

Public Consultation on the Evaluation of the Energy Performance of Buildings Directive

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PUBLIC CONSULTATION ON THE EVALUATION OF THE ENERGY PERFORMANCE OF BUILDINGS DIRECTIVE

INFORMATION ABOUT YOU

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- Organisation
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European Concrete Platform (ECP)

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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?

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The main issue that we as the concrete sector see with the EPBD is that the contribution of thermal mass - the property of heavyweight materials whereby heat can be stored and released later - is insufficiently accounted for. Thermal mass not only has energy efficiency benefits, but also improves wellbeing and comfort, both in hot and cold climates. This is developed in more detail in this and some of the following questions. Regarding delays in transposition by MSs, of the recast EPBD 2010/31, this is well documented elsewhere.

Apart from that issue, uptake of methodologies for calculating the energy performance of buildings is also very variable across MS. The EPBD 2010/31 (like EPBD 2002/91 before it) states that all Member States shall apply a methodology for calculating the energy performance of buildings (Art 3). What the methodology shall consider is laid out in Annex 1 and includes thermal capacity; Insulation; Passive heating; Indoor climate condition etc.

Standards have been developed by ISO / CEN to provide this methodology (such as ISO-EN 13790 - being revised and will be called EN ISO 52016-1). However these are not used in all MSs. In some MSs, methodologies used consist of simple U-value calculations, and therefore are not capable of accurately modelling the performance of high performance dwellings which make full use of fabric energy efficiency measures and passive design techniques to minimise energy use. The standard should also be able to calculate indoor temperature in both cold and hot climate and the latent energy needed to avoid excess temperatures. As a consequence, the full benefits of heavyweight construction are not always adequately recognised.

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

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

2500 character(s) maximum

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?

2500 character(s) maximum

We do not think it has and the main problem here is leveraging financing. One of ECP's partner organizations, the European Cement Association CEMBUREAU, has participated in the discussions of the Energy Efficiency Financial Institutions Group (a joint DG Energy and UNEP initiative) that led to the publication of the Report entitled "Energy Efficiency - The First Fuel of the European Economy" (February 2015). The Report's main conclusion is that there is a need for a much stronger public-private partnership on financing private energy efficiency investments in buildings, which would need to increase fivefold by 2030. Amongst the recommendations made by the report are the need for a better communication on the benefits of energy efficiency but also the need for a concerted approach to demand and supply drivers including a leverage of private sector financing through optimal use of European Structural and Investment Funds and Member State funds. We fully support the findings of the report and are prepared to partner with the EU and national institutions to help achieve the objectives set forth.

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

2500 character(s) maximum

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?

2500 character(s) maximum

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

2500 character(s) maximum

Addressing the existing building stock is fundamental to increase the global energy efficiency of a country or region.

When renovation (in particular deep or major renovation) is decided, different options (including deconstruction and rebuilding) should be considered and the most effective chosen, possibly in a long term perspective.

The chosen solution should benefit of the same fiscal and financial advantages.

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

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Via mandates 343 and 480, CEN (in conjunction with ISO) has developed (and continues to develop/revise) standards for calculating the energy performance of buildings. However, as noted in question 1, these standards are not used in all MSs.

9. Will the 'nearly zero-energy buildings' targets be met? Why/Why not??

2500 character(s) maximum

10. How successful has the inclusion of Energy Performance Certificates in the EPBD been? Have the certificates contributed to improvements in energy performance of buildings

2500 character(s) maximum

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

2500 character(s) maximum

Recital 25 of the EPBD states "...priority should be given to strategies which enhance the thermal performance of buildings during the summer period. To that end, there should be focus on measures which avoid overheating, such as shading and sufficient thermal capacity in the building construction..." This does not seem to be sufficiently tackled elsewhere in the Directive or in Member States' actions.

Heavily insulated and air-tight buildings, coupled with a warming climate due to climate change, mean more buildings needing to rely on mechanical air conditioning to keep them cool in summer, even in Northern Europe. Therefore, passive measures which avoid overheating in summer will be of increasing importance in ensuring energy efficiency. This issue also has a health/comfort aspect.

For these reasons, more should be done to ensure calculation methodologies are sufficiently sophisticated (such as the CEN standards) to capture these aspects.

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)?

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Yes, in general.

It should be noted that the energy use of a building does not provide a direct correlation with the CO2 emissions of the use of that building. It may also depend on when the energy is used. Shifting demand way from peak times - by storage in the building envelope for example - can reduce CO2 emissions (explained in more detail below).

Both the overall energy use and the actual bought energy needed should be considered. The energy efficiency is related to the overall energy use and the bought energy relates to use of renewable energy.

