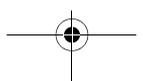
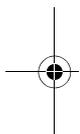
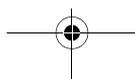
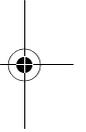
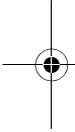




THE ENERGY PERFORMANCE OF BUILDINGS: PROMISES STILL UNFULFILLED





EGMONT PAPER 78

**THE ENERGY PERFORMANCE
OF BUILDINGS:
PROMISES STILL UNFULFILLED**

Tania ZGAJEWSKI


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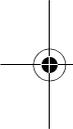
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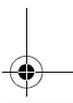
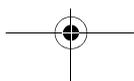
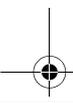


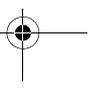
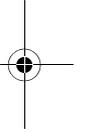
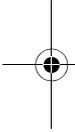
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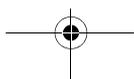
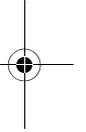
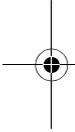
EXECUTIVE SUMMARY

All observers agree that energy efficiency must be the cornerstone of any serious EU energy strategy. In this general context, the EU building sector is critical. It represents about 40% of EU final energy consumption (residential houses, public/private offices, commercial buildings, etc.) and approximately 36% of EU CO² emissions. This is massive.

The EU has certainly not been inactive in this field. The Energy Performance in Buildings Directive 2002/91/EC (EPBD) was the first and the main instrument to address the problem of the energy performance of buildings. It has established numerous principles: a reliable methodology which enables the calculation and rating of the energy performance of buildings; minimum energy performance standards for new buildings and existing buildings under major renovation; energy performance certificates; regular inspection of heating and air-conditioning systems; and, finally, quality standards for inspections and energy performance certificates. They were strengthened in 2010 by the recast Directive 2010/31/EU. This directive also introduces a decisive concept for the development of the building sector: 'nearly zero-energy buildings'.

In 2012, the new Energy Efficiency Directive 2012/27/EU dealt with other aspects. In the building sector, three of them are particularly important. They concern: (1) the establishment of long-term strategies for mobilizing investment in the renovation of the national building stocks; (2) the introduction of energy saving schemes for 'designated' energy companies with a view to reducing consumption among 'final consumers' by 1.5% annually; and (3), as an option, the setting up of an Energy Efficiency National Fund to support energy efficiency initiatives. This paper also briefly examines the different instruments put in place to disseminate information and consultation, and the EU funding for energy efficiency in buildings.

Results, however, have remained limited until now. The improvement of the energy performance of buildings and the rhythm of renovation remain extremely weak. Member States' unwillingness to timely and properly transpose and implement the Directives continues despite the high degree of flexibility permitted. The decentralized approach chosen for some specific aspects and the differentiation in the application of EPBD standards between Member States do not appear optimal either. Adequate financial schemes remain rare. The permanent deficit of qualified and trained personnel and the inertia of public authorities to make the public understand the stakes in this domain remain problematic. Hence the need to take new initiatives to reap the benefits that the building sector is meant to bring.



INTRODUCTION

The search for energy efficiency will have to be the cornerstone of any serious EU energy strategy.¹ In this general context, the EU building sector will be critical. It is responsible for about 40% of EU final energy consumption (residential houses, public/private offices, commercial buildings, etc.) and approximately 36% of EU CO² emissions. This is massive. Furthermore, these figures do not seem to have changed for years.² Such inertia is quite disturbing given that it has long been officially recognized that ‘the greatest energy saving potential lies in buildings.’³ This situation is especially worrying considering the major role played by buildings’ energy in the 2050 energy roadmap of the EU. The roadmap aims to bring about drastic greenhouse gas emission reductions compared to 1990 in the building sector of 37-53% by 2030 and 88-91% by 2050.⁴

For the EU energy strategy, the building sector is thus pivotal to achieving three objectives: 1) reduction of greenhouse gas emissions; 2) energy savings; and 3) security of supply by influencing energy demand. To reach these objectives, the EU has adopted in 2002 a key directive. However, since then, Europe’s existing refurbishment rates are only running at around 1% a year, compared to a theoretical objective of 3%.⁵ It has become of the utmost importance to change this stalemate. This is still emphasized by the Commission’s proposals about the energy union, which has singled out this domain for emphasis. ‘Buildings have huge potential for energy efficiency gains. Retrofitting existing buildings to make them energy efficient and making full use of sustainable space heating and cooling will reduce the EU’s energy import bills, reinforce energy security and cut energy costs for households and businesses.’⁶

¹ See T. Zgajewski, *Energy Efficiency: The ever neglected priority of the European Energy Strategy*, Egmont Papers No 66, Academia Press, June 2014.

² These percentages have been found on the following European Commission web site: http://ec.europa.eu/research/industrial_technologies/eeb-challenges-ahead_en.html and in a Commission Report entitled *Financial support for energy efficiency in buildings* – COM (2013) 225, p. 4 as well as in a progress report on nearly zero-energy buildings – COM(2013) 483 final/2, p. 4. These percentages do not seem to have changed for a few years now – see, for instance, the previous COM (2008) 780 final/2, p. 2 or SEC(2011) 1093.

³ Commission communication on the 2011 energy efficiency plan – COM (2011) 109/2, p. 3, as well as European Commission Report entitled *Financial support for energy efficiency in buildings* – COM (2013) 225, p. 4.

⁴ Commission Communication entitled *A roadmap for moving to a competitive low carbon economy in 2050* – COM (2011) 112/2, p. 6.

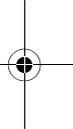
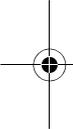
⁵ See ‘Van Rompuy flags two million buildings efficiency jobs by 2020’, *Euractiv*, published 9 October 2013 and updated on 4 November 2013. See also Special Task Force (Member States, Commission, EIB) on investment in the EU (2014), *Final Task Force Report*, p. 43, http://ec.europa.eu/priorities/jobs-growth-investment/plan/docs/special-task-force-report-on-investment-in-the-eu_en.pdf. This Task Force was set up in September 2014 at the request of EU Economic and Finance Ministers and was mandated to identify concrete actions to boost investment, including a pipeline of potentially viable projects of European relevance to be realized in the short- and medium-term.

⁶ COM (2015) 80, p. 20.

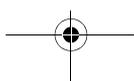


To find an explanation for the current situation, the present paper examines the provisions of the 2002 directive (§ 1), its main changes in 2010 (§ 2), as well as the 2012 Energy Efficiency Directive which contains additional provisions concerning energy efficient buildings (§ 3). It continues with the other initiatives undertaken to disseminate information and consultation (§ 4) and the EU funding for energy efficiency in buildings (§ 5). The paper does not cover building products (governed by the ecodesign and energy labelling Directives).

Tania Zgajewski⁷



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§ 1. THE 2002 DIRECTIVE ON ENERGY PERFORMANCE OF BUILDINGS

In its conclusions of 30 May 2000 and 5 December 2000, the Council endorsed the Commission's action plan on energy efficiency and requested measures in the building sector. This gave birth to **Directive 2002/91/EC**⁸ on the energy performance of buildings (EPBD), considered to be the main instrument affecting energy use and efficiency in the building sector. To support and facilitate its implementation by Member States, the European Commission gave mandate 343 (M343) to the European Committee for Standardization (CEN) to produce a first generation of EPBD standards for the assessment of the energy performance of buildings.⁹

The EPBD defined the energy performance of buildings as: 'the amount of energy actually consumed or estimated to meet the different needs associated with a standardized use of the building, which may include, *inter alia*, heating, hot water heating, cooling, ventilation and lighting.'¹⁰ It attempted to establish an integrated approach towards more efficient buildings and concerned the residential sector (households) and the tertiary sector (commercial offices, public buildings, etc.).

