October 24th 2015

Public consultation

This response below is based on consultation with FEDARENE members.

This consultation forms part of the evaluation of the Energy Performance of Buildings Directive. Under the terms of the Directive, the Commission is required to carry out this evaluation by 1 January 2017, with assistance from a Committee of Member States’ representatives. The evaluation should reflect the experience gained and progress made since the adoption of the Directive. If necessary, the Commission should make proposals on the basis of the evaluation.

The evaluation also follows on from the Energy Efficiency Communication of July 2014, which indicated that additional measures to be introduced to improve energy efficiency would need to primarily address the energy efficiency of buildings and products if progress is to be made by 2030. The Energy Performance of Buildings Directive is the main legislative instrument in force at EU level covering the energy efficiency of buildings.

The Energy Union, launched in February 2015 as one of the EU’s ten priority areas for action, has five mutually reinforcing and closely interrelated areas of focus, one of which is ‘Energy efficiency contributing to a moderation of demand’. The Energy Union strategy identifies improvements to energy efficiency in the building sector as a change that could make a critical contribution to the Commission’s energy and climate strategy. Action will be needed from Member States in order to exploit the energy efficiency potential of existing buildings. As part of the Energy Union, the Commission will also look to simplify access to existing funding, as EU funds and financing from the European Investment Bank can make a significant difference for Member States.

Measures relating to energy efficiency and the use of renewable energy form part of broader initiatives designed to ensure that the EU meets the objectives of its energy and climate change policy. The EU’s policy on energy efficiency and renewable energy also stimulates economic recovery and promotes growth and the creation and retention of jobs. It is thus important for the competitiveness of the construction sector, and forms an integral part of the EU’s long-term vision for smart, sustainable and inclusive growth, set out in the Europe 2020 Strategy and promoted through the European Semester process. Energy efficiency has been incorporated into a number of the EU’s main policies, such as the Structural and Innovation Funds. The energy efficiency of buildings features particularly strongly. Information and communication technologies (ICT) are also contributing to the improvement of energy efficiency and the reduction of total energy use in buildings, including houses, offices, public buildings and spaces, making city centres and residential areas more efficient and more attractive places to live, work and do business. Reducing energy use
also reduces the amount of carbon dioxide emitted into the atmosphere, thus helping to tackle one of the major causes of climate change.

The Energy Performance of Buildings Directive requires Member States to set energy performance standards for buildings, to issue buildings with energy performance certificates and to ensure that, by the end of 2020, all new buildings are ‘nearly zero energy’ buildings. The Directive introduced a benchmarking system, the aim of which is to create an incentive for making the energy performance requirements set by national or regional building codes more ambitious, and to ensure that these requirements are reviewed regularly. Member States were required to have most of the measures set out under the Directive in force by January 2013. It has been estimated that the Directive will reduce the EU’s total energy consumption by 5-6% by 2020.

By managing energy demand, the EU can influence the global energy market and hence the security of energy supply. The Energy Roadmap 2050 (COM (2011) 885 final) shows that improved energy efficiency in new and existing buildings will be critical to managing energy demand over the period 2020-2050. Nearly zero energy buildings should become the norm. Buildings could even produce more energy than they use. Smart technologies such as home automation will give consumers greater influence over their own consumption patterns, and individual buildings and districts will play an active role in local distribution and storage grids.

Although there has been investment in energy efficiency and use of renewable energy in buildings for some decades, the level of investment has not been sufficient. Investment in this area has become strategically important for the EU as a result of the high level of energy imports (the EU imported 55% of the energy used in 2012, at a cost of EUR 400 bn), volatile energy prices, and for reaching the EU target for 2030 of cutting greenhouse gas emissions by at least 40% compared with 1990 (which includes the target of a 30% reduction of greenhouse gases in non-ETS sectors). A number of the policies and markets that are central to shaping investment in energy efficiency and on-site renewable energy are still relatively new, and it will take time for their full effect to be felt. As highlighted in the report of the Energy Efficiency Financial Institutions Group (EEFIG Report) on investment in energy efficiency in buildings, the policy framework should encourage businesses to invest in energy efficiency at the critical points in their investment cycle, using a ‘carrot and stick’ approach. Reporting, accounting and procurement procedures must facilitate, and not hinder, appropriate investment in energy efficiency in public buildings while also clarifying the regulatory, fiscal and accounting treatment and standardising Energy Performance Contracts. The Commission plans to bring forward its assessment of the issues discussed above to meet the deadline for evaluation of the Energy Performance of Buildings Directive. Addressing these issues is all the more important given the contribution made by buildings both to achieving EU objectives for energy and climate policy and growth, and to improving living standards and reducing energy bills for EU citizens. This consultation exercise will provide an important source of information for the assessment, and will help to ensure that the analysis is robust and comprehensive. This consultation will also serve as a framework for potential further consultation on specific topics such as district energy, retail, building automation and monitoring, building regulations and financing.
This consultation is designed to allow respondents to answer the questions that are relevant to them, their knowledge and experience, and/or their concerns. Respondents are not required to answer all questions. There are twelve sections. The questions are in English; the Commission services invite respondents to answer in any official EU language.

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 on its goals?

In overall terms, the EPBD would appear to have had a positive impact on the energy performance of buildings in the EU, by raising the overall level of attention to this issue, and as a driver in all member states to:

- Improve relevant legislation;
- Boost the building sector to give more attention to the quality of works, increase NZEB and seek innovation in low carbon building;
- Encourage public regional and local authorities to initiate new investment facilities (if these efforts are not compromised by the new Guidance Note on EPC published by Eurostat)

There are significant strengths in the EPBD approach, in particular the introduction of the concept of certification and inspection as the norm, and the overall shift towards NZEB.

The requirement to produce national plans for increasing the number of NZEBS is a positive way in which to ensure that all MS fully consider the implications and their responsibilities in this regard. However, MS should also be required both to consult on their plans, and to fully communicate them to the general public and the industry within their own countries, so that they can be held to account.
in terms of delivery. There is a risk otherwise that these are documents produced by the civil service and communicated only to the European Commission, which would undermine the chances of effective implementation in practice. While some parts of the industry may understand the implications, it is unlikely that this awareness is consistent across the supply chain and with the consumer – and the public is not empowered to hold public authorities to account for implementation.

The most significant impact is likely to have been in those MS where the least progress had been made previously. In this way the EPBD may have achieved one of its stated aims, to reduce the large differences between Member States, but not by enough. At the same time the EPBD has not done enough to move the more advanced countries forward. There is a risk of a negative impact of ‘social norms’, in that while those Member States who had not progressed on the various elements of action prior to the EPBD will have been impelled to action, it’s possible that those who had already done more may ‘back-pedal’. An example is the UK where the current Building Regulations are at or better than cost-optimal, and the recent decision to cancel the early shift to NZEB for new buildings which had been set for 2016. While the reason has not been specifically stated, the fact that this is not required to be implemented until 2020 could be seen as a reason for a lowering of ambition.

In general terms the impact has been more positive in regard to new buildings than retrofit of existing buildings, but even in relation to new buildings, the impact has not (yet) been as significant as it could be.

It is also important to note that it is not possible to be sure of the impact with no actual measurement or data collected as an indicator, and no set standard to measure against (as in the NZEB).

Overall, the EPBD has not been as effective as it could be for several reasons. Many of these points are highlighted in later questions, but in summary:

- Only 16 of the EU’s 28 countries have transposed EPBD requirements into the national law;
- In many countries transposition may have occurred but is not adequately enforced;
- Transposition is confused and ineffective at national level due to a lack of coherence – for example where responsibility is split between different government ministries or departments. Examples include:
  - In Croatia that part of EPBD dealing with heating systems is in competence of Ministry of Economy and other parts of the Ministry of construction and spatial planning
  - In the UK, responsibility for building codes lies with the Department of Communities and Local Government, while climate change, energy supply and energy efficiency are with the Department of Energy and Climate Change
- NZEB is not fully defined, making the 2020 target relatively meaningless;
- The lack of a clear NZEB definition and target leaves it open to Member States to set targets as low as they can get away with;
- There are no specific targets for existing buildings;
Where NZEB plans and national renovation strategies have been produced, they do not appear to have been well communicated to the wider public within member states, so undermining the chances of actual implementation.