13. Is it in line with subsidiarity? What should continue to be tackled at EU level and what could be achieved better at national level?

2500 character(s) maximum

14. Are the objectives of the EPBD delivered efficiently?

2500 character(s) maximum

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

2500 character(s) maximum

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

2500 character(s) maximum

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?

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

2500 character(s) maximum

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

2500 character(s) maximum

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

a. Minimum energy performance requirements in new buildings?

2500 character(s) maximum

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

2500 character(s) maximum

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.)?

2500 character(s) maximum

d. Minimum renewable energy requirements to meet the NZEB target by 2020?

2500 character(s) maximum

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

2500 character(s) maximum

f. Regular inspections of heating and air conditioning systems?

2500 character(s) maximum

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?

2500 character(s) maximum

22. Are there any cost-effective measures for ensuring compliance at local and regional level that could be replicated and used to improve compliance on a larger scale?

2500 character(s) maximum

23. What do you think of the various ways of calculating building energy performance at national/regional level? Please include examples.

2500 character(s) maximum

Some MSs use methodologies based on ISO-EN 13790 to calculate building energy performance; others use simpler / more rigorous methodologies. While not necessarily perfect, methodologies based on EN 13790 are preferable to simple methods as they allow dynamic effects like thermal mass to be taken into account. Examples from MSs:

UK:

The UK Methodology for dwellings is the Standard Assessment Procedure (SAP), based on EN 13790. Feedback from Mineral Products Association (MPA) in the UK states that the cooling load methodology used in EN 13790 (and SAP) is too simplistic to accurately represent heat loss/gain in summer. With modern, low energy building design, it is no longer sufficient to use mean temperatures and steady state U-values as the basis of calculation. Something more dynamic and sophisticated is needed to capture variations in heat flow across a summer day. Ventilation is also handled too simplistically and makes no allowance for energy saved by buildings that exploit night cooling and thermal mass.

Regarding space heating, MPA would like to see multiple options available for heating regimes. EN 13790 should make this a requirement and not allow individual countries to decide what approach is taken (SAP currently assumes all dwellings are intermittently heated, with no option for continuous heating).

Portugal:

Current regulation is simply based on the U-value of the building envelope. This approach is too simplistic - no way to take advantage of dynamic (time related) effects.

France:

Option to use simple method (tabulated values for thermal mass) or complex method (dynamic calculation according to EN-ISO standards).

Ireland:

Calculation methodology is like UK SAP. There is an issue with regard to heating regimes (schedules) - not clear where this choice comes from.

Belgium:

Architects must indicate type of material under one of 4 categories (light to heavy) when using software to calculate whether a building will resist summer overheating.

Spain:

Spanish Technical Code of Buildings (CTE) is the regulatory standard that establishes the requirements. Basic Document of CTE, HE1 (Energy Savings) establishes technical conditions to be met in terms of: characteristic parameters of the building enclosure; thermal bridges; climate data; superficial & interstitial condensation in enclosures. Spanish CTE provides a software tool (LIDER-CALENER) that can be used to fulfil BD HE1. Software based on EN ISO 13790 can also be used.

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?

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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.

25. Are the available data on the national/regional building stock sufficient to give a clear picture of the energy performance of the EU's building stock, as well as the market uptake of energy efficiency technologies and the improvement of the energy performance of buildings in the EU?

2500 character(s) maximum

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?

2500 character(s) maximum

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?

2500 character(s) maximum

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?

2500 character(s) maximum

In such targets, the potential benefits of rebuilding should not be neglected. Renovation should be considered to mean “renewal of the building stock as a whole” and therefore include rebuilding for energy efficiency.

A certain amount of older buildings are no longer fit for purpose (‘obsolescence’) in terms of energy use, financial viability and social needs. Therefore, the renovation of these buildings would not necessarily be beneficial as they do not offer sufficient flexibility to meet new social needs, nor will the renovation significantly increase the life expectancy of the building and could be a much more costly option both in monetary terms as in CO₂ generation. As a result, rebuilding would be the preferred option as, not only would the building be more energy efficient and offer a much longer life span, new design techniques could incorporate an element of flexibility allowing for future adaptation.

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?

2500 character(s) maximum

30. Are EPCs designed in a way that makes it easy to compare and harmonise them across EU Member States?

2500 character(s) maximum

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

2500 character(s) maximum

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?

2500 character(s) maximum

33. Should EPCs have been made mandatory for all buildings (a roofed construction having walls, for which energy is used to condition the indoor climate), independent of whether they are rented out or sold or not?

2500 character(s) maximum

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?