Under the EPBD, Member States were required to fulfil five main obligations.

Firstly, a reliable **methodology** that enables *the calculation and rating of the energy performance of buildings* has to be adopted and applied.¹¹ This methodology is based on a general framework provided in the Annex of the directive, and contains a list of aspects to be taken into consideration in the calculation and classification of buildings. Moreover, the energy performance of a building may include a CO² emission indicator. The methodology may be set at national or regional level.

Secondly, **minimum energy performance standards** for all new buildings and existing buildings of more than 1,000 m² under major renovation have to be set.¹² They have to be calculated on the basis of the above-mentioned methodology and have to be reviewed at regular intervals (not exceeding five years). If necessary, they must be updated to reflect technical progress. When setting such standards, it is permitted to

⁸ Directive 2002/91/EC of 16 December 2002 on the energy performance of buildings (OJEC L 1/65, 04.01.2003) as amended by Regulation (EC) No 1137/2008 (OJEU L 311/1, 21.11. 2008).

⁹ This first generation of EPBD standards were published in the years 2007-2008. They can be used as a reference and most are employed in many Member States 'in a practical way'. This means that the application of the EPBD standards differs very much from country to country. To know more on this first set of standards, see J. Hogeling and D. van Dijk, *More information on the set of CEN standards for the EPBD*, p. 60, EPBD Buildings Platform, 10.03.2008 file:///C:/Users/FD/Downloads/P060_EN_EPBD_CEN_March2008_p3031.pdf.

¹⁰ See Art. 2(2) of Directive 2002/91/EC.

¹¹ Art. 3 of Directive 2002/91/EC.

¹² Art. 4 to 6 of Directive 2002/91/EC.

differentiate between new and existing buildings as well as between different categories of buildings.

Thirdly, **energy performance certificates** have to be introduced.¹³ They have to be available whenever a property is built, sold or rented. In the latter two cases, the owner has to take the necessary action. Public authorities occupying an office space over 1,000 m² have to display the certificate in a prominent place clearly visible to the public. These certificates give a property an energy efficiency rating from A (most efficient) to G (least efficient) and their validity cannot exceed ten years. These certificates also include recommendations about how to reduce energy use and thus save money.

Fourthly, regular **inspections of heating (boilers) and air-conditioning systems**, have to be performed, and assessment of heating installations in which the boilers are more than 15 years old made.¹⁴

Fifthly, **the quality of the inspections and of the energy performance certificates must be ensured**. For that reason, certification and inspections must be conducted by qualified/or accredited personnel in an independent manner.¹⁵

The possibility of excluding specific building types (architectural or historic buildings, religious buildings, industrial sites, etc.) from the scope of the provisions on energy performance standards and on certification was also authorized.¹⁶ The provision of information to consumers was encouraged.¹⁷

According to the estimations made at the time, the implementation of Directive 2002/91/EC had to permit a gain estimated at some 40 Mtoe (million tonnes of oil equivalent) from the year 2006 (the Directive's transposition year) to the year 2020.¹⁸

In reality, the transposition of the Directive into national legislation in many Member States was much slower than envisaged. Directive 2002/91/EC entered into force on 4 January 2003 and had to be transposed in all Member States by 4 January 2006 at the latest. Yet, at the end of February 2006, only three countries had notified full transposition and seven countries partial transposition. In January 2008, Greece¹⁹ was the first Member State to be condemned by the Court of Justice for not completing the transposition of the EPBD and was followed by the Grand Duchy of

¹³ Art. 7 of Directive 2002/91/EC.

¹⁴ Art. 8 and 9 of Directive 2002/91/EC.

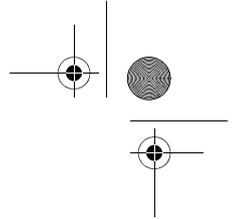
¹⁵ Art. 10 of Directive 2002/91/EC.

¹⁶ Art. 4, point 4., and Art. 7, point 1, al. 3 of Directive 2002/91/EC.

¹⁷ Art. 12 of Directive 2002/91/EC.

¹⁸ See the Green Paper *Towards a European strategy for the security of energy supply* (COM(2000) 769, p.84); the explanatory memorandum of the legislative proposal of the Directive (COM(2001) 226, p. 8) and the *Green Paper on Energy Efficiency or Doing More With Less* (COM(2005) 265, p. 21).

¹⁹ C-342/07, *Commission vs Greece*, 17.01.2008.



Luxembourg²⁰ in 2009. Infringement proceedings by the Commission continued against numerous Member States from 2010 onwards. Some of them resolved their problem. Others did not and were then referred to the Court of Justice. Italy²¹ and Spain²² were condemned in 2013 and 2014 respectively for not fully complying with Directive 2002/91/EC.

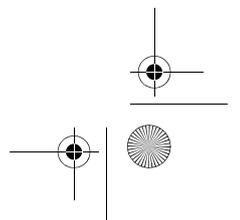
This lack of enthusiasm for transposing the Directive is often explained by the difficulty of implementing the 'common and integrated approach' provided by the Directive. Buildings are indeed very different across Europe. They depend on the culture, the climate, the construction materials available, the differing legal framework and the economic development.²³

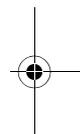
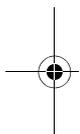
²⁰ C-22/09, Commission vs Luxembourg, 29.10.2009.

²¹ C-345/12, Commission vs Italy, 13.06.2013.

²² C-67/12, Commission vs Spain, 16 January 2014.

²³ To know more, see *The Energy Performance of Buildings Directive (2002/91/EC)*, European Council for an Energy Efficient Economy (ecee), ecee policy brief, January 2008.





§ 2. THE RECAST OF THE ENERGY PERFORMANCE OF BUILDINGS DIRECTIVE

In 2005, the Commission opened a debate with a Green Paper on energy efficiency.²⁴ In this general document, it was estimated that an improvement and a strengthening of the obligations mentioned in Directive 2002/91/EC, as well as an extension of its scope could permit an additional gain estimated at 30 Mtoe. Among other measures, it aimed to respond to several existing difficulties.²⁵ A new Energy Efficiency Action Plan was then proposed by the European Commission in 2006²⁶ (2006 EEAP) promoting 20% energy savings by 2020, and was approved by the Council²⁷ the same year. In March 2007, the European Council called for the implementation of the priorities established in the 2006 EEAP, including those for the building sector.

As substantial amendments had to be made to Directive 2002/91/EC, it was decided to recast it for more clarity. In 2008, the Commission launched a public consultation on the recasting of the EPBD. The **recast Directive 2010/31/EU**²⁸ (hereafter 'recast EPBD') entered into force in July 2010 and repealed Directive 2002/91/EC with effect from 1 February 2012. Though the date of transposition into national law had been established on 9 July 2012, the application of many of its provisions had been deferred. To support the implementation by Member States of the recast EPBD, the European Commission issued in 2010 a mandate 480 (M480) to CEN, CENELEC (European Committee for Electrotechnical Standardization) and ETSI (European Telecommunications Standards Institute) for the development of a second generation of EPBD standards. This new set of standards should become available by 2016.²⁹

The main changes introduced by the recast EPBD with regard to the obligations introduced in 2002 (see § 1) are as follows.

