

# The Energy Performance of Buildings Directive (2010/31/EU)

**Buildings consume more than 40 % of Europe’s energy use. Significant potential cost-effective energy savings and CO<sub>2</sub> emissions reductions exist in new and existing buildings. The Directive on Energy Performance in Buildings (EPBD) is the main legislative instrument affecting energy use and efficiency in the EU building sector. It tackles both new construction and existing building stock in all sectors. The recast, approved 19 May 2010, significantly increases energy efficiency ambition levels in EU buildings.**



The original 2002 Directive clearly had shortcomings and needed strengthening. The European Commission in its 2006 Action Plan stated that further strengthening of the buildings directive would be one of its priorities. Following a lengthy consultation period, in November 2008, the Commission proposed a recast of the Directive. The Commission Communication on the proposed recast stated that buildings have significant untapped potential for cost effective energy savings “which, if realized, would mean that in 2020 the EU will consume 11 % less final energy.”

Throughout 2009, the proposal went through the approval process of the European Parliament and Council. A political agreement was achieved in November 2009 and finally approved in May 2010. The recast proposal confirms the importance of:

- Effective implementation at the Member State level;
- Community-wide co-operation; and,
- Strong, long-term commitment and the role of the Commission in supporting effective implementation.

The recast Directive will help reduce EU buildings energy consumption in the long run. A requirement that all new buildings must be net zero energy consumers by 2020 has received the most attention. The recast further sets a framework for:

- Creating an integrated methodology for measuring energy performance;
- Establishing minimum performance standards for new and certain existing buildings; and,
- Conducting regular inspections of critical buildings system.

The recast improves the original Directive, expanding its scope and clarifying definitions. The Directive is strong regarding new buildings. However, in Europe the main



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potential – and the main challenge – lies in existing buildings. The ecee had hoped that the recast would set a higher level of ambition for existing buildings, but it did not do so. Nevertheless, the stable policy framework serves as a foundation for future initiatives. Now the priorities are: good implementation and ensuring Member States are fully committed to meeting the objectives of the recast Directive.



## A short description of the original 2002 Buildings Directive (Directive 2002/91/EC)

The original directive promotes the energy performance of buildings in Member States through:

- A framework for an integrated methodology for measuring energy performance;
- Minimum energy performance standards for new buildings and certain renovated buildings, with regular updating of these standards;
- Energy certification and advice for new and existing buildings; and,
- Inspection and assessment of boilers and heating/cooling systems.

This was a complex directive to implement because it is difficult to have a common approach at the EU level. Buildings differ across Europe because their design and construction depends on culture, climate, materials available, differing legal frameworks and economic development. Difficulties were encountered during the preliminary phase between 2003 and 2006. The recast should help overcome the issues that prevented full implementation.

The European Commission launched the Concerted Action EPBD to support Member States' implementation, by promoting experts' dialogue and exchanges of best practices.<sup>1</sup> Build Up is an initiative supported by the Intelligent Energy – Europe programme to provide information services for practitioners and consultants, energy agencies, interest groups and national policy makers.<sup>2</sup> Build Up replaces the EPBD Buildings Platform.

This Directive provides an integrated approach to different aspects of buildings energy use. Previously, only a few Member States were co-coordinating these. The Directive's largest potential impact will come from renovating existing buildings; the main tool for this is requiring that all buildings have an Energy Performance Certificate.

**“Around 80 % of the population live in urban areas. While new buildings add at most 1 % a year to the existing stock, the other 99 % of buildings are already built and produce 27 % of all carbon emissions. At least 80 % of the current housing stock will still be standing in 2050. Therefore, tackling its energy efficiency is vital to our future.”**

Anne Power, Sustainable Development Commission, UK

## Highlights of the 2010 Recast Directive (Directive 2010/31/EU)<sup>3</sup>

When the recast Directive was approved 19 May 2010, many of the features of the original Directive were strengthened and new requirements were introduced:

- As of 31 December 2020, new buildings in the EU must consume 'nearly zero' energy, which will be 'to a very large extent' from renewable sources.
- Public authorities that own or occupy a new building should set an example by building, buying or renting such a 'nearly zero energy building' by 31 December 2018.
- “Very low energy building” or “nearly zero energy building” means: “a building that has a very high energy performance, determined in accordance with Annex I [of the Directive]. The nearly zero or very low amount of energy required should to a very significant level be covered by energy from renewable source, including renewable energy produced on-site or nearby.”
- No specific target is set for the renovation of existing buildings. However, Member States shall follow the lead of the public sector by developing policies and adopting measures (such as energy targets) that will stimulate the transformation of refurbished buildings into very low energy buildings. The Member States shall inform the Commission thereof in their national plans.