The exemption of historic buildings from the requirements of the EPBD is applied too widely, across the ‘everyday heritage’ of large numbers of buildings in everyday use (as opposed to the much smaller number of exceptional buildings such as castles, palaces and cathedrals). While such buildings need special treatment, it is too big an omission to not treat them at all for the improvement of energy performance – solutions can and should be identified and standards set. In Italy, for example, this could affect as much as 70% of homes.

There are a number of ways on which the implementation of Energy Performance Certificates (EPCs) has not been as beneficial as it might be:

- The drive to reduce costs of producing them has resulted in simplified processes and data collection, so limiting their accuracy. This has a negative effect on their reputation, as well as their usefulness.
- The limitations and lack of sophistication/sensitivity are more noticeable in regard to some categories, such as the highest energy performing building, and older buildings with complexities and additions.
- These limitations mean that more sophisticated methodologies tend to be used for design purposes – and the different methodologies can give different results, causing further confusion.
- The use of recommendations on EPCs is not well regulated, and may be used to promote different measures. It is also often not well defined or explained – and together with the over simplified methodology, this means that the EPCs are not generally an effective advice tool for retrofit (as opposed to simply an asset rating with some fairly limited information added).
- The use of an EPC alone is not enough to make renovation happen, and needs to be part of a coherent package that includes information and advice, and financing possibilities. An effective advice tool for retrofit needs to reflect the practical realities for home owners and the building industry and the need to take advantage of trigger point opportunities afforded by home repairs and improvements, and life changes for the occupants, as well as new owners and tenants. The EPC should ideally be supported by an expert advisory service, and both should be designed to support and enable step by step improvements as well as the (possibly less common) whole house refurbishment opportunities.

Another possible weakness is in the emphasis on ‘cost-effectiveness’ in renovation of existing buildings. This can result in circular thinking, in that it reflects the status quo in the market – whereas it is necessary to shift the status quo in order to achieve the necessary changes. The question of energy efficiency in buildings is clearly still one of market failure, hence requiring intervention to disturb the market.

An example from the UK is the notable failure of the Green Deal scheme, which was intended as a market mechanism with minimum government intervention, as opposed to the success of the more direct intervention of the Feed in Tariffs which have had a massive impact on the deployment of PVs in particular.
2. Has it helped improve energy efficiency in buildings?

Overall yes, at least for new buildings. The impact on existing buildings is less clear. The lack of measurement or specific targets makes it impossible to be sure of the impact.

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

This is difficult to assess, as other factors have had an influence, in particular the economic crisis and the difficult financial situation faced by public authorities. In general we consider that there is little evidence of any significant impact, and are concerned that building renovation rates may even be slowing down in some countries, due to the economic downturn.

The EPBD alone, in its current form, is insufficiently strong to achieve this goal. It must be supported by more financial support and legal obligations to renovate low performing buildings.

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?

The EPBD has contributed to some extent to the design of new investment facilities (such as Elena at EU level, or Posit’IF, OSER, Pass Renovation, Green Deal, at regional level). The impact of the EPBD, has however been limited in attracting investment in improving the energy performance of the EU’s building stock as a whole.

This is mainly due to the:

- Lack of binding energy efficiency objectives at both MS level and EU level;
- Lack of motivation among potential investors (especially private investors such as households);
- Lack of regulation to enforce implementation;
- Difficulties in accessing and using financial instruments, including for example, the use of energy performance contracting for buildings with high energy saving potential;
- Economic crisis, limiting both public and private investment.

The EPBD has contributed to some extent in accelerating EE investments in public buildings (although in fact this 3% obligation is included, at least at national level, in the EED).

For residential buildings, the main contribution is in raising the targets for new construction (especially the NZEB approach), but only indirectly for renovation (where Member States have increased funding programmes in this field).

For existing buildings in general, however, the lack of specific targets is a major weakness. These represent the bulk of the building stock and the potential energy savings for the sector. Just 1% of the total EU building stock in any given year is newly-built, and only major renovations of Europe’s existing 180 million buildings are covered by the EPBD.
Investment in improving energy performance in buildings is part of a virtuous circle, and cannot be seen as a factor in isolation. It is also necessary to continue to provide advice and awareness-raising, data on buildings, training of the building sector, quality control, monitoring of impacts, promotion of best practice examples and so on.

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

Overall, yes - however, there was no clear definition of what is ‘cost-effective’ within the EPBD, so this is difficult to assess. Where even the most cost-effective measures were not previously being implemented, it is likely to have had an impact, but relatively little impact on achieving ‘deeper’ energy performance improvements.

Energy improvements could be better integrated into regeneration strategy, as in the EnSURE project (energy-efficient rehabilitation of buildings and new methods of energy supply), which sets out a concept for the long-term, integrated urban energy development strategy for the individual urban quarter or the district level, consisting of an optimised complex package of refurbishment measures, new concepts for energy-efficient district planning, heat energy supply and the use of renewable energies.

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?

No, and this could not have been achieved as they were not defined clearly enough. In some parts of EU, minimum EP requirements are still too low and in the most advanced countries, higher EP requirements could have been implemented. For example, the NZEB indicator in Romania is 70kWh/m² per annum, compared to 15kWh/m² per annum in Austria.

There is an argument in favour of differing energy consumption targets to take account of climatic variations, and while the ultimate ambition should be the same for all countries within the same climatic zone, differing starting points and economic conditions necessitate a different time scale for achieving them.

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

It has made a start but not gone far enough – there are too many ‘get out clauses’, and too little actual enforcement.

There is also too strong a focus on only implementing measures which comply with limited timescale ‘cost-effectiveness’ – in contradiction to the need for deep renovation.

Existing buildings should be the main focus of the revised EPBD at least in terms of binding energy efficiency objectives and renovation rates.
8. Has the EPBD set effective energy performance standards for new buildings?

Not completely – the concept has been introduced, but the definition of NZEB needs clarifying and must not be made too weak, and the 2020 date must be kept to. Until now, the EPBD has made MS aware of the need to set standards but has not been strong enough in insisting that these standards are sufficiently high. The specific definition should be clearly stated in the national plans, and guidance developed on how to achieve it.


In Italy, the EPBD has stimulated the market for high energy performance new buildings, and it would appear that the market has taken this further and many new buildings exceed the minimum requirements. This is necessary to compensate (in part) for the large proportion of older buildings that are exempt from the EPBD due to special historic character.

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

Without a clear definition of NZEB, this will be impossible to judge. The NZEB definition is still being discussed and is not yet agreed and standardised at EU level. In the updated EPBD, more explanation of what is meant by a “nearly zero-energy building” is needed, albeit with some flexibility in terms and requirements is necessary given the vast array of national circumstances in terms of geography, demographics, markets and ownership structures.

It is fundamental for achieving the target to get clear on common rules for nearly zero-energy buildings and on what constitutes a deep retrofit. The lack of clarity on what is meant by NZEB may be used as a reason not to achieve the implementation of this requirement within the specified time frame, or to interpret it weakly. Where national plans have been produced, there is a lack of detail on how they will be implemented in practice. There is a significant lack of enforcement plans, and a need to develop building industry knowledge, skills and products for building NZEBs on a sufficient scale to deliver large quantities of NZEBs.

Unless and until legislation on this issue is clear, a complication may also arise in relation to procurement rules which impose least cost choices. Many other barriers exist, such as guaranteed results contracting, which limits the applicable measures and depth of renovation that may be financed.

Meanwhile, some countries may achieve the targets they have set.

In France, the regulatory framework has been in place for the last several years since 2010 called RT2012. Its implementation is supported by the Effinergie association that brings together French regional and city governments and a wide range of actors and experts, from research laboratories to
manufacturers, training centres, architects, engineering consultants, research departments, non-profit organizations, etc.

