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**COMMISSION STAFF WORKING DOCUMENT**

*Accompanying document to the*

**PROPOSAL FOR A RECAST OF THE  
ENERGY PERFORMANCE OF BUILDINGS DIRECTIVE (2002/91/EC)**

**SUMMARY OF THE IMPACT ASSESSMENT**

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## SUMMARY OF THE IMPACT ASSESSMENT

### *EU buildings sector and EU policy objectives*

Energy use in residential and commercial buildings represents a lions share, about 40%, of the EU's total final energy consumption and CO<sub>2</sub> emissions. Activities related to buildings are a considerable part of the EU economy, respectively about 9% of EU GDP and 7-8% of EU employment. The potential for cost-effective energy savings is substantial, which would lead to significant economic, social and environmental benefits. Therefore, the EU buildings sector can play a key role in achieving EU growth, energy and climate policy objectives, while contributing to an improved level of comfort and lower energy bills for citizens. Energy efficiency of buildings is also an important part of broader initiatives on achieving EU energy and climate change objectives, as outlined in the Commission Communication *Energy policy for Europe*<sup>1</sup>.

### *EU legislative action*

From the existing EU core instruments the Energy Performance of Buildings Directive (EPBD) is the main tool that provides for a holistic approach towards efficient energy use in the buildings sector. It covers the energy needs for space and water heating, cooling, ventilation and lighting.

The Directive combines in a legal text different regulatory (i.e. energy performance requirements) and information-based instruments (i.e. certificates and inspections):

- Member States have to set up minimum energy performance requirements for new buildings and for large existing ones that undergo major renovation.
- Member States have to introduce a scheme for energy performance certificates that provides information on the energy quality of a building and on what can be improved. They are valid for 10 years and should be presented to potential buyers/tenants.
- Member States shall establish a system for regular inspection of medium- and large-size heating and air-conditioning systems so that their energy performance is monitored and optimized. As an alternative, promotion campaigns can be undertaken by Member States if they prove that they are equal in effect to inspections of heating systems.

The Directive does not fix concrete EU-wide levels but requires Member States to lay down the mechanisms for implementing its provisions. They also have to develop their own methodology or use existing European standards for calculating the energy performance of buildings and ensure that there are enough qualified experts to carry out the certifications and inspections.

The main contribution of the EPBD, so far, has been in bringing the subject of the energy efficiency of buildings onto political agendas, building codes and to the attention of citizens. The implementation has been a challenge for many Member States but at present 22 of them declare full transposition (under evaluation). In terms of implementation costs, several

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<sup>1</sup> COM(2007) 1

Member States reported moderate costs but significant improvements in terms of energy savings in the buildings sector which have been stimulated by the Directive.

### *Need for further activities?*

Despite the actions already undertaken within the buildings sector a large cost-efficient energy saving potential is still unutilized. This is due to the complexity of the sector and the existence of market failures (e.g. incomplete internalization of externalities in energy prices, tenant-landlord problems, imperfect information, and low uptake of new and innovative technologies) but also to limitations of the wording of the current EPBD and low level of ambition in its implementation.

The possible alternative ways of tackling the challenges are:

- repealing the EPBD and replacing it by ‘soft’ policy instruments. This would entail proactive and ambitious actions and very high costs to all Member States.
- business as usual or ‘do nothing more’ than the existing measures, including continued and improved implementation. In this case the potential that is outside of the EPBD but also its full potential would not be used.
- EU action by complementary and improved instruments of the current EPBD.

From the three policy alternatives the largest contribution towards meeting the EU policy goals can be achieved through revision of the EPBD. This can be done with modifications of the current provisions that would keep the principles and their essence but would significantly improve their efficiency. This would ease the transposition and understanding of the modifications proposed. At the same time a larger share of potential and related benefits would be tapped. The EPBD's continued implementation is of crucial importance.

However, the solution is an integrated mix of policy instruments and thus other non-regulatory measures, although not sufficient on their own, are necessary to complement the EPBD's implementation. The efforts in providing more financial and fiscal incentives, information, training of experts, and agreeing on voluntary actions should be strengthened. The 'soft law' instruments already contained in the current EPBD should be further developed.

### *EU's right to undertake these activities*

Climate change, security of energy supply and environmental protection are challenges that require coordinated EU-level action. Energy efficiency provides part of the solution to these problems and the instruments in this area that have already been adopted at EU level reflect this need for Community action.

The buildings sector is responsible for about half of the CO<sub>2</sub> emissions not covered by the Emission Trading Scheme and has significant CO<sub>2</sub> reduction potential at negative or low abatement costs. The specifics of the buildings sector limit the rate of energy efficiency gains and the construction products, appliances and services related to buildings are an important part of the EU internal market. In addition, with the increasing mobility of people and number of businesses with operations across the EU, similar measures would decrease the administrative burden for them.