²⁴ COM (2005) 265.

²⁵ Among other measures, this additional gain in the building sector had to contribute to: (1) the attainment of the Lisbon Strategy goals aimed at relaunching the European economy, with an expected positive impact on employment; (2) the diminution of the energy demand which continued to increase in the EU with its negative direct impact on the deterioration of the environment and on climate change; (3) the increase of the EU energy security of supply since the EU hydrocarbon production continued (and currently continues) to diminish.

²⁶ COM (2006) 545.

²⁷ Bull. EU, 11/2006, point 1.23.4.

²⁸ Directive 2010/31/EU on the energy performance of buildings (recast), L 153/13, 18.06.2010. See also a February 2013 ECOFYS report ordered by the Commission entitled *Towards nearly zero-energy buildings – Definition of common principles under the EPBD*, which can be found on the following web site: http://ec.europa.eu/energy/efficiency/buildings/doc/nzeb_full_report.pdf.

²⁹ Slides from J. Hogeling, 'The second-generation of EPBD standards – A firm basis for the NZEB definition; outcome of EU mandate 480 to CEN', REHVA-techn seminar NZEB at aquaTherm, Prague 03.2014 http://www.rehva.eu/fileadmin/events/eventspdf/Aqua_Therm_Prague_2014/Jaap_Hogeling_Praha.pdf.

The methodology to calculate the energy performance of buildings has been refined and improved. From now on, it covers the ‘annual’ energy performance of the building (and is no longer only based, for instance, on the season in which heating is required).³⁰ It also includes ‘an energy performance indicator’ and a ‘numeric indicator of primary energy use’.³¹

The **minimum energy performance standards** adopted by Member States and in force in Member States must now be compared with the comparative methodology framework established in Commission’s delegated Regulation (EU) No 244/2012,³² accompanied by a guidance document³³ on how to implement the comparative methodology at national level.³⁴ This comparison aims to ensure that cost-optimal levels³⁵ of minimum energy performance standards have been achieved. Member States must submit reports with the result of the comparison to the Commission at regular intervals of a maximum of five years, with the first report due by 21 March 2013. If the result of the comparison performed shows a discrepancy exceeding 15%,³⁶ Member States have to provide justifications to the Commission. If the discrepancy cannot be justified, a plan must be developed to outline the appropriate steps for reducing the discrepancy.³⁷ It is worth noting that the aforementioned delegated Regulation and guidance document give Member States a very large degree of flexibility. Many parameters are left to be decided at national level. For that reason, external studies have been conducted to give additional guidance on

³⁰ See Recital (9) of Directive 2010/31/EC.

³¹ Art. 3 of Directive 2010/31/EC.

³² Art. 5 of Directive 2010/31/EC and Commission delegated Regulation (EU) No 244/2012 of 16 January 2012 supplementing Directive 2010/31/EU on the energy performance of buildings by establishing a comparative methodology framework for calculating cost-optimal levels of minimum energy performance requirements for buildings and building elements (OJEU, L 81/18, 21.03.2012). This Regulation is based on a CEN package of standards.

³³ Guidelines accompanying Commission Delegated Regulation (EU) No 244/2012 of 16 January 2012 supplementing Directive 2010/31/EU of the European Parliament and of the Council on the energy performance of buildings by establishing a comparative methodology framework for calculating cost-optimal levels of minimum energy performance requirements for buildings and building elements (OJEU, C 115/1, 19.04.2012). These guidelines are not legally binding but they provide relevant additional information to the Member States. They are those intended by Annex III to Directive 2010/31/EC.

³⁴ On the comparative method, see K. Engelund Thomsen and K. B. Wittchen (Danish Building Research Institute), ‘Energy performance requirements using the cost-optimal methodology. Overview and outcomes’, Concerted Action Energy Performance of Building, November 2012 file:///C:/Users/FD/Desktop/EE/CA3-2012-Cost-Optimal-ei.pdf. J. Kwiatkowski (Warsaw University of Technology), A. Panek (Warsaw University of Technology), A. Lehmden (Wienerberger AG), C. Unger (Wienerberger AG), *Consideration about the cost-optimal methodology to determine energy performance requirements for buildings – Central Europe towards sustainable buildings 2013, Decision-support tools and assessment methods* http://www.cesb.cz/cesb13/proceedings/5_tools/CESB13_1314.pdf.

³⁵ The cost-optimal level is defined as ‘the energy performance level which leads to the lowest cost during the estimated economic lifecycle.’ Member States determine this level by taking into account a range of costs including investments, maintenance, operating costs and energy savings. The economic lifecycle is defined in the Cost-Optimal Delegated Regulation of the Commission.

³⁶ Recital 14 of Directive 2010/31/EC.

³⁷ See the national reports submitted by Member States on calculation of cost-optimal levels of energy performance requirements communicated by Member States to the European Commission as requested by the EBPD. They can be found on the following EC web site: http://ec.europa.eu/energy/efficiency/buildings/implementation_en.htm

how to implement the cost-optimality methodology in EU countries.³⁸ It is noted, however, that the actual depth of renovation in all EU countries is very far from achieving cost-effective levels.³⁹

In addition, the minimum energy performance standards set on the basis of the cost-optimal methodology, as just explained, are extended to *all existing buildings under major renovation*⁴⁰ (the 1,000 m² threshold being removed), as well as retrofitted or replaced elements that form part of the building envelope (for instance, roofs or walls) and technical building systems (large ventilation, heating, hot water, air-conditioning).⁴¹ The recast EPBD also encourages the introduction of intelligent energy consumption metering systems whenever a building is constructed or undergoes renovation.⁴²

The **buildings energy performance certificates** obligation is extended and additional requirements introduced.⁴³ In real terms, this mainly implies four things.

First, not only does the energy performance certificate have to be shown to the prospective tenant or buyer when a building is being constructed, sold or rented, but the energy performance indicator of the energy performance certificate of the building also has to be included in the sale or rental advertisements.⁴⁴ Second, the requirement to display the certificate in a prominent place clearly visible to the public is extended to public authorities occupying an office space over 500 m². This threshold of 500 m² will be lowered to 250 m² on 9 July 2015.⁴⁵ Third, a voluntary common European certification scheme for non-residential buildings had to be developed by 2011.^{46 47} This document has not been adopted

³⁸ For instance, see a 2013 study entitled *Implementing the cost-optimal methodology in EU countries. Lessons learned from three case studies*, Buildings Performance Institute Europe (BPIE), 2013. The study can be found on the following web site: http://bpie.eu/cost_optimal_methodology.html#VP2PxvyG8mO.

³⁹ *Investing in the European buildings infrastructure – An opportunity for the EU's new investment package*, BPIE, November 2014.

⁴⁰ Art. 2, point 10, of the recast EPBD defines a 'major renovation' as: either where 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; or where more than 25% of the surface of the building envelope undergoes renovation.

⁴¹ Art. 7 and Art. 8, point 1, of Directive 2010/31/EC.

⁴² Art. 8(2) of Directive 2010/31/EC.