The UK had set its own target for all homes to be NZEB by 2016, and the UK national plan to increase the number of NZEB says that “by 2050, emissions from heating and powering our buildings will be virtually zero”. However recent announcements (HM Treasury 2015: Fixing the Foundations: Creating a More Prosperous Nation) indicate that this interim target will now be dropped, and have yet to be replaced by an alternative timetable.

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?

Energy Performance Certificates have been widely deployed, for example in both France and the UK, where it is now compulsory to have an EPC each time someone wants to sell or rent a property. The existence and widespread deployment of the EPC has raised awareness of energy efficiency in buildings, however in both these countries EPCs are not frequently used for negotiation purposes. This could be partly due to the fact that they are not generally considered to be very reliable tools.

The lack of enforcement action or monitoring means that deployment is probably not at all comprehensive. In the UK for example, there appears to be no process for checking that public buildings have their display energy certificates in place, or that Energy Performance Certificates have been produced for domestic properties for sale or rent. Without such enforcement, action is unlikely to take place: for example a UK programme placed a requirement on businesses that employ more than 250 employees to undertake energy surveys at least once every 4 years, with the deadline for having to have had the first of these surveys is December 2015. Out of an approximate current stock of 10,000 such businesses, only 120 (1.2%) have complied so far.

The extent to which EPCs are actually influencing improvements in energy performance (rather than just raised awareness of the energy performance of each building) is not yet clear. There are a number of potential barriers to achieving this in the way they have been developed, such as:

- A process designed for labelling, which is not necessarily ideal for technical advice.
- A limited set of data collected, to simplify and speed up the process, can result in recommendations which are obviously wrong to the consumers – and makes them less likely to trust or use the rest of the report. In some cases assessors do not even go to the actual site in question – and so make their assessment based on assumptions.
- Existing buildings may have had many changes and additions over the years, which makes them complex and unsuitable for simplified approaches to assessment.
- A limited number set of recommendations – which assumes that this small number can make the necessary difference, while in reality it could require a bigger set of steps, including smaller ones.
- The lack of detail in recommendations, so that a further step in technical advice is needed before a consumer can commission work.
- A push for a lowest cost delivery, so that the quality is also pushed down and assessors don’t have enough time to do a thorough job. This can also limit the skills and knowledge of
assessors, so that they may not have the range of knowledge needed to assess more complex buildings – especially older ones – or very high performance buildings.

- No reflection in the EPC of the need for integrated design, allowing for the impact of one measure on another.

In general, the EPC is useful only as one part of a fuller advice package, and requires interpretation and explanation to the consumer by someone with both technical knowledge and communication skills, as well as support in design and specification of improvements.

There are also buildings that are not covered due to their (small) size or because they are considered of historic significance.

According to a study by the Buildings Performance Institute Europe (BPIE), the current system of certifying buildings according to their energy performance is beset by patchy enforcement, wildly-varying certificate costs, a laissez-faire attitude towards displaying information and a lack of trained inspectors. EPBD says that certification schemes should be set up, independent control systems established and penalties for non-compliance set. BPIE research shows that close to half EU MS have no financial penalties for non-compliance. Similarly, eight EU states have no minimum education requirements for their qualified experts and 13 states apply no financial or certification-withdrawal penalties for mistakes that such experts make in their energy performance calculations. Cost of the energy performance certificates (EPCs) can vary from 10 to several thousand euros, and the quality is really questionable.

A requirement that all EU countries should keep a centralised energy performance database of their buildings that can be publicly accessed is also widely flouted, the research finds.

Germany, Poland and the Czech Republic have no central database yet on their buildings, while countries such as Belgium, Spain and Italy depend on regional databases, which may not cover the whole country.

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

Generally, EPBD works well, but the main problem is incompleteness and the lack of exact and precise targets, and the lack of monitoring or enforcement action.

The aspects that have worked best are the initial work to set standards for new buildings, including introduction of first thermal regulations in some countries, especially for new buildings. The introduction of energy performance certification has raised awareness and has introduced the issue formally into the real estate market.

What could be improved is:

- The setting up of energy efficiency objectives for existing buildings at both EU and MS level. We need regulation for existing buildings, including the requirement for higher standards for energy improvement for intervention on a part of the whole existing building and associated controls.
- Clear definition of NZEB and application across the EU, with climatic variations.
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)?

Overall, yes, but insufficiently. The revised EPBD should further contribute to the EU goals by setting up clear binding objectives related with existing buildings.

Thermal regulatory framework should apply not only at building level but in some cases could be considered at district level (some buildings consuming less energy than average and compensating for other buildings with higher consumption). A new energy performance standard for Positive Energy Building called BEPOS is being introduced in France which suggests a district based approach.

The example of the Covenant of Mayors shows that 44% of CO₂ emission reduction, more than 20 % of energy savings will be reached by 2020. Most of the actions planned concerned the building sector. Due to the implementation of the SEAPs, it is expected that the targets achieved will exceed the targets define within Energy 2030.

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?

Examples of issues to be tackled at EU level:

- Definition of NZEB
- Setting defined energy efficiency objectives for buildings, including existing ones
- Definition of progress based indicators for energy efficiency measures in existing building
- Implementation of support funding schemes for centralised services
• Harmonization of standards and methodologies, taking more into account of territorial specificities in UE regulations (example MED area) as already done for transnational cooperation programs

Examples of issues to be tackled at National/Regional level:

• Engagement campaigns
• Capacity building programmes
• Monitoring and enforcement of implementation of EPBD
• Adaptation of energy performance standards of buildings taking into account different outdoor climatic and local conditions
• Maintenance of database of buildings energy performance

14. Are the objectives of the EPBD delivered efficiently?

Yes, but detailed methodology how to reach the objectives is missing.

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

No evidence of this – but suggest that a better harmonisation with the Energy Efficiency Directive would reduce burdens.

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

As above (Q 15)
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, improvements are needed. A good start has been made, but the level of ambition and sense of urgency is too low. This is the conclusion of the 2014 BPIE report ‘Renovation Strategies of selected EU countries’, and is reflected in the experience of the FEDARENE members contributing to this response.

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

No, the definition is rather vague – exact numbers are needed. This risks Member States defining it in a minimalistic way – or a very patchy response. A stronger definition applicable across the EU would provide support for those that wish to see progress in this area.

19. Is the NZEB target in the EPBD sufficiently clear to be met?
No. The word ‘near’ is not a defined quantity, so it can be interpreted differently and its achievement cannot be accurately assessed. The only precise figure in the target is the date by which it is to be achieved.

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

a. Minimum energy performance requirements in new buildings?

Yes. It is not enough just to require that a minimum is set – it is necessary to insist that this minimum is at a sufficiently high level. Buildings are still being built now which will require retrofit in the next decades to bring them up to the necessary standard. This is a short sighted policy, in that it creates a new problem for the near and medium term future – how to incentivise and finance even more retrofit. It seems particularly foolish given that we know how to build more sustainably, as well as why. For example in the UK, new homes built in 2013 had an average EPC rating of only a low B.

The use of the A to G rating is useful as a communication tool, in that it is simple and clear, but it is relatively inaccurate – so the targets must be set in terms of more specific and comparable measures, for example maximum energy consumption of x kWh/m$^2$ per annum, against different building types and function, and where relevant split into electrical, heating, air conditioning demand etc.

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

Yes. There is a massive opportunity to include improvements in energy performance in renovation work that is currently being missed.

Rather than create easy limits to taking this opportunity by allowing Member States to set weak definitions of what is ‘major’, it would be more effective to stipulate that all renovation work should include energy efficiency improvements wherever possible, While this may meet initial resistance, the technologies concerned and skills required would soon become the norm, and the market for these technologies would expand rapidly. This is a win–win scenario.

To achieve this requires the application of building codes to the renovation of a wide variety of building elements and services. Detailed work needs to be done to develop the most effective ways to do this in practice.

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.)?

Yes – there could also be a maximum allowed “heat loss factor” for the whole building.

d. Minimum renewable energy requirements to meet the NZEB target by 2020?
Yes, this would be an important step forward. The target will not be met without a wider deployment of renewable energy supply technologies at all opportunities, including on and near site for specific buildings.