Therefore, the energy efficiency objectives could not be achieved to a sufficient degree by Member States alone and action at Community level is needed to facilitate and support the uptake of activities at national level. The main elements of the current EPBD have already been discussed from the point of subsidiarity and proportionality principles when the Directive was adopted in 2002 and also tested in practice demonstrating the appropriateness of the approach.

### ***What options for a better EPBD?***

The Impact Assessment concluded that several aspects of the current EPBD could be improved. These in general refer, firstly, to the revision of some ambiguous wording and, secondly, to each of the main pillars of the current Directive. Within each pillar several options were analysed in view of their economic, social and environmental impacts and for their implications on subsidiarity and proportionality.

A large source of data and information sources was used for the analysis: i.e. PRIMES model baseline data and projections of DG TREN, BEAM model of Ecofys, more than 35 studies, the knowledge from the current EPBD's implementation, and inputs from Member States and stakeholders.

The options discussed include a mix of policy instruments and also include non-regulatory alternatives, like information and other soft measures. Five main areas of action were identified:

### **Clarification and simplification**

This is essential for proper implementation of the EPBD. There are two key actions in this area: (i) to clarify and simplify the text itself, and (ii) to choose the proper legal format (recast vs. amendment).

### **A: 1000 m<sup>2</sup> threshold for existing buildings when they undergo major renovation**

The current EPBD provisions, that only existing buildings above 1000m<sup>2</sup> should meet certain energy performance requirements when undergoing major renovation (either the investment is above 25% of the whole building value, excluding the land, or the renovation concerns more 25% of the building shell), means that only about 29% of the EU buildings sector falls within the scope of this provision. Clearly, the best moment for the introduction of energy efficiency measures is when the building undergoes major renovation (approx. every 25-40 years). In this way the additional investment needs are not high and due to energy savings they are repaid within the lifetime of the measures.

Three options on possible EPBD's extension were analysed:

*Option A1: Lowering the threshold to 500 m<sup>2</sup>*

*Option A2: Lowering the threshold to 200 m<sup>2</sup>*

*Option A3: Abolishing the 1000 m<sup>2</sup>*

For each option Member States would still be responsible for setting up the individual energy efficiency requirements and the "major renovation" definition is to be kept.

The analysis indicated that option A3 is the most beneficial one.

## **B: Energy performance certificates**

The certificates, which are already mandatory under the current EPBD, can be a powerful tool to create a demand-driven market for energy efficient buildings, as they allow economic agents to estimate costs in relation to energy consumption and efficiency. However, in practice some certificates issued are not of satisfactory quality, or they are not systematically made available during property transactions. These significantly restrict the real impact of the certificates.

*Option B1: Quality and compliance requirements for certificates.* It is proposed that a requirement for random sampling checks of the certificate's quality and the compliance with the building energy codes is carried out by public authorities or accredited institutions. This would ensure that the information in the certificates is of good quality and reliable. It is expected that this would trigger an increase in the renovation rate, and thus higher energy savings.

*Option B2: Requiring that the recommended cost-effective measures of the certificate are realized within a certain time period.* Such a requirement would lead to high savings but also to a significant financial burden for EU citizens and businesses as the measures might then not be combined with a 'major renovation' and therefore it cannot be justified at EU-level.

*Option B3: Making certificates a mandatory part of property advertisement and/or property transactions documents.* This would entail that information on the energy performance of a building is included in publicity for property transactions (similar to the display of CO<sub>2</sub> emission of new cars) and that with each transaction the certificate has to be presented.

*Option B4: Requiring the linking of the certificates with other support or discouragement mechanisms.* It is suggested that the energy efficiency improvements of a building which are achieved as a result of a financial incentive, are demonstrated or justified with the certificate. This would help property owners/tenants in making informed decisions about the cost-effectiveness of their investments and there would be a proof that the funding provided really lead to energy savings. However, such a requirement may not be in line with the subsidiarity principle and may require a change in the legal basis of the Directive.

The analysis indicated that options B1 and B3 could significantly contribute to the realization of the EU policy objectives in question. Option B4 could also be further developed outside the scope of the EPBD.

## **C: Inspection of heating and air-conditioning systems**

These systems have a very high energy saving potential, up to 40-60% of their total energy use. At present, EPBD requires regular inspection above a certain threshold but it is very unclear as to what the outcomes are. Also, the quality of inspections is not always satisfactory. As a result, it is estimated that the current EPBD can bring only 10% energy savings in this area by 2020. There is significant room for further savings.