⁴³ On the subject of energy performance certificates, see an April 2013 study by BIO Intelligence Service and the Institute of European Environmental Policy (IEEP) ordered by DG Energy, *Energy performance certificates in buildings and their impact on transaction prices and rents in selected EU countries*, which can be found on the following web site: http://ec.europa.eu/energy/efficiency/buildings/doc/20130619-energy_performance_certificates_in_buildings.pdf. The main results of the study indicate that such certification still does not fulfil its potential as not all property transactions (buying/rental) are accompanied by a certificate. Nevertheless, the study also shows that, once implemented properly, certification can have a significant impact on the value of a building.

⁴⁴ Art. 12, point 4 of Directive 2010/31/EC.

⁴⁵ Art. 13, point 2 of Directive 2010/31/EC.

⁴⁶ Art. 11, point 9 of Directive 2010/31/EC.

⁴⁷ It should be noted that currently there is no common approach on buildings energy performance certificates and they vary considerably in content, appearance and relevance between Member States. That is why it is important that the Commission develops a voluntary common European certification scheme with the aim of defining a common EU methodology to express the energy performance of non-residential buildings.

yet.⁴⁸ It has been delayed until a new set of CEN standards to support the certification scheme is released by 2016. Currently, there is only a study intended to serve as a basis for the elaboration of such a document. It was published by the Commission on 3 December 2014.⁴⁹ Fourth, the requirement that the energy certification of buildings needs to be carried out in an independent manner by a qualified and/or accredited expert is strengthened. Member States are compelled to 'take into account the experts' competence in the accreditation procedure'. In addition, in order to improve the process transparency, Member States are also required to make publicly available the 'information on training and accreditations' as well as to provide 'regularly updated lists of qualified and/or accredited experts'.⁵⁰

Concerning energy certification more specifically, a report⁵¹ and a factsheet⁵² published in October 2014 and January 2015 respectively by the BPIE identify the competence of the certifier among the most influential factors affecting the quality and cost of the certificates. However, Member States have flexibility in designing the system of training and/or accreditation of qualified experts, and this has led to the introduction of very different approaches across the EU. As indicated in the report, only 20 Member States recognize a compulsory exam to check the certifiers' skills as a best practice. Mandatory training is required in only 14 Member States and, in some countries, only when there is a lack of education and professional experience.⁵³ Nevertheless, as indicated in the factsheet, 15 Member States have foreseen

⁴⁸ To learn why this document has not been published yet, see the Parliamentary question for written answer by Silvia-Adriana Ţicău (S&D) dated 15 July 2013 (E-008619-13), as well as the written answer given by Mr. Oettinger on behalf of the Commission dated 20 August 2013 (E-008619/2013). They can be found on the European Parliament web site: <http://www.europarl.europa.eu/sides/getDoc.do?type=WQ&reference=E-2013-008619&language=EN> for the question and <http://www.europarl.europa.eu/sides/getAllAnswers.do?reference=E-2013-008619&language=EN> for the written answer.

⁴⁹ *Market study for a voluntary common European Union certification scheme for the energy performance of non-residential buildings – Final report*, Triple E Consulting in association with Ecofys and TNO Innovation for Life, 26 November 2014 <http://ec.europa.eu/energy/sites/ener/files/documents/Final%20report%20-%20Building%20Certification%20Schemes%20-%20FINAL%2026112014.pdf>. This study offers an overview of existing voluntary schemes and aims to analyse the demand for a Europe-wide voluntary scheme. The findings are as follows: (1) The key factors for scheme selection among a variety of stakeholders were reliability, cost and international acceptance. (2) The main added value of this voluntary EU scheme would be to allow a consistent comparison between non-residential buildings across the EU. (3) It could also contribute to raising ambitions for building certification in some Member States. (4) The study also shows that the voluntary EU scheme should build on CEN standards, start with a pilot phase (e.g., with offices), take a modular approach for energy performance only, and be applied both for public and private buildings, as well as new and existing buildings. (5) The study recommends that the voluntary EU scheme should use a comparative label design, and that a third party should be responsible for the technical development of it. <http://www.tripleeconsulting.com/project/dg-energy-publishes-market-study-led-triple-e-consulting-voluntary-common-eu-certification>.

⁵⁰ Art. 17 of Directive 2010/31/EC.

⁵¹ *Report on Energy Performance Certificates (EPCs) across the EU – Mapping of national approaches*, BPIE, October 2014 http://bpie.eu/uploads/lib/document/attachment/81/BPIE_Energy_Performance_Certificates_EU_mapping_-_2014.pdf.

⁵² *Qualification and accreditation requirements of building energy certifiers in EU28*, BPIE, January 2015 http://bpie.eu/factsheet_epc.html#VRLaw_mG8mM.

⁵³ p. 6 of the report.

continuous professional development programmes for certifiers to renew their accreditation periodically.⁵⁴ Finally, it is also worth noting that in Member States the accreditation process is sometimes conducted by government bodies, sometimes by third party bodies (i.e., institutions/companies) having an agreement with the government, and sometimes by professional associations. All these differences between Member States raise concerns. They largely prevent cross-border recognition of the professional skills of certifiers but they also lead to the possibility that in some countries the claims for energy performance could be different from the reality – and this may jeopardize the reliability of and trust in the energy performance certificates in those countries.

The **inspection** process is extended to include accessible parts of **heating** (over 20 kW) and **air-conditioning** (over 12 kW) **systems**.⁵⁵ After each inspection, a report must be issued to the owner or tenant of the building and include recommendations for efficiency improvements.⁵⁶ The inspection solution can be replaced by equivalent measures.⁵⁷ The Member State which chose that solution had to submit by 30 June 2011 at the latest a report on the equivalent measures to the Commission, and after that date every three years.⁵⁸

The recast EPBD adds *further* obligations for Member States than those described above.

The first obligation is ambitious and is decisive for the development of the building sector. It has a bearing on the new concept of '**nearly zero-energy buildings (NZEBs)**'. Introduced for the first time by the recast EPBD, this concept covers 'buildings that have a very high energy performance, as determined in accordance with Annex I of the recast EPBD. 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'.⁵⁹ This definition is thus sufficiently vague and thus flexible enough to allow Member States some room to figure out what is the most appropriate action within their own context. Therefore there is so far no single, harmonized NZEB definition throughout the EU⁶⁰

⁵⁴ p. 2 of the factsheet.

⁵⁵ Art. 14 and Art. 15 of Directive 2010/31/EC.

⁵⁶ Art. 16 of Directive 2010/31/EC.

⁵⁷ See national reports on equivalence of alternative measures to regular inspections of heating and air-conditioning systems on the following EC web site: http://ec.europa.eu/energy/efficiency/buildings/implementation_en.htm.

⁵⁸ National reports on alternative measures submitted by Member States in 2011 and in 2014 can be found on the following web site: <http://ec.europa.eu/energy/en/topics/energy-efficiency/buildings/certificates-and-inspections>.

⁵⁹ Art. 2, point 2., of Directive 2010/31/EC. See also the 2012 Ecofys study entitled *Towards nearly zero-energy buildings. Definition of common principles under the EPBD*, http://ec.europa.eu/energy/sites/ener/files/documents/nzeb_full_report.pdf, as well as the 2013 Ecofys guidance document for national plans for increasing the number of nearly zero-energy buildings, http://ec.europa.eu/energy/sites/ener/files/documents/nzeb_ecofys_guidance.pdf.