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

Yes, certification of the energy performance of buildings is essential, but the effectiveness of the use of EPCs for NZEB requires EPCs to be sophisticated enough to deal with high performance buildings, and for assessors to be sufficiently expert. The ‘standard’ EPC approach that has evolved in many if not all countries is unlikely to be adequate.

NZEB new buildings will inevitably involve newer approaches in construction and technologies, some of which have yet to be widely known by the construction industry.

There will also be a need, therefore, for a greater level of attention to detail of application of methods and technologies, and as standards get higher small differences in quality will have a proportionately higher impact on performance. An example where NZEB practice can differ a great deal from traditional construction is in air-tightness. Attention is needed to the ‘performance gap’ between generalised product or technology characteristics suggested by suppliers and the actual performance in situ.

As a result, a standard EPC assessment may be insufficient and need to be enhanced by a fuller technical quality check.

Recommendations for improvements may be both with regard to technologies and their method or quality of application – this requires a high skill set from the assessor, and may be an argument for integrating assessments into the work of building professionals (technicians, engineers, architects, surveyors) who can specify the works required rather than make generalised comments. An alternative approach would be to keep EPCs simple and without recommendations, and used only to ‘label’ the building, not as an advice tool - and to have a different and more sophisticated energy audit approach for recommendations.

In the current situation there is widespread concern about the quality and relevance of recommendations on standard EPCs.

f. Regular inspections of heating and air-conditioning systems?

Yes, but also much more follow-up on the whole building, and awareness of monitored values (=real energy performance). These inspections must be accompanied with some kind of enforcement of improvements, which is missing at the current time. A full energy monitoring of a building would be more useful – especially for public or commercial buildings.
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, the method has too many loopholes, the Commission needs to close those through better and clearer definitions, fully developed, and delivered in time (and not with a years’ delay like the existing one).

It is not clear that the methodology proposed has been universally applied – for example the methodology used in France was not the same as the one required by the EU Commission’s cost optimum regulation. The French Ministry decided in 2013 to analyse cost-optimality of thermal regulations.

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?

A simple approach could be to build enforcement into the work of building inspectors working at local authority level.

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

It would be more efficient to select and define common standards applicable in all MS, and to achieve a fit with international standards where these exist.

It is important that the tools used are appropriate to the purpose of the calculation: a broad statistical analysis of energy performance does not require the same level of accuracy as one that may be used to value a specific building or predict its energy requirements. A calculation that will be used as the basis for advice on renovation needs to be even more detailed and specific to the actual building in question in order to be at all useful.

These may have been over simplified in relation to the full range of existing buildings, which carries the risk of reputational damage where building owners can see that the reports are incorrect because the detailed data is not right. An issue that may arise is that a building has been extended and altered over time, and assessment processes need to allow for the entry of sufficiently detailed data to cover this, for example different wall and roof constructions. An example is in the UK, where the building stock is particularly old.

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?

In the case of refurbishment of existing buildings, a great deal of variation can be found and it is not always possible to achieve the best results with a limited number of standardised solutions. It can also be the case that Building Regulations are complex and difficult to understand. The availability of
expert, practical advice on how to achieve the relevant standards could make a great deal of difference, and enhance the level of compliance. This is best provided at a local level, where advisory personnel can visit a site, and have knowledge of the local vernacular. This type of assistance would also facilitate shared learning about good solutions, in that advisory personnel may be able to develop these solutions together with builders, and take this learning on to other projects.

The provision of local examples would be helpful for builders and owners, and local advisory personnel could develop local databases of examples.

For builders and home owners wishing to achieve very high standards beyond the minimum set by regulations, this type of advisory service would also be helpful and encourage others.
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?

Probably not yet – this is still patchy.

For example, the data is sufficient in Austria. Major efforts are being undertaken in France by the Effinergie association, however further support would be needed in order to improve the reliability of available data.

In the UK, where a high proportion of the building stock is old, there is a good general overview, but not full detail on all the stock. Only a limited amount of the stock has full data collected, and although this is increasing over time, it can also become out of date as over 60% is privately owned, and changes to private buildings are not generally added to the details held. Assumptions are made about the energy performance of buildings based on their age and built form, but not taking into account such changes (such as extensions and other major improvements and renovations) – there may be a reasonable broad accuracy at statistical level, but as we move towards higher standards the level of inaccuracy will become more significant.

One of the burning issues in Croatia is the lack of national building stock data as well as systematic energy data management in buildings. As for public buildings, national data base (ISGE) has been established and energy data collection is mandatory but for residential and commercial sector there are no data on building stock and no systematic energy data management.

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?
No, in general, the renovation strategies are probably not sufficient, and/or are not being effectively applied. As with the NZEB plans, they may also not effectively communicated with countries, and so the public are generally unaware of their existence and so cannot hold the government to account. A really long term strategy is necessary – which continues beyond changes in political power.

To achieve the renovation of national building stock needs development and implementation of successful financial schemes both on EU and national levels.

In the UK, for example, the renovation strategy is an annex to the National Energy Efficiency Action Plan, which is not well publicised. The plan identifies broad strategies which sound fairly convincing, but the policies that would implement them were never completed and those that were established (and needed building upon) have been gradually weakened or eradicated over the past year – such as the current fuel supplier obligation (ECO), the Green Deal framework for financing retrofit, and the 2016 NZEB target with associated practical proposals such as the ‘allowable solutions’ options where onsite renewables may not be effective.

Some examples of best practice could be highlighted:

- Creation within each territory of a unique information centre (Point Renovation Info Service) dedicated to providing free “one-stop shop” information services to private and public bodies about existing financial incentive programs such as eco-prêt à taux zéro (loan with 0% interest rate), Crédit d’Impôt pour la Transition Énergétique (tax credit scheme). In total 450 PRIS are in operations across France.
- A new regulatory scheme called “Loi TECV” has just been voted and stipulates that by 2030 all existing buildings will need to be thermally renovated by the property owner before they are being sold.
- Public ESCOs and/or third part financing services, for example in Catalonia. The Energy Efficiency Plan in Catalan Government buildings includes a reduction of energy consumption for the period 2015-2017 for each Catalan Ministry, achieving a 10.1% reduction on the overall energy bill in 2017 compared to 2014. This reduction will be achieved mainly through Energy Performance Contracting.
- Development of local services to coordinate and simplify energy renovation process for owners and building companies, such as:
  - In France: local energy renovation platforms, tested in MARIE project – Med programme
  - The ‘local retrofit hub’ approach described in the Countdown to Low Carbon Homes project, and piloted by Severn Wye Energy Agency. There is a research report and toolkit provided [www.countdowntolowcarbonhomes.eu](http://www.countdowntolowcarbonhomes.eu)
- Effective grants for improvements, for example in Barcelona municipality: grants (up to 50%) for buildings renovation, including energy renovation of façades and roofs, green roofs, solar thermal energy for domestic hot water.
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?

In general, no. In many cases this is negatively affected by the fact that the cost is market driven, and the quality of EPCs varies significantly. Inspection and control processes should be enforced. One problem is the level of detail - in some countries the EPC does not even require a site visit. This will be less of a problem where the building stock is rather homogeneous – but even then, the chance of inaccuracy is probably too high.

In France, for example, EPCs are not used as a reference tool for the allocation of national level grants or subsidies.

In the UK, the EPC was used as the basis for development of the Green Deal Advice Report, which was intended as the main tool for allocation of Green Deal loans, but there is widespread doubt as to the effectiveness of this approach, for several reasons:

- The system was developed as private market approach, and a new market for energy assessments developed – so people invested in training for this purpose
- The driver was for as low a cost as possible, which put assessors under pressure to carry out the work very quickly – and made it less likely that well qualified people took up the role
- They were based on a reduced data set, to make the reports simpler and less costly to produce – but this meant they were less accurate to the building in question

At present there is a certainly some confusion in the market about the purpose of the EPCs, for example:

- To provide information to take into account in valuing or selecting a property for sale or rent
- To judge whether a property has been built or renovated to a given standard
- To provide advice as to appropriate, relevant improvement measures
- To quantify the anticipated impact of, and potential return on such measures

Given the time and cost of carrying out an energy audit, and the need to take all opportunities to drive energy efficiency improvements, it would be more cost-effective if they were to adequately fulfil all of the expected purposes rather than just one.

