transformation of the existing building stock towards a NZEB level building stock by 2050. In this regard, EPCs should play a key role by informing tenants, owners and potential investors on how to improve the energy performance of buildings and by triggering financial investments needed for measures such as single component replacement and staged- deep renovation. However, to be really successful, EPCs require implementation, convergence and compliance. Therefore, to speed up renovation rates, EPCs must be reinforced, their quality must be ensured and they should provide robust recommendations and information.

28. Is setting a minimum renovation target for Member States to undertake (e.g. each year; percentage of building stock) important and requires further attention in the context of meeting the goals of the EPBD?

Such targets serving to express a collective aspiration would be most useful to send a signal to the industry and the wider Society. Glass for Europe nevertheless believes that such targets could not become mandatory, except for buildings owned and occupied by public authorities. In the latter case, targets need to be mandatory and made meaningful.

29. Are obligations or binding targets for renovation or any other mandatory measure (e.g. mandatory minimum thermal efficiency standards for rental properties) missing from the EPBD to ensure that the directive meets its goals? If, yes, what kind of obligations and targets?

In the case of buildings owned and occupied by public authorities, targets need to remain mandatory. The target definition nevertheless needs to be broadened compared to the existing EED target, so as to be made meaningful and to impact a pool of buildings sufficiently large to activate markets.

It would be appropriate to investigate whether or not a mandatory minimum thermal efficiency standard could be introduced for rental properties. This would need to be linked to EPCs, requiring their quality to be improved. Member States could be asked to provide a timeline for the introduction of such requirements in a gradual way to take account of the building stock and property market realities.

31. Do you think that the 'staged deep renovation' concept is clear enough in the EPBD?

Yes.

32. Have EPCs raised awareness among building owners and tenants of cost-efficient ways of improving the energy performance of the buildings and, as a consequence, help to increase renovation rates across the EU?

EPCs have served to raised awareness of building owners on measures that can be taken to improve the energy efficiency of buildings. Whether or not this has helped put in evidence the cost-efficient measures is questionable due to the lack of transparency about cost-optimum calculations (see section B). Additionally, one should not suggest that there is an automatic casual link between awareness of cost-optimum measures and increase in renovation rates.

D. Financing energy efficiency and renewable energy in buildings and creation of markets

The EU has been supporting the improvement of the energy performance of buildings for many years with a range of financial support programmes. As almost 90% of building floor space in the EU is privately owned and more than 40% of residential buildings date from before 1960, most financing has to come from private sources. The Energy Efficiency Financial Institution Group (EEFIG), an expert group set up by the European Commission and United Nations Environment Programme Finance Initiative, published their final report in February 2015. The report identified the need to engage with multiple stakeholder groups and scale up the use of several financial instruments as part of a clear and enforced 'carrot and stick' legislative framework. The group also made a strong case for combining public funds with private sector investment to address risks and achieve the scale of financing needed.

34. What are the main reasons for the insufficient take-up of the financing available for energy efficiency in buildings?

There are many barriers causing an insufficient take-up of available financing for energy efficiency in buildings, such as:

- inappropriate Eurostat rules on public debt and deficit for energy efficiency investments;
- a lack of aggregators to increase the size of projects; and
- a lack of aggregated data and regulatory stability to boost the investors' confidence.
- the "split incentive" dilemma between landlord and tenant

35. What non-financing barriers are there that hinder investments, and how can they be overcome?

Among the non-financing barriers, one is of particular relevance to the window and glass industry: i.e. the lack of robust and yet simple information to consumers about the energy efficiency properties of the different window and glass products in the market. This too often misleads consumers who opt for cheaper products, simply because they are not explained that these are less performing than other solutions. The development of EU energy labels for energy-related building components when relevant, such as windows, should be pursued to overcome this non-financing barrier.

36. What are the best financing tools the EU could offer to help citizens and Member States facilitate deep renovations?

Two recent reports respectively from EEFIG and the JRC include a good analysis of barriers and provide useful recommendations on how to overcome them. All in all, financing tools for energy efficient buildings need to be easily accessible, cheap, and available on the long term and this requires a stable long term policy framework regarding energy efficiency in buildings.

37. What role do current national subsidies for fossil fuels have in supporting energy efficient buildings?

National subsidies for fossil fuels shall be phased out, as subsidies distort market price setting.

E. Energy poverty and affordability of housing

Energy poverty affects living conditions and health. It has many causes, including a combination of low income and general poverty conditions, energy-inefficient homes and a housing tenure system that fails to encourage energy efficiency. For example, in Britain, 9,300 people died prematurely due to the cold during the [winters of 2012 and 2013](#).

The Energy Union has identified a combination of measures, mainly in the social field and within the competence of authorities at national, regional and local levels, as the only effective way of tackling energy poverty. When phasing out regulated prices, Member States need to propose a mechanism to protect vulnerable consumers, which ideally should not be provided through the general welfare system. If provided through the energy market, it could be implemented through schemes such as a solidarity tariff or in the form of a discount on energy bills. The UK Government is preparing a programme under which doctors will be able to prescribe boilers, insulation and double glazing to fuel-poor patients suffering from health conditions exacerbated by cold homes.