⁶⁰ See the report of the European Council for an Energy Efficient Europe (ecee) entitled *Understanding (the very European concept of) nearly zero-energy buildings*, 11 April 2014, p. 3.

but a wide range of definitions instead.⁶¹

All new buildings (residential and non-residential) in the EU must be ‘nearly zero energy’ by 31 December 2020 and new buildings owned or rented by public authorities after 31 December 2018.⁶² However, a new building does not have to meet nearly zero-energy level if the cost-benefit analysis over the economic lifecycle of the building in question is negative.⁶³

To encourage the increase of the number of nearly zero-energy buildings on their territory, Member States have to report their national plans to the Commission. They must include *inter alia* intermediate targets for new buildings by 2015.⁶⁴ At the beginning of March 2015, only 21 Member States had drawn up and submitted such a plan to the Commission.⁶⁵ The first progress report⁶⁶ on nearly zero-energy buildings,⁶⁷ which had to be published at the end of 2012, but was eventually published in October 2013, already emphasised in its conclusions that too little progress has been made by Member States in their preparations for achieving nearly zero-energy buildings by 2020, and that this situation increases the risk that Member States will not meet the deadlines indicated in the recast EPBD.

The second obligation further strengthens the quality of all certificates and inspections carried out by independent and qualified and/or accredited experts.⁶⁸ It requires Member States to set up ‘**independent control systems**’ with random verification of certificates and inspection reports in conformity with its Annex II.⁶⁹ 20 Member States have produced reports on the independent control systems they use.⁷⁰ The above-mentioned factsheet, however, reveals that only 16 Member States performed quality checks on certificates in 2013.⁷¹

⁶¹ See on this issue the study entitled *Principles for nearly zero-energy buildings – Paving the way for effective implementation of policy requirements*, BPIE in cooperation with Ecofys, Nov. 2011 http://www.bpie.eu/documents/BPIE/publications/HR_nZEB%20study.pdf. This study analyses the challenges and their implications for setting a sustainable and practical NZEB definition and proposes principles to be considered when setting up a practical definition.

⁶² Art. 9, point 1, of Directive 2010/31/EC.

⁶³ Art. 9, point 6, of Directive 2010/31/EC.

⁶⁴ Art. 9, point 3., (b), of Directive 2010/31/EC.

⁶⁵ The national plans for nearly zero-energy buildings received by the Commission can be found on the following EC web site: <http://ec.europa.eu/energy/en/topics/energy-efficiency/buildings/nearly-zero-energy-buildings>.

⁶⁶ COM(2013) 483 final/2. This first progress report was complemented by two templates issued in 2014. The first presents information on intermediate targets and policy measures for nearly zero-energy buildings. The second one provides information on the national application of the definition of nearly zero-energy buildings from the recast EPBD. They can be found on the following web site: <http://ec.europa.eu/energy/en/topics/energy-efficiency/buildings/nearly-zero-energy-buildings>.

⁶⁷ Art. 9, point 5, of Directive 2010/31/EC states that progress reports are published every three years.

⁶⁸ On qualification and accreditation requirements of building energy certifiers in EU-28, see the BPIE Factsheet of January 2015.

⁶⁹ Art. 18, point 1, of Directive 2010/31/EC.

⁷⁰ These reports can be found on the following web site: <http://ec.europa.eu/energy/en/topics/energy-efficiency/buildings/certificates-and-inspections>.

⁷¹ p. 3 of the factsheet.

The third obligation is informative. Member States must **provide building owners or tenants with information** on certification and inspection, on how to improve energy performance and, where appropriate, on the financial instruments available for achieving this.⁷²

The fourth obligation also has an informative nature toward this time the Commission. All Member States must communicate to the Commission a list of existing and proposed measures and instruments (including those of a financial nature) other than those required by the recast EPBD. The examination of the effectiveness of the listed measures and instruments will allow the Commission to provide advice and recommendations. The deadline for the first listing, to be updated every three years thereafter, was 30 June 2011.⁷³

The fifth obligation obliges Member States to determine rules on penalties applicable to infringements of the national provisions adopted pursuant to the recast EPBD.⁷⁴

In a nutshell, in the recast EPBD two mechanisms are decisive for the development of the building sector: the principle of nearly zero-energy buildings and the principle of cost optimality, which gives guidance for the energy performance standards of new buildings, existing buildings undergoing major renovation, and retrofitted or replaced elements that form part of the building envelope. This said, the particular attention given to new buildings in the recast EPBD must not hide the central importance of retrofits. Europe is not at all like the emerging countries. 'Approximately 40% of Europe's building stock predates the 1960s and is in dire need of renovation. ... New construction in Europe represents only about 1% of building stock.'⁷⁵ Furthermore, '75% of Europe's housing stock is still energy inefficient. 64% of space heaters are inefficient and 44% of windows are still single glazed.'⁷⁶ Presently, retrofits cover yearly 1% of existing stock. This should be raised to 2-3% to allow the EU to reach its 2020 target, but increasing the percentage would also be a good weapon against energy dependency as about 40% of EU energy demand lies in buildings.

The transposition of the recast EPBD also encountered strong difficulties. It had to be fully transposed into national law by 9 July 2012. In September 2012, however, the Commission started infringement procedures against 24 Member States for non-transposition or only partial transposition, and reasoned opinions were sent to 22 Member States in 2013.⁷⁷ Currently, five Member States have already been referred

⁷² Art. 20, point 2 of Directive 2010/31/EC.

⁷³ Art. 10 of Directive 2010/31/EC. This article also states that the lists may also be communicated to the Commission via their inclusion in Member States' Energy Efficiency Action Plans.

⁷⁴ Art. 27 of the Directive.

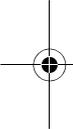
⁷⁵ The Economist Unit, *Investing in energy efficiency in Europe's buildings*, 2013, p. 3.

⁷⁶ Cordis Express: Energy efficient Europe http://cordis.europa.eu/news/rcn/122442_en.html.

⁷⁷ See <http://www.buildup.eu/news/39052?embed=true>.



to the Court of Justice of the European Union for failing to transpose the recast EPBD (Portugal in June 2013, Belgium and Finland in April 2014, Poland and Austria in July 2014).⁷⁸



⁷⁸ See also the report on *Implementing the energy performance of building directive (EPBD) – featuring country reports 2012*, electronic version October 2013, Concerted Action Energy Performance of Buildings <http://www.epbd-ca.org/Medias/Pdf/CA3-BOOK-2012-ebook-201310.pdf>.



§ 3. THE NEW ENERGY EFFICIENCY DIRECTIVE

Apart from the recast EPBD, there are a number of other legislative instruments dealing with energy efficiency of buildings. One of them is the Energy Efficiency Directive 2012/27/EU⁷⁹ (EED). It is currently the most important piece of EU legislation on energy savings based on the 2011 EEAP. It replaces Directive 2006/32/EC and repeals the cogeneration Directive 2004/8/EC. The EED entered into force in December 2012 and had to be transposed into national law by 5 June 2014. To support its transposition and implementation, several interpretative notes⁸⁰ have been issued by the Commission.

The EED aims to put the EU on track towards achieving its goal of 20% energy savings by 2020. It covers all sectors except transport. It thus concerns the building sector and contains three pivotal provisions to support the recast EPBD.

Article 4 of the EED⁸¹ requires each Member State to establish a long-term strategy for mobilizing investment in the renovation of the national stock of residential and commercial buildings, both public and private. This strategy

- provides an overview of the Member State's building stock;
- identifies key policies that the country intends to use to stimulate cost-effective renovations; and
- provides an estimate of the expected energy savings that will result from renovations.

