



# CONCERTED ACTION ENERGY PERFORMANCE OF BUILDINGS

## EPBD implementation in Romania

Status in December 2016, revision 2018

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### NATIONAL WEBSITES

[www.mdrap.ro](http://www.mdrap.ro)

## 1. Introduction

Improving the energy efficiency of the supply chain, from resources, production, transport and distribution to end-use consumers, represents one of the priorities of the energy strategy of Romania.

For the building sector, the national implementation of the EPBD is the overall responsibility of the Ministry of Regional Development and Public Administration (MDRAP).

Since 2015, in order to transpose the EPBD into national law, Law no. 372/2005 (recast 2016), which relates to the energy performance of buildings, was amended by Law no. 156/2016 which approved Government Ordinance no. 13/2016 and was republished in the Official Gazette of Romania no. 764/2016<sup>1</sup>.

The amendments to the law concern:

- the clarification of definitions;
- the extension of law provisions to individual building elements/replacement of components;
- NZEB implementation;
- the display of EPCs in public buildings and buildings frequently visited by the public;
- implementing EPC recommendations for public buildings;

- repealing provisions for cases which lack inspection;
- the obligations and responsibilities of energy auditors;
- provisions for implementing independent control systems;
- contraventions and penalty charges;
- the validity of issued EPCs;
- elaborating a study on the technical, environmental and economic feasibility of energy use from RES. For new buildings, a complete study has to be presented to the public authority in order to obtain the urban planning certificate.

## 2. Current Status of Implementation of the EPBD

The transposition of the EPBD is implemented by Law no. 372/2005 (recast 2016), which relates to the energy performance of buildings and includes further amendments, and the technical regulations methodology for calculating the energy performance of buildings, Mc 001 – 2006. Further amendments to the methodology were developed based on the provisions of available European standards.

As an amendment to Law no. 372/2005, several definitions were introduced for:

- public buildings (from Law no. 159/2013);
- major renovations of existing buildings (from Law no. 156/2016);
- buildings frequently visited by the public (from Law no. 156/2016).

### 2.1. Energy performance requirements: NEW BUILDINGS

For the design of new buildings (residential and non-residential), technical rules are set out in the code for the thermal calculation of building elements C 107-2005, with further amendments in 2010 and 2012. In 2016, the code was amended by Ministerial Order no. 386/2016, setting the NZEB performance levels for primary energy demand and CO<sub>2</sub> emissions for different building categories and winter temperature zoning in Romania (5 climatic zones according to the National Standard SR 1907-1:2014) and also the minimum contribution of renewable energy.

#### 2.1.i. Progress and current status of new buildings

Some of the minimum energy requirements set in C 107-2005, with further amendments, are under review. Ministerial Order no. 2641/04.04.2017 (published in the Official Gazette of Romania no. 252/11.04. 2017<sup>2</sup>) amended Mc 001 – 2006 to set explicit minimum energy requirements for new and existing buildings (residential and non-residential buildings, i.e. office, commercial and industrial buildings, as well as health care, educational, sport and tourist buildings). The minimum energy requirements will be further reviewed in the process of revising Mc 001 – 2006.

### **2.1.ii. Format of national transposition and implementation of existing regulations**

For building design (both residential and non-residential), the technical regulation currently in force is C 107-2005, revised and completed with further amendments in 2010 and 2011. The code contains design indicators for building elements, the entire heated air volume and restrictions on thermal resistance values, but no global indicators for the energy consumption/efficiency of individual technical building systems (heating, domestic hot water, heating ventilation and AC or lighting) are presented.

For residential buildings, the code sets the annual maximum heating demand without taking the efficiency of the technical building systems into account. The code presents values for minimum thermal resistance and maximum thermal transmittance, corrected for thermal bridging, for each building element within the building envelope, as well as the global heat transfer coefficient for thermal insulation in this respect.

For non-residential buildings, the code presents values for minimum thermal resistance for each building element within the building envelope and calculation rules for the global heat transfer coefficient.

The Ministerial Order no. 2641/2017 sets maximum allowable values for the annual primary energy demand for space heating for different building categories and CO<sub>2</sub> emissions factors from different fossil/non-fossil fuels.