The inclusion of recommendations for improvements can work well if the EPC reports are adequately detailed, and there is the opportunity for an adviser to explain the results. But if the reports are over simplified and no advice time is available the result can be the opposite (both of these problems can happen to drive down costs, if the provision of EPCs is established as an open market) in that the reports may have obvious defects that make the home owner dismiss them as incorrect, or they do not understand of even take time to look at them (for example where an EPC has been ordered as part of a house sale, and so is seen as just one of the many necessary legal documents).
The focus on ‘cost effectiveness’ based on current energy prices can also have the opposite effect to encouraging implementation of improvement measures, particularly in countries where owner-occupiers move house fairly often – in other words the duration of tenure is short (for example in the UK).

In some countries it is too soon to know how effective EPCs have been in increasing renovation, for example in Spain EPCs for existing buildings only became mandatory in June 2013.

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?

Yes, this is an excellent approach which should be followed. It is essential also that the minimum energy requirements are clearly defined and compatible with EU 2050 objectives. The target should be set in terms of real and comparable indicators (not just EPC ratings). Targets will need to take account of differences in each country, and be accompanied by appropriate financial mechanisms.

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?

Yes, very much so. Minimum energy performance requirements should be set for all buildings. Without this obligation, Member States are unlikely to carry out the necessary work, particularly in the current economic climate.

The targets should be based on the energy performance of the building. For example renovation obligations (a certain percentage and/or all buildings below a defined energy performance threshold). They must be accompanied by controls and support measures (such as advice and finance).

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

No. As regards the energy rating this is relatively insignificant, as not many people will be looking to buy property in more than one country on the basis of a comparison of energy performance.

However, a degree of harmonisation of methodology would be useful strategically to assess progress in achieving energy and carbon reduction targets – for example enough harmonisation in approach that metrics such as kWh/m² and CO₂/m² may be compared (as opposed to A, B, C ratings). As things stand it appears that they are comparable, but this is misleading, as algorithms are different in different MS.

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

Yes, they will have raised awareness to a limited extent – but in general the information only raising awareness of the issue and is insufficiently detailed for making decisions on the building – and it is certainly not enough to achieve deep renovation. As a result the impact on renovation rates is likely to have been insignificant so far. Continuous public awareness campaigns are needed. EC should establish special fund for EPC promotion.

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?

Yes, ultimately, but this cannot happen at once. This would ultimately be much more cost effective than the ‘pepper-pot’ approach which is typical at present. This could be linked to the assessment of buildings for local taxes, with reduced rates for more energy efficiency buildings.
D. Smart Finance for Smart Buildings: 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 reasons, most of which are likely to be quite common across the EU. We do not have precise evidence but the following points were made by members:

- Lack of knowledge at all levels
- Difficulty in accessing EU funds – complexity and risk
- Confusion due to too many different types of fund
- Administrative barriers – lack of well-trained experts at all governmental levels
- Lack of operators able to manage financial instruments
- Lack of communication about strong business models involving deep renovations
- Lack of confidence in energy efficiency
- Reluctance of banks to invest in energy efficiency
- Banks not interested in promoting public funding programmes, preferring to "sell" their own loans instead
- Lack of a long term view
- Cost of capital finance too high
- Cost of financial administration too high
- Complexity and cost of financial regulations limiting the participation in the market for more community-based actors.
- Restrictions placed on public entities limiting their ability to increase their debts
- Lack of EC support - circulating communication channels, trainings, seminars, peer-to-peer consultation

Using the example of the Green Deal in the UK, which has failed to achieve anything close to its targets, several disadvantages of the approach became clear at an early stage of development, and offer salutary lessons for others attempting something similar, including:

- The scheme was over-complicated, making it difficult to understand for home owners and even for the industry itself.
The complexity also made it expensive to administer. As it was established as a framework without government funding, which the industry then had to buy into to participate, this cost had to be passed on to the home owner, making the overall cost too high.

The dependence on private finance resulted in a relatively high interest rate offer.

The need for substantial investment to participate, and the complex administration requirements, tended to exclude small businesses – who are at the forefront of local delivery, and a crucial part of the ‘retrofit army’.

The insistence on a restriction according to return on investment results in coverage of a restricted list of measures, and the exclusion of ancillary works, making the scheme less practically useful – it makes no sense to the homeowner to artificially separate categories of works needed for the home when obtaining quotation for major renovations.

There was a very strong focus on consumer protection, adding further to the cost of the scheme, so that it became more costly for home owners to get works done through the scheme than outside it. This also gives the message to the general public that energy efficiency was somehow risky, and more so than general building work.

The explosion of private ‘brands’ for accreditations has caused confusion in the market, and opened the door to dishonest sales practices.

The various parts of the scheme were developed by separate working groups and civil servants, going deep into the detail, and not enough thought was given to the integrated whole and how the different parts link together.

The EPC-based Green Deal Advice Report highlights those measures which can be funded under the Green Deal – and these have to meet the ‘Golden Rule’ to save more on energy bills than the cost of repayments. However, this may be reducing the take up rather than increasing it, as the addition of high interest and administrative costs has made measures even less cost-effective than before – and where before some people may have chosen measures for comfort or environmental benefit, they are now encouraged to follow advice which is purely financial.....

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

Non financing barriers are far more important that is usually stated – for example as indicated in the MARIE project.

The barriers are also reviewed in the Countdown to Low Carbon Homes research report www.countdowntolowcarbonhomes.eu.

Some of the issue indicated are:
- Lack of an appropriate legislative framework, and decision makers with insufficient knowledge
• High prices of appropriate technologies
• Lack of motivation among private property owners to implement deep renovations – due to:
  o Cost
  o Disruption
  o Lack of awareness of the benefits, or information on the specific costs and benefits in their case
  o Limited funds to spend, or other priorities for spending their limited funds – such as holidays, cars, education, more visible home improvements such as decorations or furniture, more utility-based home improvements such as an extension.
• A short term view on getting the benefits from expenditure: something you can have now is worth more than something in the future....
• Short term occupancy of homes in some countries – people moving for jobs, or to move up the property ‘ladder’ (as in the UK where the value of the home is such a major issue for households).
• Public administrations not always leading by example
• The split incentive between the building owner and occupant, where it is rented: the owner pays for works, and the tenant gains the benefits, and (at least some of) the return on investment.
• Lack of experts in terms of design, energy advisory services, specification.
• Lack of support of the key stakeholders and conflicting interests of different stakeholders
• Building owners unaccustomed to taking risk – as in the concept of investing now to save later.
• Lack of promotion of these improvements through the mainstream home repairs, maintenance and improvements supply chain – such as the general tradespeople contacted in the first instance for getting work done on the home. This means that the usual ‘trigger-point’ opportunities for retrofit are missed. This could be because:
  o They do not know enough about energy retrofit
  o They do not have the accreditations to do the work, or to certify it so that it can meet finance requirements
  o The retrofit market has developed separately and in competition with the mainstream building trades
• Older people are often not willing to have construction works in their homes, because of the disturbance and cost – in some cases where they acknowledge the argument for the return on investment in terms of savings on energy bills, they may see themselves as not living long enough to benefit – a very practical reason not to take a long term view.

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

Financing of investment grants (no complex loan schemes which require the involvement of banks), cutting administrative burdens (not energy requirements!) for structural funds

An EU carbon/energy tax scheme
Regional investment facilities such as Posit’IF, OSER, Pass Renovation, green funds... who provide advice and funds for deep renovation – if EPC is not compromised by the Guidance Note on EPC published by Eurostat.