The first version of the strategy had to be published by 30 April 2014 and updated every three years thereafter.⁸² It is worth noting that the strategy is submitted to the European Commission as part of the Member State's National Energy Efficiency

⁷⁹ Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC (OJEU L 315/1, 14.11.2012). This Directive entered into force on 4 December 2012. This Directive has been adapted by Directive 2013/12/EU by reason of the accession of the Republic of Croatia (OJEU 2013, L 141/28).

⁸⁰ Commission communication *Implementing the energy efficiency directive – Commission guidance* (COM(2013) 762 final). This communication is accompanied by Staff Working Documents with more detailed guidance on specific provisions of Directive 2012/27/EU (SWD(2013) 445, SWD(2013) 446, SWD(2013) 447, SWD(2013) 448, SWD(2013) 449, SWD(2013) 450 and SWD(2013) 451). All these documents can be found on the following web site: http://ec.europa.eu/energy/efficiency/eed/eed_en.htm.

⁸¹ A status report on compliance with Art. 4 of the EED was issued by the BPIE in 2014. The report examines a cross section of building renovation strategies from ten Member States across the EU. It stresses that the first strategies submitted must be considered as a learning process in themselves and concludes, based on the strategies reviewed, that there is still considerable progress to be made in ALL Member States before the EU can be said to be on the required transformation path for its existing building stock. The required level of ambition, sense of urgency and strategic importance is still lacking. This report also contains recommendations.

⁸² The national strategies submitted can be found on the following web site: <http://ec.europa.eu/energy/en/topics/energy-efficiency-directive/buildings-under-eed>.

Action Plan (NEEAP), which is also to be submitted to the European Commission on 30 April 2014.⁸³

Article 5 EED⁸⁴ requires each Member State as from 1 January 2014 to refurbish each year **3%** of the total floor area of buildings owned and occupied by their central government to drastically reduce its energy consumption. As a basis for the calculation of the 3% target,⁸⁵ they had to prepare a public inventory of all central government buildings with a total useful floor area of over 500 m². The inventory had to be made publicly available by 31 December 2013. So far, only four Member States have done this.⁸⁶

Two flexibility clauses are, however, granted to Member States. *First flexibility clause:*⁸⁷ A Member State may opt for an alternative approach which results in at least an equivalent amount of energy savings.⁸⁸ This alternative approach had to be notified to the Commission by 31 December 2013 at the latest. So far 20 Member States have chosen that option.⁸⁹ *Second flexibility clause:*⁹⁰ a Member State may authorize that the obligation of refurbishment be fulfilled by annual contributions to the Energy Efficiency National Fund if such a fund is created by the Member State concerned.

Article 6 of the EED obliges central governments to purchase only products, services and buildings with high-energy efficiency performance.⁹¹

The EED covers also other measures regarding the energy efficiency of buildings and related financing, including:

- Establishment by Member States of **energy saving schemes:**⁹² From 1 January 2014 to 31 December 2020, energy companies, distributors and/or retail energy sales companies that are designated as obligated parties will be required to

⁸³ Combined reading of Art. 4, in fine, and Art. 24(2) of Directive 2012/27/EU. NEEAPs submitted in 2014 can be found on the following web site: <http://ec.europa.eu/energy/en/topics/energy-efficiency/energy-efficiency-directive/national-energy-efficiency-action-plans>.

⁸⁴ Art. 5 of Directive 2012/27/EU.

⁸⁵ The 3% rate shall be calculated on the total floor area of buildings which have a total useful floor area over 500 m² and which, at January 1 of each year, do not meet the national minimum energy performance requirements set in Art. 4 of the recast EPBD. That threshold has to be lowered to 250 m² as of July 2015.

⁸⁶ See the four building inventories on the following web site: <http://ec.europa.eu/energy/en/topics/energy-efficiency-directive/buildings-under-eed>. The countries which submitted an inventory were Cyprus, Latvia, Lithuania and Estonia.

⁸⁷ Art. 5, in particular 1-2 and 5-6 of Directive 2012/27/EU.

⁸⁸ This alternative approach may include measures such as behavioural changes (turning off lights or shutting down equipment when leaving the office) or deep renovations that go beyond minimum energy performance requirements. In this case, the total floor area renovated in central government buildings annually could be less than 3%.

⁸⁹ Alternative approaches submitted by Member States can be found on the following web site: <http://ec.europa.eu/energy/en/topics/energy-efficiency-directive/buildings-under-eed>.

⁹⁰ Art. 20(5) of Directive 2012/27/EU. It is Art. 20(4) of Directive 2012/27/EU which authorizes Member States to create such a fund if they want.

⁹¹ Art. 6 of Directive 2012/27/EU.

⁹² Art. 7(1) of Directive 2012/27/EU.

reduce consumption among ‘final consumers’ by **1.5%** annually. Three flexibility clauses exist, however.⁹³ *First flexibility:*⁹⁴ as an alternative to setting up an energy efficiency obligation scheme, Member States may achieve the energy savings objective through a series of alternative measures provided those measures meet criteria explicitly mentioned in the Directive and provided the alternative measures are notified to the Commission by 5 December 2013. So far all Member States have chosen alternative measures.⁹⁵ *Second flexibility:*⁹⁶ A quarter of the energy savings objective can be achieved through a series of alternative measures expressly indicated in the Directive. *Third flexibility:*⁹⁷ Member States may provide that obligated parties can fulfil their obligations by contributing annually to the Energy Efficiency National Fund.

According to The Coalition for Energy Savings’ report mentioned above, with a very high number of Member States planning to use the maximum exemptions possible, one can assume that the 1.5% annual end-use savings target should be reduced to 0.8% annual savings on average.⁹⁸

- Introduction of **certification schemes**⁹⁹ by 31 December 2014 for providers of energy services to ensure a high level of technical competence, where the Member State considers that the national level is insufficient.
- Adoption of measures to ensure that final consumers for electricity, natural gas, district heating, district cooling and domestic hot water are able to manage their energy consumption and time of use thanks to better information provided by competitively priced individual **smart meters** (provided it is technically possible, reasonable and proportionate in relation to the potential energy saving), and, when such meters do not exist, by their bills.¹⁰⁰ All bills and billing information for energy consumption have to be received by final customers free of charge, and access to their consumption data too.¹⁰¹
- Establishment of **financing facilities**, or the use of existing ones, must be facilitated by Member States for energy efficiency improvement measures. An Energy Efficiency National Fund to support national energy efficiency initiatives is authorized too. Where appropriate, directly or via the European financial institu-

⁹³ See Art. 7(2) and (9) as well as 20(6) of Directive 2012/27/EU.

⁹⁴ Art. 7(9) of Directive 2012/27/EU.

⁹⁵ See <http://ec.europa.eu/energy/en/topics/energy-efficiency-directive/obligation-schemes-and-alternative-measures>.

⁹⁶ Art. 7(2) of Directive 2012/27/EU.

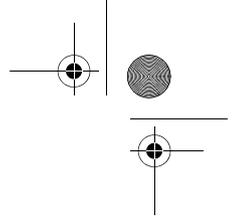
⁹⁷ Art. 20(6) of the Directive 2012/27/EU.

⁹⁸ *Implementing the EU Energy Efficiency Directive: latest analysis of Member States plans for end-use energy savings targets (Article 7)*, The Coalition for Energy Savings, 16 March 2015, p. 24 http://energycoalition.eu/sites/default/files/20150316_Coalition-for-Energy-Savings_Updated_Art._7_report.pdf.