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

2500 character(s) maximum

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

2500 character(s) maximum

The thermal renovation of a building could be linked with building extensions which would produce additional square meters of space which could be rented out or sold in order to finance the renovation of the existing building structure. This would offer a win/win situation, as fewer government subsidies would be needed to finance the renovation and the urban area would become more compact, indirectly leading to a reduction in energy consumption (see the impact of compact cities on their energy consumption). The EU should encourage this route by developing a regulatory framework which allows for building extensions to offer a solution in terms of financing thermal renovation through private funds.

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

2500 character(s) maximum

38. Have energy efficiency and renewable energy projects been combined to maximise their financing? How can the EU help?

2500 character(s) maximum

The thermal mass of buildings can be used to store energy, both at building or district level. Thanks to this storage effect, the moment when the most power has to be drawn from the electricity grid can be shifted in time, thus requiring less power at peak times. Avoiding power peaks in this way has the advantage of reduced CO2 emissions (as the energy supplier can avoid recourse to fossil fuels if peak demand is reduced) and lower costs (as energy is most expensive at peak times). The EU, building/urban designers and large power companies should work together in order to combine energy efficiency in buildings and thermal storage - win-win situation for all sides. (An efficient way to use this as an incentive is to charge for energy based on power peaks, for example shorter than 1 hour.)

39. How is investment in high-performing buildings stimulated and what is being undertaken to gradually phase out the worst performing buildings? Is it sufficient?

2500 character(s) maximum

40. What is being undertaken to solve the problem of 'split incentives' (between the owner and the tenant) that hampers deep renovations? Is it sufficient?

2500 character(s) maximum

41. Taking into account the experience and achievements to date, would

a) scaling-up of existing public funds alone be sufficient to meet the goals of the EPBD?

2500 character(s) maximum

b) aggregation of energy efficiency investments in buildings (e.g. enabled by standardisation of Energy Performance Contracts and clarification of regulatory and accounting issues) contribute to the achievement of EPBD goals

2500 character(s) maximum

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 could preferably 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.

42. What measures have been taken in the housing sector to address energy poverty?

2500 character(s) maximum

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

2500 character(s) maximum

Yes, there is the health and safety issue, especially for elderly people, due to overheating indoor climate during heat waves. This is a case of energy poverty with regard to cooling, rather than heating. This phenomenon of summertime temperature peaks could be mitigated by use of thermal mass in building structures.

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

2500 character(s) maximum

45. Are energy costs for heating and air conditioning being made available to interested buyers/tenants?

2500 character(s) maximum

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.

46. What are the best policies at district and city level to increase energy efficiency in buildings? Have specific targets on renewable energies in buildings been included?

2500 character(s) maximum

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?

2500 character(s) maximum

Comfort and energy poverty as well as energy savings needs to be considered. A maximum summertime peak temperature - or related latent energy needed to cool this overheating - could be set, taking into consideration rising temperatures in future due to climate change. Thermal comfort is about stable internal temperature and avoiding summertime overheating.

48. Which building sectors have been addressed as a priority (public/private, residential/non-residential, industry, heating & cooling)?

2500 character(s) maximum

49. Has having no EU set targets (indicative or binding) for the sustainable public procurement of NZEB buildings by public authorities affected the development of NZEBs?

2500 character(s) maximum

50. Has the EPBD framework improved the self-consumption of electricity in buildings?

2500 character(s) maximum

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

2500 character(s) maximum

As stated above, the “EPBD ... [is] not designed to provide an overall life-cycle approach”. This is justifiable as its aim was to tackle the biggest impact of buildings: energy in use.

The “Communication on resource efficiency opportunities in the building sector” and the subsequent work on an environmental assessment framework being undertaken by DGs ENVI, GROW and JRC is supposed to tackle all other aspects of sustainability of buildings. In-use energy is deliberately omitted as this is considered as “already dealt with” elsewhere, principally by the EPBD. The ECP believes that such initiatives should look at embodied, in-use, and end-of-life impacts of buildings all together, in a holistic way. The EPBD should continue to exist as it serves a purpose in moving towards nZEB, but new initiatives purporting to look at sustainability of buildings should take a holistic and coordinated approach, involving all the relevant DGs.

52. Is demand response being stimulated at the individual building level and if so, how?

2500 character(s) maximum

53. What obligations are missing at EU level and national level, and at regional and local level to meet the goals of the EPBD?

2500 character(s) maximum

G. Links between the EPBD and district and city levels, smart cities, and heating and cooling networks

The EPBD focuses on reducing energy demand and increasing energy efficiency and the share of renewable energy consumption in buildings (mainly on-site or nearby).