### Energy Performance Certificates

The energy performance certificate, originally introduced in the 2002 EPBD Directive, has been plagued by poor implementation in most Member States.

The recast Directive is decisive in improving the implementation. Primarily, the EPC shall include:

- The energy performance of a building and reference values such as minimum energy performance requirements in order to make it possible for owners or tenants of the building or building unit to compare and assess its energy performance;
- Recommendations for the cost-optimal or cost-effective improvement of the energy performance of a building or building unit; and
- An indication as to where the owner or tenant can receive more detailed information, including as regards the cost-effectiveness of the recommendations made in the energy performance certificate.

The recast encourages public authorities to take into account the leading role that they should play in the field of energy performance of buildings, inter alia, by implementing the recommendations included in the energy performance certificate issued for buildings owned by them within its validity period.

Member States shall require that when buildings are offered for sale or for rent, the energy performance indicator of the EPC is to be stated in the advertisements in commercial media.

Finally, where a total useful floor area over 500 m<sup>2</sup> of a building for which an energy performance certificate has been issued is occupied by public authorities and frequently visited by the public, the energy performance certificate is to be displayed in a prominent place clearly visible to the public.

- The 1000 m<sup>2</sup> threshold for major renovation that was in the original Directive was deleted. Instead, it will take effect when the national regulations have been implemented and applied, probably at the beginning of 2014. So, with buildings under 1000 m<sup>2</sup> included as well, now almost all buildings are covered under the recast Directive.<sup>4</sup>
- Minimum requirements for components are introduced for all replacements and renovations. For major renovations, the holistic calculation methodology is the preferred method. As a complement or alternative, performance calculations based on component requirements are allowed.
- The Directive includes a harmonised calculation methodology to push up the minimum energy performance requirements in Member States towards a cost-optimal level. This method is noted in a definition and an annex. It will be refined via a comitology process. Member States will have to justify to the Commission any gap exceeding 15 % between current and cost optimal requirements.
- A more detailed and rigorous procedure for issuing energy performance certificates will be required in Member States.
- Control systems will be required by Member States to check the correctness of performance certification.
- Member States must introduce penalties for non-compliance. They shall lay down the rules on penalties that apply to infringements of the national provisions adopted pursuant to this Directive and they shall take all measures necessary to ensure that they are implemented. The penalties provided for must be effective, proportionate and dissuasive. Member States shall communicate those provisions to the Commission.

## ecee position

ecee welcomes the recast of the Directive. ecee is particularly pleased that the recast gives long-term policy signals to policymakers at all levels and to the stakeholders in the buildings chain. Manufacturers of energy-efficient products need advance notice to ensure they have enough capacity to produce the needed materials. Long-term signals also give sufficient time for appropriate training and capacity building.

During the transition period for the first EPBD, preparations for implementation were poorly done and many Member States asked for delays. As a result, many Member States presently are being served legal notices of non-compliance. The European Commission is in the final stage of starting court proceedings against 22 Member States for their non-implementation of the original EPBD. This level of non-compliance symbolises that improving energy efficiency in buildings is a low priority for too many Member States.

Important improvements in the recast Directive set minimum energy performance mandates, but the Directive does not include a financial support scheme for upgrading existing buildings. Nonetheless, the requirements include:

- Specific elements or components and technical systems;
- Setting requirements for nearly zero energy buildings;

### Nearly Zero-Energy Buildings

Article 9 of the Directive states that Member States shall ensure that:

- (a) by 31 December 2020, all new buildings are nearly zero-energy buildings; and
- (b) after 31 December 2018, new buildings occupied and owned by public authorities are nearly zero-energy buildings.

Article 2 defines a nearly zero energy building as, “a building that has a very high energy performance, as determined in accordance with Annex I. 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.”

### Major Renovations

Article 2 of the recast Directive defines major renovation as, “the renovation of a building where:

- (a) the total cost of the renovation relating to the building envelope or the technical building systems is higher than 25 % of the value of the building, excluding the value of the land upon which the building is situated; or,
- (b) more than 25 % of the surface of the building envelope undergoes renovation.”

Member States may choose to apply option (a) or (b).

Article 7 states that, “Member States shall take the necessary measures to ensure that when buildings undergo major renovation, the energy performance of the building or the renovated part thereof is upgraded in order to meet minimum energy performance requirements set in accordance with Article 4 [on setting minimum energy performance requirements] insofar as this is technically, functionally and economically feasible.”

### Tightening Compliance Requirements

Article 18 of the recast Directive calls for Independent Control Systems in place for energy performance certificates and reports on the inspection of heating and air-conditioning systems. There is an annex in the Directive providing guidance.

The annex stipulates that there must be “a random selection of at least a statistically significant percentage of all the energy performance certificates issued annually and subject those certificates to verification.” The annex outlines various verification options.