⁹⁹ Art. 16 of Directive 2012/27/EU.

¹⁰⁰ Art. 9 and 10 of Directive 2012/27/EU.

¹⁰¹ Art. 11(1) of Directive 2012/27/EU.



tions, the Commission has to assist Member States in setting up financing facilities aiming at increasing energy efficiency.^{102 103}

- Introduction of the obligation for large enterprises to carry out an energy audit of their buildings and installations at least every three years, with the first energy audit by 5 December 2015 at the latest. Exemptions are possible provided the fulfilment of certain conditions.¹⁰⁴

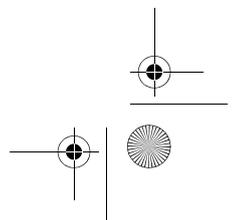
The transposition of the EED seems to have encountered fewer difficulties than the recast Directive. This could be explained by the numerous flexibility clauses that it contains and which were used by several Member States. Nevertheless, the Commission sent reasoned opinions, on the one hand, to Hungary and Bulgaria in November 2014 and, on the other hand, to Greece and Portugal in February 2015 for not fully completed the transposition of the EED. In those cases, the energy saving schemes for energy providers seem to have been the source of the problem. In February 2015, a reasoned opinion was also sent to Slovenia about the lack of submission of a NEEAP and the country's long-term strategy for mobilizing investment in the renovation of the national stock of residential and commercial buildings. In March 2015, the European Commission referred Hungary to the Court for failing to fully transpose the Energy Efficiency Directive.¹⁰⁵

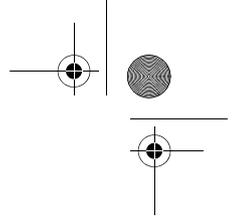
¹⁰² Art. 20(1, 2, 4) of Directive 2012/27/EU.

¹⁰³ See the recent European Commission report which notably aims to indicate how financial support for energy efficiency in buildings can be improved – COM (2013) 225.

¹⁰⁴ Art. 8, points 4 and 6 of the EED.

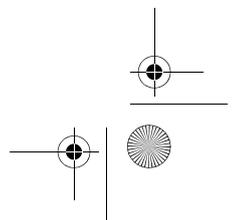
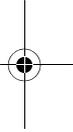
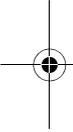
¹⁰⁵ March infringements package – Main decisions, MEMO-15-4666, 26 March 2015.

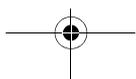
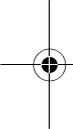




§ 4. DISSEMINATION OF INFORMATION AND CONSULTATION

To support European countries in implementing the directive, the ‘Concerted Action EPBD’ (<http://www.epbd-ca.eu/>) was launched by the Commission in 2005. This instrument was intended to promote dialogue and exchange of best practice. As an active forum of national authorities from 29 countries (EU-28 plus Norway), it focuses on finding common approaches to the most effective implementation of the directive. The Concerted Action EPBD is carried out under the coordination of ADENE, the Portuguese National Energy Agency. This effort to disseminate information and consultation has continued with the launch of the ‘Build Up’ Platform (www.buildup.eu). It is an initiative to increase the awareness of all parties in the building chain. In addition, other initiatives have been put in place. An information point with regard to the energy performance of buildings has been developed: the Buildings Platform (www.buildingsplatform.org).





§ 5. CURRENT EU FINANCIAL SUPPORT FOR ENERGY EFFICIENT IN BUILDINGS

The achievement of the 20% energy efficiency target by 2020 requires investment of €100 billion per year, 70% of which needs to be directed to buildings. However, the EU is currently at around half that level of investment, so considerable progress needs to be made.¹⁰⁶ Yet the results of a 2015 study commissioned by Global Buildings Performance Network (GBPN) to the Central European University's Center for Climate Change and Sustainable Energy Policy (3CSEP) and Advanced Building and Urban Design (ABUD) show that in the long term deep and moderate efficiency scenarios could be cost-effective for the total EU building stock.¹⁰⁷

For many years, the EU has been supporting the improvement of the energy performance of buildings with a range of financial support programmes. The table¹⁰⁸ below gives an overview of the main instruments and available fundings under the previous Multi Financial Framework (2007-2013).

Funding Source	Instruments/mechanisms	Total funding available	Funding for EE
Cohesion Policy Funding	Operational Programmes incl. financial instruments (e.g. JESSICA)	€ 10.1 billion planned for sustainable energy (RES & EE)	€ 5.5 billion planned for EE, co-generation and energy management
Research Funding	FP 7 (e.g. Concerto, E2B PPP, Smart Cities)	€ 2.35 billion for Energy research	€ 290 million for energy efficiency
Enlargement Policy Funding	IFI facilities (SMEFF, MFF, EEFF)	€ 552,3 million (381,5 + 117,8 + 53 respectively)	About one third of total funding for projects in industry and buildings
Programme for European Energy Recovery (EEPR)	European Energy Efficiency Fund (EEEF)	€ 265 million	70% of funding to be dedicated to energy efficiency
Competitiveness and Innovation Funding (CIP)	European Energy Efficiency Fund (EEEF); Intelligent Energy Europe Programme (including ELENA); Information and Communication; Technologies Policy Support Programme (ICT PSP)	Approximately € 730 million for each program	About 50% of the funding was dedicated to energy efficiency in all sectors

¹⁰⁶ 2014 final report prepared for the Commission by ECF International, Hincio and CE Delft entitled *Technical Guidance – Financing the energy renovation of buildings with Cohesion Policy Funding*, p. 21.

¹⁰⁷ Monetary benefits of ambitious building energy policies, 3CSEP and ABUD, January 2015, p. 47.

¹⁰⁸ This table has been extracted from COM (2013) 225, p. 5. A detailed explanation of this table can be found in the same document.

The current Multiannual Financial Framework (2014-2020)¹⁰⁹ should more than double the amount of funding available for energy efficiency in buildings to around €23 billion. This new funding will be available from three sources: the European Regional Development Fund (ERDF),¹¹⁰ the European Social Fund (ESF)¹¹¹ and the Cohesion Fund (CF),¹¹² which will be pivotal for the energy renovation of buildings.¹¹³ These three funds are governed by the Common Provisions Regulation (CPR)¹¹⁴ as well as specific rules for each fund.¹¹⁵

A share of the €315 billion investment package¹¹⁶ proposed by the Juncker Commission over the three years 2015-2017 for building renovation projects proposed by the private sector¹¹⁷ should also boost the energy efficiency of buildings.

National governments also use their own budgets to support energy efficiency in buildings. Many of the existing measures have been reported to the Commission through the National Energy Efficiency Actions Plans (NEEAPs) and under the EPBD. Most reported measures are grants and 'soft' loan schemes, followed by tax incentives. However, few Member States can provide details on the effectiveness of national support measures, making it difficult to have a good overview of their impact.

Finally, in the area of research and innovation funding, Horizon 2020 (which is the successor of the 7th Research Framework Programme (FP7) continues to promote Public-Private Partnership (PPP) on energy-efficient buildings. Calls for proposals in 2014 and 2015 were launched.

¹⁰⁹ Regulation (EC) No 1311/2013 (OJEU, L 347/884, 20.12.2013).

¹¹⁰ The ERDF, among others, promotes energy efficiency in small- and medium-sized enterprises, housing and public buildings; production and distribution of renewable energy; low-carbon strategies for urban areas; and resilience to climate change and extreme weather. Furthermore, the ERDF supports European Territorial Cooperation, for instance, cross-border co-operation between EU countries, including climate action.