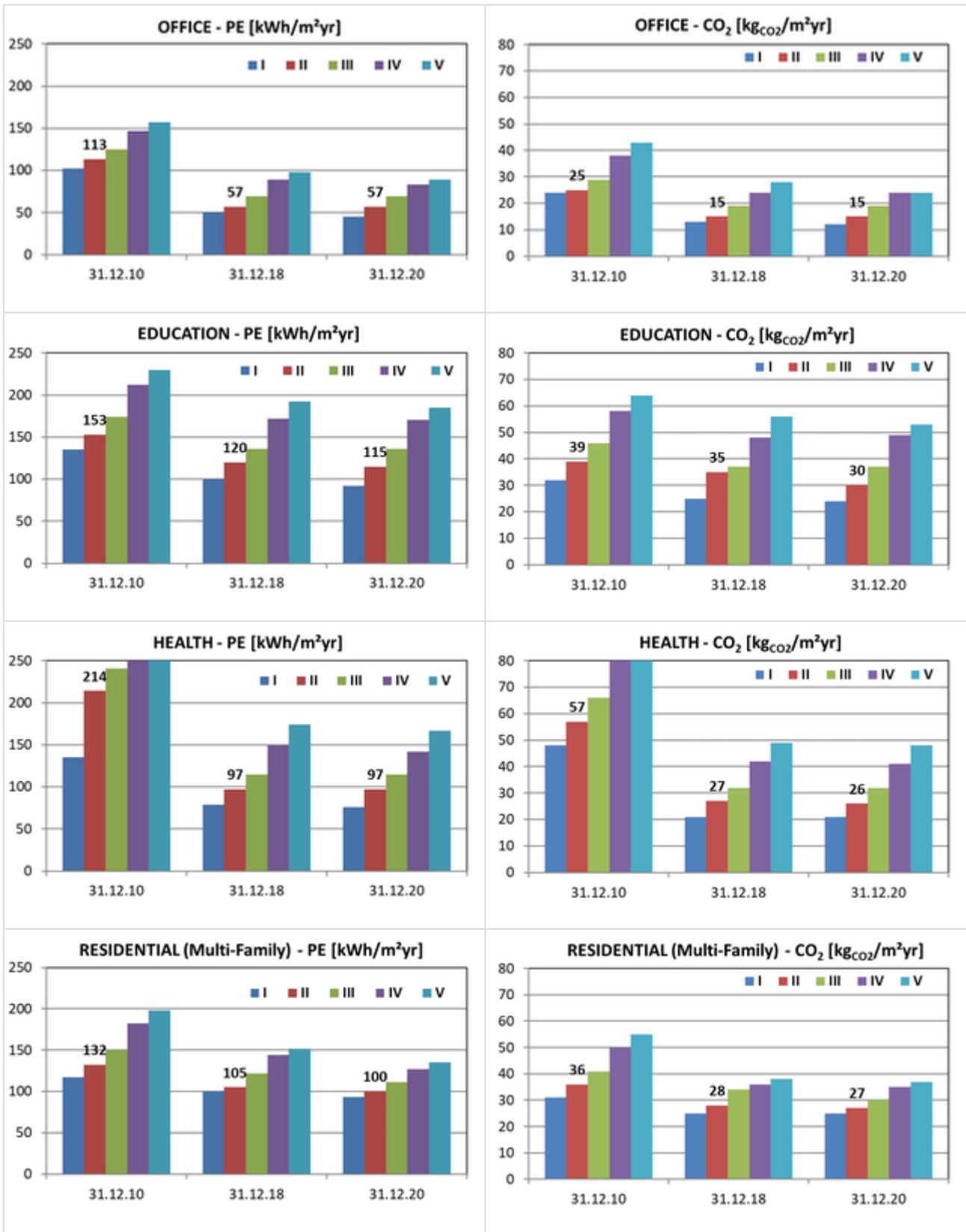
The national report for cost-optimality is under review and no further practical information is currently available.

For new buildings, compliance with technical regulations shall be checked in two phases: first at the time of building permit request, when a study on technical, environmental and economic feasibility of high-efficiency alternative systems should be presented, and secondly after the completion of the building construction works.

### **2.1.iii. Action plan for progression to NZEB for new buildings**

The national plan for increasing the number of NZEB was reviewed in 2014 and minimum energy requirements for single- and multi-family houses and office buildings were determined based on previous analyses of cost-optimal levels.

In 2016, the NZEB requirements for new single- and multi-family houses, office buildings and educational/health care facilities (the maximum allowable values for primary energy from conventional sources of energy and CO<sub>2</sub> emissions) were defined (enforced) by Ministerial Order no. 386/2016 amending C 107-2005. For their implementation, intermediate values for new public buildings are set for the period until 31 December 2018 and values are set for all other new buildings until 31 December 2020. The graph below (Figure 1) illustrates the maximum values for primary energy demand (PE) and CO<sub>2</sub> emissions (CO<sub>2</sub>) for key categories of non-residential and residential buildings for the period until 2018-2020 (NZEB values), differentiated by climatic zones (I to V), and values for zone II (average representative for Romania).