Alongside this, reducing transport needs, promoting active mobility, public transport and e-mobility in cities are important policy levers for achieving long-term European policy objectives in the field of climate change, energy and transport. Targeted use of information and communications technology will enable smart solutions that bring together different physical infrastructures and operational technologies. This would facilitate a better quality of services at lower cost, enabling better maintenance planning, for example, and approaches to investment that are focused on real needs.

When examining energy efficiency and renewable energy supply, the considerations at district and city level are different from those at building level. Heating and cooling networks can play an important role in improving the energy performance of buildings, but are also dependent on advance planning and adequate implementation (both at city and district level). Solutions for local renewables, co-generation and storage have in many cases proven to be more cost-effective at district level than at the level of individual buildings.

The EPBD is an instrument that could be used to address the differences at district and city level, and help Member States to develop a comprehensive strategy

54. What are the best policies at district and city level for increasing energy efficiency and use of renewable energy in buildings?

2500 character(s) maximum

By establishing policies where houses and thermal mass of structures can be used as a base storage for energy, reducing both the power peaks and making it possible to economically use renewable energy.

55. Are there any separate (new) obligations set at city and district level missing from the EPBD which would help increase energy efficiency and use of renewable energy in buildings?

2500 character(s) maximum

56. How has the information exchange on smart technologies which contribute to compliance of the EPBD, been promoted in cities?

2500 character(s) maximum

57. Are smart meters and their functionalities contributing to meeting energy efficiency targets and the proper implementation of the EPBD? Are other targeted meters for heat, gas and water such as those for electric meters needed?

2500 character(s) maximum

58. Has the promotion of smart cities, smart buildings, sustainable transport solutions, smart mobility, and similar initiatives been linked with the EPBD and its aims? If so, how?

2500 character(s) maximum

Not that we are aware. However, this would be a good idea. Potentially much greater savings could be made by renovation / improvements in efficiency of entire districts than if simply tackled at the individual building level. Furthermore, several research projects have identified the use of building fabrics as a means of storing energy at a district level.

59. Have obligations been set at a national/regional level in relation to buildings and district heating and cooling, or in relation to buildings and storage? Why/Why not?

2500 character(s) maximum

Not that we are aware of. However, this would be a good idea. See answer to question 38.

60. What incentives are missing, that would help promote efficient district heating and cooling or meeting the goals of the EPBD?

2500 character(s) maximum

61. Have cost-optimal policies been devised that improve the performance of buildings so that they use less heating and cooling, while ensuring a decarbonised energy supply?

2500 character(s) maximum

62. Does the EPBD and its definition of NZEB reflect the requirements that could derive from the energy systems of nearly zero-emissions districts and cities?

2500 character(s) maximum

H. Awareness, information and building data

Public information and awareness play a key role in improving energy efficiency in privately-owned buildings. There is a need for clear and accessible information for citizens, professionals and authorities to enable them to evaluate the energy performance of buildings. If this information is provided in similar formats it would make it easier to compare energy performance and, in particular, help identify best practice solutions, as almost 90% of building floor space in the EU is privately owned (and over 40% of residential buildings were built before 1960). The following questions focus on your experience of the information provided and your suggestions for improving the information flow.

63. What do you think of the quantity and quality of information on the importance of energy efficiency provided to consumers by:

1. the European Commission?

2500 character(s) maximum

2. national authorities?

2500 character(s) maximum

3. regional authorities?

2500 character(s) maximum

4. local authorities?

2500 character(s) maximum

5. local companies?

2500 character(s) maximum

64. Has the directive promoted information on opportunities for consumer-friendly smart meters and interoperable energy efficient appliances?

2500 character(s) maximum

65. What relevant building data has been collected at EU and Member State level, and city and district level? Who has access to this data?

2500 character(s) maximum

66. How can data on the energy performance of a building and its related renovation work, across its life cycle, best be managed and made available?

2500 character(s) maximum

Green building rating schemes (LEED, BREEAM etc.) are useful in that they “reward” the best buildings and can be used as a marketing tool - as long as the trend to also measure performance (not just design) continues.

More scientifically rigorous is life-cycle assessment. The CEN/TC 350 suite of standards provides a methodology for sustainability assessment of buildings using LCA.

67. Has building data harmonisation been achieved?

2500 character(s) maximum

68. Is there a need for a central EU database of EPCs and qualified experts?

2500 character(s) maximum

I. Sustainability, competitiveness and skills in the construction sector

The construction sector plays an important role in the European economy, generating almost 10% of GDP and providing 20 million jobs, mainly in micro- and small businesses. Designers, architects, builders, inspectors and certifiers, financiers, and national and regional supervisory authorities need to have the necessary skills and qualifications to ensure buildings are built effectively and using renewable energies. The sector is still largely craft-based, and there is huge scope for efficiency gains and more user-friendly retrofitting services as part of more industrial approaches, and through financial/planning/construction/maintenance package solutions based on strategic partnerships between SMEs and financing providers.