¹¹¹ The ESF, among others, supports the shift towards a low-carbon and climate-resilient economy through reform of education and training systems, adaptation of skills and qualifications, up-skilling of the labour force, and the creation of new jobs.

¹¹² The CF is a financial tool set up to implement the regional policy of the EU. It aims to reduce regional disparities. It supports the shift towards a low-carbon economy in all sectors, climate change adaptation and risk prevention and management, and may pursue climate action in relation to transport and environmental investments.

¹¹³ See the 2014 final report prepared for the European Commission by ECF International, Hincio and CE Delft entitled *Technical Guidance – Financing the energy renovation of buildings with Cohesion Policy Funding* http://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/financing_energy_renovation.pdf.

¹¹⁴ The rules covering these three funds are set out in the Common Provisions Regulation (CPR) – Regulation (EU) No 1303/2013 (OJEU, L 347/320, 20.12.2013).

¹¹⁵ Regulation (EU) No 1301/2013 (OJEU, L 347/289, 20.12.2013) for the ERDF; Regulation (EU) No 1304/2013 (OJEU, L 347/470, 20.12.2013) for the ESF; and Regulation (EU) No 1300/2013 (OJEU, L 347/281, 20.12.2013) for CF.

¹¹⁶ Investment Plan for Europe – Proposal for a Regulation of the European Parliament and of the Council on the European Fund for Strategic Investments and amending Regulations (EU) No 1291/2013 and (EU) No 1316/2013 (also called 'EFSI Regulation') (First reading), document of the Council of the European Union, 6831/15 of 5 March 2015 <http://register.consilium.europa.eu/doc/srv?l=EN&f=ST%206831%202015%20INIT>. See also the Commission communication entitled *An investment plan for Europe* – COM (2014) 903 final.

¹¹⁷ See the article dated 11.03.2015 published in Euractiv and entitled 'Katainen: Private sector will decide if EU money goes to energy efficiency' dated <http://www.euractiv.com/sections/efficient-energy-union/katainen-private-sector-will-decide-if-eu-money-goes-energy>.

CONCLUSION

Despite a longstanding awareness that buildings consume too much energy and emit too many CO² emissions, and although the EU's legislative efforts (recast EPBD and EED among others) have been impressive, honesty obliges us to conclude that their results are not. The improvement of energy performance in buildings and the rhythm of renovation remain extremely weak. One must not, however, underestimate the considerable difficulties that the EU objectives imply. The market is very complex. They are market failures. Investments in buildings are very long term.

Need for a clear and stable regulatory framework in place in all Member States

Firstly, the legislation on the energy performance of buildings is complex. It deals with many new advanced aspects, combines different regulatory (i.e., energy performance standards) and information-based instruments (i.e., certificates and inspections) and concerns a multitude of actors. In addition, provisions are sometimes ambiguous or principles are not well defined (necessity of clarification through interpretation notes). This obliged Member States to face considerable practical difficulties which delayed its transposition and/or prevent a proper implementation, although to help them several platforms have been put in place. But one must also admit that unwillingness also exists on the part of Member States, even though it is their responsibility to fully, correctly and timely transpose as well as implement the EU legislation. They appear to do it, as noted, with reluctance.

One could also wonder whether, in some specific aspects, the present decentralized approach is the optimal one. Of course, national and local flexibility must be protected. However, this does not necessarily require that evaluation must also be decentralized. This concerns, for example, the methodology for calculating the energy performance of buildings or the minimum energy performance standards, or the definition of nearly zero-energy buildings. Tellingly, some surveys indicate that 'ambiguity regarding definitions of what constitutes a "deep retrofit" and a "nearly zero-energy building" affects implementation at national levels'. 'Operators identify regulatory uncertainty as a barrier to pursuing energy efficiency investments. Furthermore, implementation of energy efficiency-related directives varies by country, which limits the ability of property owners to achieve economies of scale across the region.'¹¹⁸

In another domain, the application of EPBD standards differs very much from country to country. For example, CEN standards are not mandatory, comprise a different level of complexity and allow differentiation and national choices at various levels for different applications. Harmonization of standards could be attractive, however, in

¹¹⁸ The Economist Unit, *Investing in energy efficiency in Europe's buildings*, 2013, pp. 3-4.

the long-term for Member States. CEN standards may also lead to CEN-ISO standards. ISO standards are widely accepted and may increase market opportunities for the European industry.

The present situation is not fully clear

Even a proper implementation of the EU legislation is not necessarily in itself a perfect indicator of the impact that the legislation has on improving energy performance of buildings in the Member States. There is little evidence to date on its real impact on the efficiency of the European building stock (figures are always the same in addition). It is thus imperative that Member States and the EU are clearer about the exact nature of the current situation.

Financial concerns must be dealt with

According to the Commission figures, the buildings sector needs investment of €60 billion a year for refurbishments and new buildings if it is to meet its energy efficiency targets for 2020 and beyond. Yet with an economic crisis and a financial crisis, public funding at EU level and at Member States' level is limited while the costs of construction continue to increase. Consequently, and although various financial instruments exist, more capital must be found to fund the works through the private sector or innovative instruments. A lack of awareness and expertise regarding energy efficiency financing could compound this problem, and so could a lack of affordable schemes to help homeowners switch to energy saving measures. There is also only limited information on the effectiveness of the different financial support measures both at EU and national levels. To overcome the problem, Member evaluation instruments should be put in place.

The qualifications deficit could become central

The evaluation of the energy performance of buildings is a complex endeavour, as is the construction of efficient buildings. In many Member States, there seems to be a growing lack of trained personnel. One fears that the 2019 deadline will be awfully difficult to respect. Furthermore, from the same perspective, Member States should also contemplate a strengthening of consumers' protection, since it is very difficult for uninformed consumers to evaluate the real value of new buildings and new energy services.

Communication to the public must be improved

Finally, the complexity of the topic also has to be mastered by the public. People can be mobilized only when they have understood the stakes. From this point of view, Member States could adopt more dynamic initiatives. Even at the level of companies, it is amazing to read that roughly 50% of EU companies surveyed do not audit their

energy use.¹¹⁹ In the present context of rising energy insecurity, such an inertia is difficult to understand – and must certainly be fought ... energetically.

Some huge opportunities are missed by the political authorities

The consistently insufficient results obtained in this domain are especially damaging, considering the economic context. Since 2008, the financial crisis has had very important effects on the EU economy, but especially on the construction sector. Building permit indices have fallen in considerable proportions. Even after seven years, the sector has not yet recovered.

Additionally, the construction sector, compared to others, is extremely labour intensive. Compared to the energy sector, for example, it produces the same added volume – with five times more personnel. It also relies largely on small- and medium-sized enterprises. Finally, its import dependence is quite limited. It is thus quite obvious that a serious recovery programme aiming to promote the energy renovation of existing buildings would have a tremendous economic impact in Europe.¹²⁰ This is especially obvious given the extremely low level of the interest rates.

¹¹⁹ The Economist Unit, *Investing in energy efficiency in Europe's buildings*, 2013, p. 6.

¹²⁰ See the very interesting JRC report: Y. Saheb, K. Bodis, S. Szabo, H. Ossenbrink and S. Panev, *Energy renovation: the trump card for the new start for Europe*, JRC, 2015.