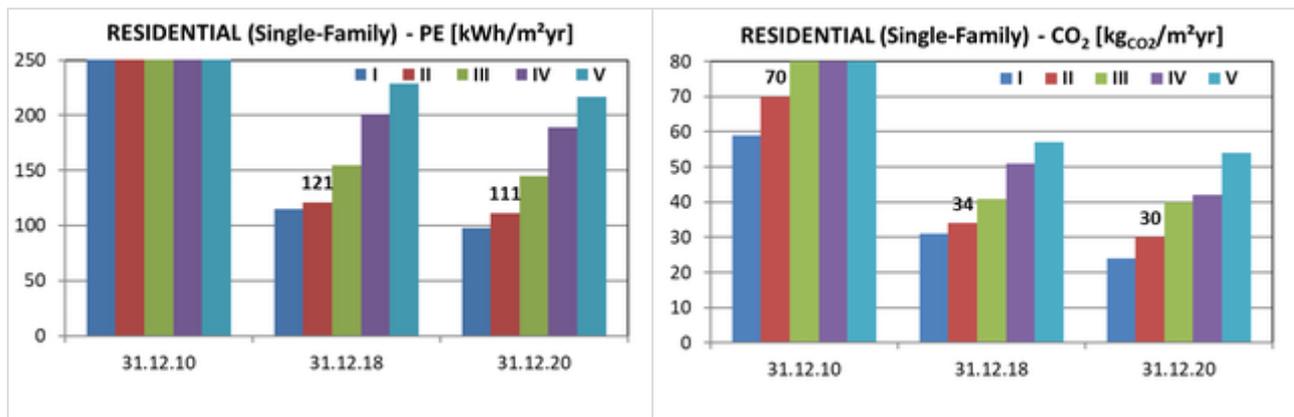


Figure 1. Maximum values for primary energy demand (PE) and CO<sub>2</sub> emissions (CO<sub>2</sub>) for key building categories for the period until 2018-2020 (NZEB values), differentiated by climatic zones (I to V), and values for zone II (average representative for Romania).

Public authorities for local communities of more than 5,000 inhabitants must initiate multi-annual plans to increase the number of NZEB (including new and existing single- and multi-family houses, office buildings, educational, health care, tourist and sport buildings) in order to comply with Law no. 372/2005 (recast 2016), including further amendments. The local development plans shall contain financial policies/measures and possible financial incentives as it is a local government decision-making issue to promote NZEB and the use of RES in new buildings and existing ones undergoing major renovations.

Renewable energy sources must provide at least 10% of the total calculated primary energy needs of NZEB.

The EPC format shall be reviewed to introduce diversified energy classes for residential/non-residential NZEB.

As of November 2016, there are no newly constructed or existing NZEB documented in Romania (residential, non-residential or public buildings) and no further relevant data is available on this topic.

#### **2.1.iv. Requirements for systems and / or building components for new buildings**

The design of the technical building systems is based on the energy performance requirements set in the technical regulations: I 13 - 2015 (central heating installations), I 9 - 2015 (sanitary installations in buildings), I 5 - 2010 and GEx 011 - 2015 (ventilation & AC installations), I 7 - 2011 (lighting installations in buildings).

The calculation of heating and cooling energy needs is based on the provisions of the national standards: SR 1907-1&2:2014 (heating systems), SR 6648-1&2:2014 (ventilation & AC installations).

Energy consumption in buildings is assessed based on the methodology set in Mc 001-2006, with further amendments.

The guidance on the use of RES in new and existing buildings (technical regulation GEx 013-2015) implements the rules for use of energy from RES in buildings or in their vicinity and may be used in the design of new buildings or major renovations of existing buildings.

## **2.II. Energy performance requirements: EXISTING BUILDINGS**

The energy performance of buildings and building units (apartments) is based on their energy consumption as calculated according to C 107-2005 and Mc 001-2006, with further amendments, including the new ministerial order published in the spring of 2017.

For buildings undergoing major renovations, the energy performance of the building or the renovated part thereof needs to be upgraded in order to meet the minimum energy performance requirements set in C 107-2005, with further amendments, so far as this is technically, functionally and economically feasible.

### ***2.II.i. Progress and current status of existing buildings***

The minimum energy requirements applied to the renovated building or building unit as a whole include:

- building elements within the building envelope;
- minimum corrected thermal resistances;
- maximum corrected thermal transmittances and maximum annual primary energy consumption for heating from conventional sources in residential buildings;
- maximum annual primary energy consumption for heating from conventional sources in non-residential buildings – office and commercial buildings, and educational, health care, tourist, and sport facilities.