43. Should have further measures tackling energy poverty been included in the EPBD?

It is Glass for Europe's understanding that the EPBD does not include measures directly addressing energy poverty. However, it could be envisaged:

- To focus renovation programmes on low income households;
- Specific funds should be allocated for this purpose. When public money subsidising the consumption of fossil fuel by lower income people exist, it should be proposed to redirect these funds towards the refurbishment of the housing
- Public social housing should enter within the scope of a mandatory target for renovation of publicly owned or occupied buildings.

44. Has tackling energy poverty been a requirements when constructing new buildings and renovating existing buildings in Member States?

The cost of ensuring indoor comfort is an important element of household expenditure and in some cases can be significant, especially for low income households. Although the EPBD does not directly address the issue of energy poverty, building renovations and the implementation of EE measures prioritised towards low income households are the only sustainable and structural solutions to this problem.

F. Ensuring new highly efficient buildings using a higher share of renewable energy

Directive 2009/28/EC on the promotion of the use of energy from renewable sources ('the RES Directive') requires Member States to introduce in their building regulations and codes appropriate measures to increase the share of all types of renewable energy in buildings. One possible measure is Demand Response, which is a set of time-dependent programme activities and tariffs that seek to reduce electricity usage and provide control systems that encourage load shedding or load shifting at times when the electricity grid is near capacity or electricity prices are high. Demand Response helps to manage building electricity costs and to improve the reliability of the electricity grid.

By December 2014, Member States must, in their building regulations and codes, require the use of minimum levels of energy from renewable sources in new buildings and in existing buildings that are subject to major renovation. These provisions are complementary to the Near Zero-Energy Building (NZEB) requirements in the EPBD, which set clear obligations to reduce the primary energy consumption of buildings and recommend that the resulting nearly-zero or very low amount of energy needed should be covered to a very significant extent by energy from renewable sources. The Roadmap to a Resource-Efficient Europe (COM (2011) 571) proposed that buildings should be renovated and constructed with greater resource efficiency. While the Energy Efficiency Directive ('the EED') and the EPBD have an impact on building and construction activities they are not designed to provide an overall life-cycle approach. For newly-built NZEBs, from a life cycle perspective, the share of embedded energy is almost as great as the share of energy consumed in the building's use phase.

47. On the basis of existing experience, are provisions on targets or specific requirements for new buildings, beyond the current NZEB targets, missing in the EPBD which could help achieve the energy efficiency 2030 target? If so, in what types of targets or requirements?

Yes, a revisited EPBD must raise levels of ambitions to achieve the EC energy objectives and to support technology deployment, innovations and know-how in construction. This can be achieved in new buildings by introducing a requirement for new buildings to become 'energy positive' by 2028 / 2030. This is not only feasible today but costs of such construction will decrease over time. Additionally, 'Energy Positive' buildings will ensure that all technologies deliver their fullest contribution to the EC energy and climate objectives in terms of efficiency, decarbonization and renewable energy.

51. Does the EPBD address the issue of embedded energy? If so, in what way?

To Glass for Europe, the issue of embedded energy is not addressed within the EPBD. This issue of the wider environmental performance of buildings throughout the life-cycle is already being investigated in other fora such as initiatives of DG Grow and DG Environment as well as standardization work on going within CEN.

J. Buildings systems requirements

The EPBD requires Member States to set minimum energy performance requirements for technical building systems (means technical equipment for the heating, cooling, ventilation, hot water, and lightning or for a combination thereof, of a building or building unit) in existing buildings. National provisions should not target specific products only (e.g. boilers) but should instead address building systems while also taking into consideration the building as a whole. Whilst the Ecodesign Directive governs the placing on the market of individual products, the EPBD sets requirements for their energy-efficient performance as part of the technical systems serving a building. The EPBD also requires regular inspections of heating and air conditioning systems. While the Directive does not specify what would be regarded as a 'regular inspection', it is the view of the European Commission services that inspections carried out at least every 7–8 years would be considered acceptable, whereas anything less frequent than every 10 years is likely to be problematic.

73. Based on existing experience, do you think in the EPBD minimum requirements for technical buildings systems focussing on other factors than heating, air condition, large ventilation systems and domestic hot water e.g. certain building categories, building size, etc., is missing?

No. A recent eco-design preparatory study on windows demonstrated the pitfalls and limits of a 'building system' approach in the case of windows. When individual products comprising the system have different if not opposite functions, e.g. the glazing part of the window meant to provide daylight and a view to the outside when a shading or shutter system is meant to provide darkness and non-transparent cavity, analyzing the performance of the system requires a knowledge of consumer interaction with the different devices of the system to a level that is almost impossible to predict. This in turn means that a system approach is / would lead to sub-optimal choices of products being made based on artificial scenario of use. In turn, it would lead to energy savings being locked in while creating discomfort for building occupants. Based on this experience, Glass for Europe believes that the system approach must be used with great caution and is certainly not applicable to windows and glazed areas.

L. Further Comments

Please include any further comments that have not been covered in the consultation:

Glass for Europe is a registered organization on the European Commission's register of interest representatives under the ID number 15997912445-80. Glass for Europe's address is rue Belliard 199 – B-1040 Brussels