Through the EU's BUILD UP Skills initiative, between 2011 and 2013, energy efficiency skills needs and gaps for blue collar workers in the construction sector were identified in 30 countries (EU, Norway and the Former Yugoslav Republic of Macedonia). Each of these countries has produced a detailed status quo analysis with the participation of all main public and private stakeholders. From 2013 the BUILD UP Skills initiative has focused on the implementation of the national status quo analysis by setting up national training and qualification programmes for blue collar workers. These programmes have been put in place in 21 EU countries. With the launch of Horizon 2020, a new topic (EE4) on construction skills is now targeting training needs for both blue and white collar workers. Five projects focusing on skills in the construction sector will run until 2018.

The competitiveness of construction companies is an important issue, not only for growth and employment, but also to ensure the sustainability of the sector. The sector could contribute significantly to job creation by increasing its activity in promising areas such as the renovation of buildings. Construction and use of buildings in the EU account for about half of all extracted materials and energy consumption. 5—10% of total energy consumption across the EU is related to the production of construction products. The goal of the European Commission is to help the sector become more competitive, resource-efficient and sustainable. The EPBD is an instrument that could help work towards this goal.

69. How does the construction sector cost-effectively demonstrate and check compliance with the EPBD while also upgrading the skill and knowledge of tradespeople and professionals?

2500 character(s) maximum

70. Would it have been useful to extend Eurocodes to include energy performance in buildings and other relevant aspects? If so, why?

2500 character(s) maximum

The Eurocodes, as they are structural design codes, do not seem to be the relevant place for energy performance requirements. Nevertheless, a scheme whereby aspects such as energy performance and other sustainability aspects as well as structural design are taken into consideration in an integrated way at the design stage does make sense. An example of this approach is the JRC report “Building design for safety and sustainability”, which integrates structural design considerations and environmental aspects.
<http://publications.jrc.ec.europa.eu/repository/bitstream/JRC93115/lbna27116enn.pdf>

71. Are energy, materials, waste and water use addressed in the EPBD?

2500 character(s) maximum

No. As mentioned under question 51, it is justifiable that the EPBD only focuses on in-use energy of buildings, but in general EU initiatives should take a holistic approach across the whole life-cycle of buildings and the three pillars of sustainability.

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.

72. Based on existing experience, do you think the setting of minimum requirements in the EPBD for technical building systems is missing? Would have technical building systems minimum requirements contributed to the improvement of buildings' energy performances?

2500 character(s) maximum

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?

2500 character(s) maximum

No. Minimum requirements should only be set at the system level or at the building level.

74. Based on existing experience, do you think in the EPBD requirements is missing for regular inspections of the technical building systems to ensure:

a. that systems' performance is maintained during their lifetime?

2500 character(s) maximum

b. that owners/occupiers are properly informed about the potential improvements to the efficiency of their systems?

2500 character(s) maximum

c. that replacement/upgrading of the technical building systems is triggered?

2500 character(s) maximum

75. Have inspections required by the EPBD, been incorporated into or more tightly linked to other inspection/certification/energy auditing activities and schemes under other EU or national directives?

2500 character(s) maximum

76. Are the requirements for building elements set by Member States optimised to avoid market barriers limiting the installation of building products complying with EU requirements/standards e.g., under eco-design requirements?

2500 character(s) maximum

We are not aware of any market barriers

K. Operational management and maintenance

After the completion of development and/or renovation works, buildings still use energy in a way that impacts building occupants and operators (e.g. via energy costs). Ongoing operation is a key part of a building's life cycle and is related to the goal of building NZEBs by 2020.

77. Based on existing experience, does the EPBD promote the key ways to ensure that buildings meet stringent efficiency targets in their operation?

2500 character(s) maximum

78. Based on existing experience, does the EPBD promote the best way to close the gap between designed and actual energy performance of buildings?

2500 character(s) maximum

79. Based on existing experience, are the provisions provided by the EPBD to stimulate a proactive, innovative maintenance market effective?

2500 character(s) maximum

L. Further Comments

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

5000 character(s) maximum

A full description of the thermal mass effect, as mentioned in several response above, can be found here:
http://www.theconcreteinitiative.eu/images/Newsroom/Factsheets/7201_CEMBUREAU_ThermalMass2015-08-31.pdf

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