A system that can be used widely for guarantees and interest rate support to make loans more attractive and less risky for building owners, and which encourages deep renovation (such as an improvement on the concept of the UK’s Green Deal framework, learning from its mistakes)

Grants and effective support in development of the ESCO and Energy Performance Contracting market. Guarantees for Third Party Financing. For example in Liguria, an ESCO approach was used to achieve energy saving in hospitals, resulting in 20% energy savings in 5 years.

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

Fossil fuel subsidies do not support energy efficient buildings. They do the opposite.

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

Typically they are not combined, and it would be helpful if they were in practice, as this is the practical way to achieve NZEB.

In Austria, there are combined subsidy programme (in Upper Austria, you have to install renewable heating to be eligible for energy efficiency subsidy programmes). The EU can help cutting administrative burdens (not energy requirements!) for structural funds.

Combined approaches in buildings are supported by the French regulation scheme: reduce energy consumption and use RES, however projects combining both EE and RES are usually very limited, for instance in community investment projects and would need to be further supported for instance by EU funds.

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?

A major factor is the political will, and for this to be consistent over an extended period of time. In Upper Austria, for example there are very attractive incentives for high-performance buildings for new construction and renovation (including commercial buildings), however, there is no legal basis for instruments to phase out the worst performing buildings where the owners are not interested in funding packages.

Investment in high performing buildings is stimulated by law for new buildings, and by implementing incentive schemes and financial instruments such as 0% interest loan or tax credits for existing ones.
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?

This is not done enough, and needs to be specifically addressed in the new EPBD

In France, split incentives are being implemented, called “3ème ligne de quittance” in accordance with Law MLLE dated march 2009. 50% of investment deducted from rent with period limited to 15 years. Renovation project needs to include at least 2 major (deep renovation) types of work.

A tax credit (the Energy Savings Allowance) has been provided for private landlords in the UK to encourage investment in energy efficiency, but take up has been low – it is too limited and not well publicised.

41. Was

a) the scaling-up of existing funds sufficient to meet the goals of the EPBD? Considering the potential of building refurbishment, the scaling up of existing funds will not be sufficient. Definitely not

b) the creation of aggregated facilities (through standardisation of Energy Performance Contracts and clarification of regulatory, fiscal and accounting issues) sufficient to meet the goals of the EPBD?

Probably not, but it is a move in the right direction.
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.

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

Energy poverty is an issue of real concern in Europe will become even more of a problem as energy prices go up. It is a problem for lower income home owners and private tenants as well as those living in social housing. It is estimated that between 50 and 125 million people in Europe are considered to be fuel poverty, but the level of fuel poverty is generally not well known, and the extent of the problem could be hidden.

To address the problem adequately requires a good understanding of the problem, and it would help to have a definition – which does not yet exist in most countries. In Bulgaria, for example, a household is considered as a fuel poor household when it meets the criteria for receiving social benefits for heating. There are a number of indicators of potential energy poor households that can be used:

- low income;
- difficulties in paying energy bills;
- older homes that have not made the necessary repairs;
- insufficient level of heating caused by the lack of heating, lack of insulation or inefficient heating system;
- traces of moisture or mold, which are a reflection of the poor state of the building and / or lack of heating; old and inefficient appliances

There is also a growing body of evidence about illnesses that are associated with or affected by cold homes, such as respiratory or cardiovascular illnesses.

In the UK, a new indicator of fuel poverty has been adopted by government, following the 2012 Hill's Review. This known as the ‘Low Income High Costs’ indicator of the extent of fuel poverty, such that households would be considered fuel poor if:
• They have required fuel costs that are above the median level, and
• Were they to spend that amount they would be left with a residual income below the official poverty line.

This approach introduces a measure for the depth of fuel poverty, the ‘fuel poverty gap’, defined as the amount by which the assessed energy needs of fuel poor households exceed the threshold for reasonable costs.

For Bulgaria, in recent years, the cost of heat and electricity represent a significant part of household expenditure and the latest trends are related to the constant increase in energy prices. According to the National Statistical Institute, citing information on the annual household expenditure for electricity, heating and water, it becomes clear that the average Bulgarian household spends on them about 14% of their annual income in 2013, compared with 11% in 2002 average annual cost of energy and water increased by 36% between 2008 and 2013.

In general the housing sector in Europe is making improvements to buildings (insulation, change of windows, more efficient heating...), but with rising energy prices and pressure on household incomes, there is a need to go much further to avoid fuel poverty. Low income households need the most energy efficient homes, in order to avoid fuel poverty – not only because of limited money to spend on energy bills, but also the likelihood of being in the home more, for example because of unemployment, retirement, illness, disability, small children etc. There is also a need to do more to raise awareness of tenants, for example in terms of using heating and air conditioning controls, and electrical and ICT equipment.

In Bulgaria there is a National program for renovation of residential buildings. The programme Energy renovation of Bulgarian homes was launched in 2012 with the aim to provide better living conditions in multi-family buildings. There is also a residential EE credit line (REECL) facility: a combined scheme (a loan followed by a grant) for the purpose of financing specific EE measures. The REECL was available until July 2014. Since its launch the programme has supported 40 000 projects.

There are also allowances for heating administered by the Ministry of Labour and Social Policy, providing direct support to vulnerable households. The program provides financial support to cover bills for central heating, electricity, coal, wood and natural gas. All households with income over the last six months less than the differentiated minimum income are eligible for assistance for heating. For aid to be received the applicant household must meet additional conditions, including not having sold the property in the last 5 years and have not travelled abroad at their own expense in the last 12 months. The amount of social assistance is based on a cash equivalent of 450 kWh of electricity, such as 300 kWh daily tariff and 150 kWh night in electricity prices at the beginning of the heating season. Aid is granted for a period of five months - November 1st to March 31st. Target benefit currently falls under the jurisdiction of the Ministry of Labour and Social Policy, which has an extensive network of offices for the distribution of aid and maintain a database of vulnerable customers. In 2013. They have assisted 251,876 households each received a total of 328.60 lev for the entire heating season.

The energy analysis shows that the majority of the costs of Bulgarian households are for heating, whose share of the total energy consumption is approximately 50%. Heating represents the core of
the budget with the greatest opportunity for optimisation, so it is crucial what the heating system is, and how efficient.

While this short term help is necessary, it would be a better solution to to have long-term measures to reduce heating costs to reduce poverty in the long-term.

On 24 September 2015, the Croatian government accepted a Regulation on monthly fees for socially disadvantaged energy buyers (OG 02/15) but the maximum amount is 200 HRK (26 €) per household so it is too optimistic to expect that it will help to reduce energy poverty significantly. There are no other measures for reducing energy poverty in relevant Croatian legislative documents and it is essential to make it mandatory for MS through EPBD.

In Austria, there are programmes to support families in paying their heating and electricity bills, however, programmes specifically targeting the improvement of building envelopes is challenging as energy poor families live in apartment buildings with other non-energy poor ones.

In France, a national observatory for energy poverty was created called ONPE http://onpe.org/ that provides data, help mobilize stakeholders, etc. Solidarity tariffs have been introduced: “tarif de première nécessité: TPN” was introduced in Jan. 2015 for electricity. Solidarity tariffs also exist for gas (TSS). A French law dated April 2014 forbids power cuts during winter (usually 1st Nov until March 31st). Power level can be reduced though. Social housing companies are committed to accelerating the renovation of their buildings.

Many of the funding programmes for improving the energy performance of housing in the UK have specifically addressed fuel poverty – for example by using the receipt of welfare benefits as a passport to getting free insulation of boiler upgrades. This is a relatively effective and simple approach, but the measures included have been limited to a small selection of those that offer the quickest return on investment (cavity wall and loft insulation, low energy lighting and gas boiler upgrades) and those that have the most immediate impact on comfort (draught-proofing), and these are typically insufficient to lift people out of fuel poverty. They are also not applicable to every home – homes with solid walls, no loft or without gas heating.

The fuel supplier obligation in the UK has typically included an allocation to reduce fuel poverty, but it has been left to the fuel suppliers how they will apply it, and they will always go for the most cost effective measures and ‘easy-wins’. The impact is positive but insufficient. Detailed studies of different variations that could be made on this theme exist on the UK.