Article 27 states that, “Member States shall lay down the rules on penalties applicable to infringements of the national provisions adopted pursuant to this Directive and shall take all measures necessary to ensure that they are implemented. The penalties provided for must be effective, proportionate and dissuasive.”



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- Setting the above requirements at a “cost optimal” level;
- Encouraging major renovations; and,
- Improving the use of energy performance certificates.

Member States must transpose the recast into national legislation while they start the steps to implement the Directive. This will be a key transition period. Delays are not acceptable to eceee. The recast has many benefits – from energy security concerns through to climate change objectives – that must be met promptly.

eceee states its position in a broad context: a European policy for energy efficiency in buildings is more than a directive. The recast offers a strong legislative framework, but does not address all concerns. Three areas must still be addressed: existing buildings, new buildings and institutional issues.

## Existing buildings

Most of the potential for energy savings is in existing buildings so they provide the greatest opportunity and challenge. The recast did not provide targets for existing buildings nor did it provide new funding for renovation. More must be done now through policies at the Member State level. Normally, full renovations are undertaken every 30 to 40 years. While there are ‘nearly zero energy buildings’ for new construction in the recast, the aim should be to also have ‘nearly zero energy buildings’ for existing buildings, too. These ‘deep’ renovations are complex and expensive but if they are not undertaken, then potential savings will be ‘locked in’ for decades.

### eceee’s position on existing buildings:

- We need targets for renovating existing buildings in order to increase the number of renovations undertaken annually;
- More “deep” renovation should be done, consistent with the cost optimality methodology required under the recast Directive;
- We should lower barriers in the building community by targeting people involved in creating the key opportunities that lead to energy efficiency. Europe’s “movers and improvers” need: reliable information; improved industry capacity with less fragmentation; more financing support; inspection and enforcement; and, more effective use of instruments such as the Energy Performance Certificate;
- Better use and availability of financial instruments should be targeted towards deep renovations. This includes “unlocking” public funding to allow it to be better utilised for deep renovations; and,
- We must address some major challenges by: calculating cost-optimality; developing or revising related CEN standards;<sup>5</sup> and, conducting training, building capacity, and improving the quality of enforcement.

### Cost-optimality

The EPBD recast now requests that Member States shall ensure that minimum energy performance requirements for buildings are set “with a view to achieving cost-optimal levels”. The cost optimum level shall be calculated in accordance with a comparative methodology. The following text summarizes the provisions of the EPBD regarding this approach.

#### Methodology to calculate cost-optimal levels

The Commission needs to establish by June 2011 a comparative methodology framework for calculating cost-optimal levels of minimum energy performance requirements for buildings and building elements (e.g. the roof of a building). The comparative methodology framework shall require Member States to:

- Define reference buildings (for all building types, new and existing) that are characterised by and representative for their functionality and climate conditions.

- Define energy efficiency measures to be assessed for the reference buildings. These may be measures for buildings as a whole, for building elements, or for a combination of building elements.
- Assess the final and primary energy need of the reference buildings and the reference buildings with the defined energy efficiency measures applied. Related calculations should be based on relevant European standards.
- Calculate the costs (i.e. the net present value) of the energy efficiency measures during the expected economic life cycle applied to the reference buildings taking into account investment costs, maintenance and operating costs, earnings from energy produced and disposal costs.



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### New buildings

The target dates for introducing nearly zero energy buildings for the public sector are the end of 2018 and the rest by the end of 2020. Considering everything that needs to be done, that is a short time. The entire buildings industry needs to mobilise quickly to ensure that architects, designers, developers, builders and all other related tradespersons are properly prepared. Member States must develop detailed roadmaps for full roll-out in 2018 and 2020 in order to keep track of all the elements that are needed to be in place to meet the target dates.

#### ecee's position on new buildings:

- Ensure there is no slippage in the target dates set for nearly zero energy buildings;
- Address some major challenges on: calculating cost-optimality, developing or revising related CEN standards, training, capacity, quality of enforcement;
- Give priority to new construction between now and 2018 and 2020 through regular improvements and enforcement of building codes; and,
- Create national roadmaps so that all stakeholders know what needs to be done (and when) to meet the 2018 and 2020 target dates.

### Institutional issues

EU institutions together with ministries and agencies in Member States are vital for the success of the implementation of the recast EPBD. ecee has some concerns about these entities fulfilling their roles. Firstly, many Member States were less than enthusiastic about the recast proposal and particularly about the European Parliament amendments. Some Member States were quite negative through-

out the process. Secondly, 22 Member States are contravening the 2002 EPBD. Going beyond the contravention stage to having a more positive attitude to the EPBD and the recast is a great challenge. Without resolve, they will do the minimum required and may not do it very well. ecee will work with all stakeholders to develop a more positive, long-term approach. ecee will take an active role in policy formulation and monitor progress of implementation.