*Option C1: Requiring an 'inspection report' for heating and air-conditioning systems.* It is proposed that an 'inspection report' that is to include an energy efficiency rating of the heating/cooling system and recommendations for its improvement, is drawn up by an independent expert and is given to the buildings' owner. The report would be an important

upgrading of the existing requirements and would help consumers in identifying important possibilities for cost-effective energy savings.

*Option C2: Introducing compliance requirements.* It is proposed that random sampling checks of inspection reports of different levels of detail are introduced. This could ensure that the inspections are carried out regularly and are of satisfactory quality.

The analysis indicated that taken together, options C1 and C2 are the most beneficial.

#### **D: Energy performance requirements**

At present, Member States determine individual energy performance requirements and their levels of ambition. These vary broadly across the EU, even within similar climatic zones, and for many Member States cost-optimal levels are not yet achieved. Cross-border comparisons are difficult due to the diverse calculation approaches and parameters used. Therefore, further stimulation at Community level could realize additional energy savings.

*Option D1: Specifying EU-wide energy performance requirements.* The proposal entails that specific energy performance requirements levels are proposed. This would allow for a large part of the energy savings potential to be reaped, would ease cross-border operating businesses, and would support the internal market of related construction materials and appliances. However, determining these levels would be a very demanding and highly disputed task and would entail very high level of EU regulation.

*Option D2: Introducing a benchmarking mechanism.* The proposal is to include a benchmarking mechanism in the EPBD principal methodology to calculate the cost-optimal level of energy performance requirements for buildings. The current provisions of the EPBD would not be changed and Member States would still have to set up their individual levels. A benchmarking mechanism would clearly indicate whether Member States are below the optimal levels, i.e. money from energy savings are lost every time Regulations are applied. This is a "soft law" instrument but it could create significant 'peer-pressure' that would ultimately move all Member States towards optimal and therefore considerably more ambitious levels.

*Option D3: Requiring an evolving improvement scheme for the buildings stock focussing on the worst performing buildings.* It is proposed that Member States should prepare Action Plans on how to increase the refurbishment rate and the energy efficiency of the worst performing buildings. Such an approach would require high administrative costs for Member States and would also be a considerable burden for the owners of the poor performing buildings.

*Option D4: Setting up EU-wide low or zero energy/carbon buildings/passive house requirements.* Introducing such requirement for newly constructed buildings from a certain date onwards would lead to very well performing new buildings and foster innovation. However, it would increase houses prices and the additional investments may not be fully paid back by energy cost savings, posing a significant burden to citizens and national budgets. Therefore, a softer approach could be taken which is to include the obligation on the develop 'roadmaps' in which Member States would show their commitment towards achieving low energy/emission houses.

The analysis indicates that option D2 could significantly contribute towards achieving cost-optimal levels. Option D3 could be taken on board by Member States when starting national activities, in particular related to the National Energy Efficiency Action Plans. Option D4 could be considered in a less prescribed form, i.e. by national roadmaps.

The role of the public sector as a leading example is proposed to be increased by stricter obligations on displaying the certificate and shorter deadlines than for the other sectors to fulfil the revised provisions.

### *Conclusions*

**Significant positive impacts are possible if the Directive is revised. These would make use of a large part of the remaining potential in the buildings sector and would also contribute to the realization of the full potential of the current EPBD.** This would also create a simplified and improved framework for energy savings.

The minimum total impact of the most beneficial options for which quantification was possible, is:

- 60 – 80 Mtoe/year energy savings by 2020, i.e. a reduction of 5-6% of the EU final energy consumption in 2020;
- 160 to 210 Mt/year CO<sub>2</sub> savings by 2020, i.e. 4-5% of EU total CO<sub>2</sub> emissions in 2020;
- 280,000 (to 450,000) potential new jobs by 2020, mainly in the construction sector, energy certifiers and auditors and inspectors of heating and air-conditioning systems.

The investment requirements and the administrative costs of the measures were analysed and are relatively low compared to the benefits and the returns. For example, on an EU scale abolishing the 1000 m<sup>2</sup> threshold would lead to €8 billion/year additional capital costs but would trigger €25 billion/year energy cost savings by 2020 and therefore create negative CO<sub>2</sub> abatement costs.

The investment needs differ substantially across Europe depending on the social and economic conditions, on the initial state of the property and on the type of renovations to be undertaken. They are not equally distributed amongst EU citizens, i.e. there will be additional costs for those who make major renovations of their buildings or are engaged in property transaction. However, with high oil prices these initial investments will have attractive returns.

The overall benefits for society in terms of reduction of energy consumption and thus reduced CO<sub>2</sub> emissions and energy import dependency, job creation, especially at local and regional level, positive health and labour productivity far exceed the costs of the measures analysed.