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

Yes. The problem is likely to have been further exacerbated by the widespread economic downturn throughout Europe.

The Fuel Poverty Advisory Group for England’s 12th Annual Report (2013-14) estimated that there were 2.3m fuel poor households in England alone, with a fuel poverty gap of more than £1 billion per
year, or nearly £450 per household. The impacts on vulnerable households cannot be ignored - the Children’s Society report, ‘The Debt Trap – Show some Warmth’ published in January this year, analysed the England Housing Survey and found that almost one third of families in England were affected, including 3.8 million children.

The most effective way to tackle fuel poverty is to provide energy efficiency homes. Specific programmes or percentages of funding schemes for improving home energy efficiency should be allocated to fuel poor households, or to housing lived in by lower income households to avoid the risk of fuel poverty.

Energy efficiency obligation schemes that are put in place by MS and involve energy suppliers should include requirements with a social aim in the saving obligations they impose, including by requiring a share of energy efficiency measures to be implemented as a priority in households affected by energy poverty or in social housing.

Another requirement is the provision of social tariffs, so that those on the lowest incomes are not paying the most for energy. In order to make sure that those most disadvantaged in society are able to access the necessary help, attention must be given to working with effective networks and intermediaries, such as health and social care and community groups. There are good examples of good practice in this regard in many countries, including France, Germany and the UK.

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

No, not specifically, with possibly a few exceptions. To avoid fuel poverty the estimated running costs of a home should not exceed the income of a low income household – this might for example be correlated to basic welfare support or state pension. Energy costs are part of a wider calculation, and while this will not be precise, it is necessary to make an estimate.

This is essential for social housing, but it should also be the case for all housing. Social housing provision for lower income households is very limited now in many countries, and many low income households live in private rented accommodation, as well as some who own their own homes.

In the UK, the series of obligation programmes on energy suppliers to save energy or carbon have typically had a specific allocation for the reduction of fuel poverty. This has been attempted in several ways – the usual one being to ring fence funds for those who are eligible for welfare benefits – so avoiding further means testing by using these as ‘passport’ benefits.

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

In general, no, but they should be. In the case of district heating and cooling networks, the bills are more likely to be separate from other energy costs, and so these costs identifiable. In some cases an
estimate of predicted costs is part of the EPC. With smart meters, this could potentially be provided, but in the case of electrical consumption this would require selective monitoring of specific circuits. Building this into smart meter installations could be a useful addition to managing energy user behaviour.

In Bulgaria, for example, the monthly energy bills are available to end users as invoices. If they want detailed breakdown of the monthly consumption it is available after official request to the supplier.
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?

Sticks, carrots and tambourines! Active regions are already making a very big contribution here. It is necessary to set out specific energy performance targets at regional/city level, for energy efficiency and as well for RES. Success depends on a combination of continuous public awareness and available financial instruments. The Covenant of Mayors provides a good framework for this. Smart City concepts need to be planned in over the long term, and have huge potential.

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?

Requirements about positive energy buildings or districts.

A set percentage of renovation of existing buildings to reach NZEB standard – e.g. 2% yearly of existing public buildings should be renovated to reach NZEB standard. A similar approach should be applied over time to commercial and residential buildings.
48. Which building sectors have been addressed as a priority (public/private, residential/non-residential, industry, heating & cooling)?

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?

Yes, a great deal. Sustainable public procurement of NZEB buildings should be mandatory

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

Yes, in Austria, for example, the definition of NZEB was done in a way where self-consumption of renewable heat and electricity is a favourable factor for meeting the requirements.

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

No. But it should have, because without measurement of embedded energy, the total amount of energy necessary for an entire product lifecycle is not correct.

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

Not to our knowledge. Demand response is only so far implemented/tested through experimentation.

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

The general obligations are in place more or less, but without detailed targets and a systematic, common approach fuelled with financial means the goals will not be reached.
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?

Political support over an extended period of time, with strong strategic objectives backed up by practical implementation plans, as in the Covenant of Mayors. Multi-level governance and awareness. Continuous public awareness and available financial instruments. Intelligent horizontal application of sustainability objectives.

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?

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

Further promotional activities should take place at Regional and Local levels, promoting good and best practice examples. There is still a lack of information at local level about smart technologies implementation, but there are good examples – such as in Bulgaria, the Energy Agency of Plovdiv organises every year national conferences for promoting best practices and realised smart projects, inviting all of 208 municipalities.
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 have specific provisions such as those for electric meters needed?

Smart meters should provide free and easy access to energy consumption data with free capabilities provided to consumers in order to analyse their consumption profile and take measures to reduce their consumption (historical data, daily and hourly data). Smart meters can sometimes be installed in remote or not easily accessible locations. Analysis tools are not always provided free of charge.

Smart meters alone do not necessarily achieve energy efficiency targets. The information they provide can contribute to energy efficient behaviour, but here is no evidence that this is sustained, in isolation from other support measures. It is essential to consider these as a tool within a wider package of communication and awareness-raising activities.

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?

In general the many initiatives involved are not linked up well enough – however the Covenant of Mayors (or similar initiatives) offer an opportunity to do so. There are several Swedish cities engaged in Smart City projects and EPDB is often in focus.

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?

Yes, in some cases. For example:

At national level through Croatian Law on thermal energy market (OG 80/13, 14/14, 102/14, 95/15). In Bulgaria, according to ORDINANCE № 15 of 28 July 2005 on technical rules and standards for design, construction and operation of facilities for the generation, transmission and distribution of heat, it is obligatory for buildings to be designed heating and cooling installations, but there are no requirements to be district heating and cooling. There are no requirements for storage.

No such obligations have been set in Italy. District heating and cooling are not widespread technologies in Italy, with the exception of the city of Turin, or few other areas of northern regions. High construction costs of networks can be supported only by public utilities which may carry very long payback times. Most of the public utilities have been privatised within the last 20 years because of financial problems of the owners (cities, regional administrations) so they are no longer able to invest in these infrastructure. Obligations in this regard would be useless since they could not be met.

In the Czech Republic combined heat and power production is a priority, and has a very important role in some middle-sized and in all bigger cities. The potential to connect to district heating or CHP has to be assessed in some cases of higher energy demand. There is an existing program (OPPIK - private / OPZP - public - both from European funds) for extension of existing district heating, their renovation, using of waste heat from industry or agriculture.
In Germany combined heat and power (CHP) makes a relevant contribution to climate protection and resource conservation. The share of CHP in the total net electricity generation in Germany increased steadily. In 2003 it was about 13.4 percent and amounted to around 15.9 percent in 2011. The net electricity from cogeneration has increased during the period by approximately 20 percent and the total net electricity production by about 1 per cent. However the impact of the cogeneration law despite many improvements in the past has not achieved a substantial increase in electricity from cogeneration. (Federal Environmental Agency). More information can be found here: http://www.ace.or.jp/web/overseas/pdf/oversea_0050/COGEN_Europe_Fact_Sheet_on_Germany_April2014.pdf.

In France, no obligations have been set at a regional level because the French Regions don’t have the power to edict such rules. At a national level the “Grenelle 2 law” (2010) give to the cities the authority to oblige every new building created in the perimeter of a heat / cooling network to join it. In consequence, the situation depend on each city. The new law about energetic transition (adopted during the summer 2015) creates a lot of new objectives for these heating / cooling networks (multiplication by 5 in 2030,...) but we have to wait for the release of the application decrees to know the new obligations to be applied to the projects. The new law about energetic transition (adopted during the summer 2015) has created two new Schemes about heating / cooling networks: a national one (National strategic plan to develop renewable heat and cold - Plan stratégique national de développement de la chaleur et du froid renouvelables et de recuperation) and a local one for the cities which have such a network. These documents are complementary to the Call for Projects which are regularly launched by the Government in order to promote this kind of energy.