#### ecee's position on institutional issues:

- Ensure effective monitoring and evaluation of steps leading to full implementation of recast;
- Have independent, third-party monitoring, particularly for implementation;
- Encourage the energy efficiency and climate change communities to add more pressure to ensure good implementation;
- Support the excellent initiatives, BUILD UP and Concerted Actions.
- Provide extra capacity-building support to new Member States and others that struggle with implementation;
- Ensure that the European Parliament plays a key role in monitoring implementation so that it can determine what new policy initiatives could have greater impact;
- Encourage the Commission to provide the necessary tools and support to Member States to improve implementation. For example, Intelligent Energy Europe objectives (for funding non-technical projects) should be fully in line with the recast objectives; and,
- Ensure that Member States are fully engaged in the policy priorities, including providing adequate resources for effective implementation.

## ecee policy recommendations

Government at all levels should lead by example in deploying and, where appropriate, demonstrating new building designs, construction and technologies in the building stock for which they have direct responsibility. They should ensure that there are effective enforcement systems in place and assess regularly whether enforcement is effective.

ecee has developed policy recommendations for the Commission, the European Parliament and the Member States.

### ecee wants the European Commission to:

- Amend the EU Structural Fund rules so that all cost effective energy efficiency measures must be carried out in any building that receives support for the installation of renewable energy sources from this fund.
- Include effective measures in the EU Energy Efficiency Action Plan to increase the rate of deep renovation.
- Undertake a regular review of the expected impact of the Directive. This will lead to a more complete understanding of expected energy savings and carbon emissions reductions. It will help assess when new policy initiatives may be necessary to improve overall impact.
- Ensure that cost-optimality calculations include integrating the costs of major co-benefits and that they take a societal perspective and not just a private perspective.
- Review Member States' buildings strategies to assess the complementary measures (e.g. financial incentives) able to improve the overall effectiveness of the EPBD, including studying good practice. This should help Member States prepare for the National Energy Efficiency Action Plans (NEEAPs) that are required under the Energy Services Directive.

### The European Council for an Energy Efficient Economy (ecee)

is a non-profit, membership-based European NGO. The goal of ecee is to stimulate energy efficiency through information exchange and co-operation. To facilitate this, ecee provides an information service through its website and electronic newsletter, arranges workshops and conferences, and takes active part in the European policymaking process.

ecee holds a Summer Study five days every odd year in the early summer. It is Europe's primary event for cross-cutting discussions on energy efficiency. The Summer Study attracts more than 350 participants from a wide range of backgrounds.

ecee offers governments, industry, research institutes and citizen organisations a unique resource of evidence-based knowledge and access to reliable information.

ecee offers membership for both individuals and organisations.

Visit our web site [www.ecee.org](http://www.ecee.org)

### ecee wants the European Parliament to:

- Enhance and maintain continuous oversight to the implementation and effectiveness of the EPBD and its recast; and,
- Request regular updates on the overall effectiveness and impact of the EPBD.

### ecee wants Member States at a national level to:

- Provide incentives or rewards for new buildings or renovations that exceed the national or regional building standards;
- Ensure that the EPBD particularly targets existing buildings;
- Ensure that there are effective enforcement systems in place.
- Assess regularly and independently whether enforcement is effective;
- Develop a monitoring system based on the information in the building Energy Performance Certificate;
- Adopt and promote a set of complementary measures to ensure the effectiveness of Energy Performance Certificates by: information and training campaigns targeted at all market agents in the building sector (property owners, architects and designers, building management companies, building development companies, potential auditors, real estate, house owners and consumers);
- Adopt policy instruments to see that the energy efficiency recommendations in the certificate are implemented;
- Adopt a voluntary label for low energy buildings. This must be stronger than the minimum energy performance requirements, to create a market for these buildings; and,
- Implement demonstration projects for net zero energy requirements or net zero carbon buildings, and lead by example on the refurbishment of existing buildings.

### Sources and notes

1. **Concerted Action for EPBD is a forum of national authorities from 29 countries, focusing on finding common approaches to the most effective implementation of this EU legislation.** See: <http://www.epbd-ca.org>
2. See: <http://www.buildup.eu/>
3. See: <http://www.ecee.org/buildings/docs/>
4. **This is up from about 30 % of buildings covered in the previous directive.**
5. **The European Committee for Standardisation (see <http://www.cen.eu>). There are 31 CEN standards that relate to the EPBD.**

#### Further online resources:

ecee buildings pages: <http://www.ecee.org/buildings/>

BPIE – Buildings Performance Institute Europe:  
<http://www.bpie.eu/>