In the UK, there is not a specific obligation for district heating or cooling, but it is now generally recognised at national and local level that district heat networks have high potential to contribute to the carbon reduction legal obligations established in the Climate Change Act (2008). Market penetration of district heat networks is currently only 2% in the UK. Progress of the distribution of networks has been slow and it is difficult to measure the initiatives success, due to the lack of targets. Setting clear objectives within renewable or low carbon heat policies would vastly improve development and deployment. Since 2013, there has been support and funding for development of heat networks in England and Wales, with funding for heat mapping, feasibility studies and project development, through a specialised unit within national government, and 115 local authorities have received support for 180 projects to date. This support has yet to extend beyond this initial project development stage however.

Since 2011 the UK has run an adaptation of the Feed in Tariff concept for heating – the Renewable Heat Incentive. This provides an income stream for up to 20 years for eligible renewable heat installations. This can also be used to support group or community heating schemes – however the funding is on a similar basis to single units (based on the heating capacity of the installation) there is no additional support for the costs of networks etc.
60. What incentives are missing, that would help promote efficient district heating and cooling or meeting the goals of the EPBD?

The white certificates mechanism has been shown to be a good instrument to promote energy efficiency in Italy. Whoever carries out an important action to save energy receive a number of white certificates proportional to the energy saved. Certificates are sold to energy producer and distributer companies which have to develop energy saving actions depending on the energy distributed amount. In the UK an obligation on energy suppliers has supported significant levels of energy efficiency works to homes (the EEC, CERT, CESP and ECO programmes), although this has now slowed down almost to a standstill due to policy changes, with severe impacts on the energy efficiency industry. There is potential for this type of approach to be applied more systematically to the development of district heating and cooling.

EPBD should promote guarantee funds mechanism to facilitate private investments (ESCos) in district heating and cooling tanks to more favourable loans term.

Financial incentives have been enabled through ESI funds and Croatian Law on thermal energy market (OG 80/13, 14/14, 102/14, 95/15) but national programmes to promote efficient district heating and cooling are missing.

In France, those involved in this industry indicate that the following type of actions are currently missing:

- setting a minimum price for the heating / cooling produced
- the promotion of cogeneration instead of heating / cooling alone in order to permit the production of electricity

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?

Partly, through national programmes for integral renovation of different types of buildings (public, commercial, family houses and condominium residential buildings) the performance of heating and cooling systems will be improved but they do not necessarily ensure a decarbonised energy supply.

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?

Not at the moment, but it should do.
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:

The question refers only to the ‘information on the importance of energy efficiency’ – however it is assumed that this cannot be separated entirely from information and advice on how to improve energy efficiency, particularly as there is no subsequent question dealing with this?

1. the European Commission?

In principle, this is not a task of the Commission, however, the Commission should continue to fund dissemination activities, especially through H2020. They should also focus on dissemination on their own buildings.

It would be helpful to have a simple ‘call-back’ advisory service from EC experts: for example with question sent in by e-mail and a response within 7 days.

2. national authorities?

Member States should be encouraged to implement more effective and more frequent communication campaigns. Besides mobilizing and engaging consumers, awareness raising is still an issue. They should also focus on dissemination on their own buildings.

3. regional authorities?

The regional or local level (depending on the region and the sector) is the most important level for consumer information as they are close enough to citizens and have respective capacities and skills. A special role can be played by regional energy agencies, where these are well supported.

4. local authorities?

Very important for first, principle information as they are often also first building authority

This is probably the most important level for consumer information as they are close enough to citizens, and are generally also the level that deals with planning and building permits (construction and renovation). This is an important ‘trigger-point’ for providing specific advice on maximising the
energy efficiency of a new building or renovation, and to apply incentives to encourage building owners to achieve higher standards. It is also an appropriate level to ensure that designers and builders have access to information, products and training in their application to enable them to achieve these standards.

In general this level of provision appears to be missing, with a few exceptions – this is a serious omission. In some areas, services that previously existed have been cut due to loss of public sector funding.

5. local companies?

Some companies provide information about energy efficiency, but it is often framed in such a way as to promote only their own products, so not credible. More effort could be made to provide commercially independent sources of information on products that can be referred to to help consumers – for example if you are a local builder and people ask about how environmentally friendly a product is.

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

No, not sufficiently. Consumer-friendly smart meters are being referenced and recommended in other Directives such as the EED/27.

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?

At MS level, some data collection and data sharing initiatives have taken place over the last few years such as the Effinergie BBC observatory:
http://www.observatoirebbc.org/site/ObservatoireBBC/Indicateurs2011
At EU level, Build Up: The European Portal For Energy Efficiency In Buildings provides detailed information and data.

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?

67. Has building data harmonisation been achieved?

Not at all

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

There may be a case for a database, and there is certainly a need for a harmonised qualification system for experts. This will ensure quality across Europe and help to build the reputation of EPCs.
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?

In general work needs to be done to make this more consistent and ensure that those aspects of energy efficiency and renewable energy that relate to each specialism, together with a better understanding of the need for integrated design and how this affects overall building energy performance, are a core part of all construction training – not an optional extra.

A qualification system for professionals has been initiated by ADEME (French energy management agency) and implemented in coordination with professionals’ associations: RGE « Reconnu Garant de l’Environnement ». Renovation work needs to be performed by RGE certified professionals in order to benefit from grants and incentives.
In the UK a single organisation certifies renewable energy installers and installations, but on energy efficiency the situation is more confused: the Green Deal framework was developed as a market mechanism which construction and energy advisory businesses would have to invest a considerable amount of money to join, with private providers of accreditation, certification and training programmes. In practice this excluded many microenterprises with good basic skills while encouraging aggressive marketing tactics from those bigger commercial interests with money to invest. Many companies have now disappeared and jobs been lost – and the market penetration of energy efficiency skills into the mainstream building trades has been sadly limited. One lesson is to take care to minimise the on-costs of accreditation and certification.

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

Yes, this could offer useful simplification. For example in the Croatian situation the Eurocode methodology would replace 6 algorithms and simplify the whole EPC procedure. Furthermore, the same methodology in each MS will simplify the whole process.

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

No. Reference to the Life Cycle Assessment is not sufficiently tackled in the existing EPBD. Waste recycling could be further developed in the new version, for instance by setting targets at EU level for construction waste recycling, domestic waste and water.
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?

Yes, minimum requirements for technical building systems would be very useful and contribute to buildings' energy performance (partly this was covered in the new label for heating systems). It is not enough to consider energy performance of whole building - each product used in the building should be addressed. U-values and COPs should be defined for each aspect of a building and the technical equipment installed.

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?

Yes, building division by categories is missing. Division should be followed with exact definition of each building category.

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?  yes
b. that owners/occupiers are properly informed about the potential improvements to the efficiency of their systems?  yes
c. that replacement/upgrading of the technical building systems is triggered?  yes
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?

Yes, at least in some cases: for example this is the case in Upper Austria (done in parallel to other environmental and safety checks). But inspection without enforcement is ineffective – and this is typically the case.

For example, inspection of heating system (Article 14 of EPBD) is incorporated in Croatian national legislation but enforcement methods are missing. Paragraph 3 of Article 14 said (heating system with more than 100 kW boilers shall be inspected at least every two years) will be impossible to meet without enforcement methods.

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?

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

Not entirely, EPBD should give much more attention to mechanisms for enforcement, monitoring, verification and control of achieved results.

More generally speaking, EU measures for energy efficiency in buildings can be addressed in different EU Directives (Eco-design, EED, EPBD, Service, Electricity..). It is important to keep a global vision and be able to develop coherent and complementary measures. For that matter, the current consultation should probably be extended to EU energy efficiency measures in buildings and not only cover the EPBD measures.

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

No this needs more work.

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

no
L. Further comments (optional) (maximum 1000 characters; count: 0)

The new EBRD should be harmonised with EED as much as possible – overlapping should be eliminated completely

Generally, EBRD is too generalised – obligations should be expressed in clearer, more precise and measurable ways

The objectives are addressed pretty clearly, but precise recommendations on how to reach them are missing.

The EPBD should give much more attention to straighten the mechanisms for enforcement, verification and control of achieved results in MS