See also section 2.I.i above. In the case of major renovations, the thermal renovation of the building envelope is usually taken into consideration in the first instance and the improvement or replacement of the technical building systems is considered, where necessary.

### ***2.II.ii. Plans to improve the existing building stock***

Since 2014, the current national strategy for increasing investment in the renovation of residential and commercial buildings, both public and private, has been included in the National Energy Efficiency Action Plan (NEEAP), published in 2015.

The NEEAP aims to increase the energy efficiency and the use of RES in the existing building stock and encompasses the following stages:

- Stage 1 – sets the target to implement major renovations in the next 5 years;
- Stage 2 – sets the target to implement major renovations towards NZEB in the next (more or less) 15 years;
- Stage 3 – sets the target to implement deep renovations in the next 15 years.

In the case of major renovations, the NZEB concept may be applied as long as the appropriate investments are technically and economically justified, so that the renovation work still provides greater benefits than costs over the expected lifetime of the building operation.

The NZEB requirements for existing single- and multi-family houses, office buildings, and educational and health care facilities are the same as those for new buildings that have been enforced by Ministerial Order no. 386/2016 amending C 107-2005.

As for new buildings, to comply with Law no. 372/2005 (recast 2016), with further amendments, the local public authorities for communities of more than 5,000 inhabitants must initiate multi-annual plans to increase the number of NZEB. The local development plans shall contain financial policies and other measures to promote NZEB and the use of RES in existing buildings undergoing major renovations.

In relation to major renovations, high-efficiency alternative systems may be taken into account as far as this is technically, functionally and economically feasible.

For existing NZEB buildings, RES shall provide at least 10% of the total calculated primary energy needs. This indicator is required as a minimum share of renewables for publicly funded renovation projects.

The reviewed EPC template with diversified energy classes for residential/non-residential NZEB will be used in publicly funded renovations in order to support an increased ambition of performance indicators and renovation impact monitoring.

As of November 2016, there are so far no existing buildings undergoing major renovations towards NZEB in Romania (residential, non-residential or public buildings) and no relevant data is available on this topic.

Complementary actions are taken in order to scale up investments in deep renovations of buildings in Romania, e.g., by supporting the implementation of relevant data and use of the tool developed under ENERFUND<sup>3</sup>. Funded by the European Commission's Horizon 2020 programme, the ENERFUND online app<sup>4</sup> provides key stakeholders, such as financing institutions, energy service companies and local authorities, with sound and up-to-date information regarding energy efficiency of the Romanian building stock and easy comparison with other European countries. In particular, it uses data from EPCs to map energy renovation opportunities and could also be used to monitor and showcase implemented renovation projects.

### ***2.II.iii. Regulation of system performance, distinct from whole building performance***

Law no. 372/2005 (2016 recast), with further amendments, imposes the minimum energy performance requirements for major renovations of individual building elements within the building envelope and technical building systems so that their performance meets minimum requirements set by national technical regulations (C 107-2005, Mc 001-2006, I5-2010, I7 -2011, I9-2015 and I13-2015) in so far as this is technically, functionally and economically feasible.

Also, by Law no. 196/2018 on the establishment, organisation and operation of the owners' associations, as subsequently amended and supplemented, states that the owners are obliged to take measures for consolidation or modernisation of the building, thermal rehabilitation and energy efficiency, according to the legal provisions. Regardless of the nature of the interventions, it will be considered to maintain the harmonious and unitary appearance of the entire building.

### ***2.II.iv. Encouragement of intelligent metering***

Law no. 372/2005 (recast 2016), with further amendments, allows the introduction of intelligent metering systems whenever a building undergoes major renovations, and, where appropriate, the installation of active control systems such as automation, control and monitoring systems that aim to save energy.

### ***2.II.v. Financial instruments and incentives for existing buildings***

Legal acts have been adopted with the aim of stimulating energy-efficiency-related measures financed by:

- structural funds and funds from public finance institutions for increasing energy efficiency in buildings, especially in housing;
- state budget allocations for stimulating investments in energy efficiency for achieving union objectives;
- local budgets for the elaboration of technical-economical documentation for design projects, EPCs, technical expert reports and energy audits;
- the execution of construction works for the major renovation of buildings listed in the national/local financial support multi-annual programmes with the aim of increasing energy efficiency in existing buildings.

The local authorities have an obligation to annually allocate finance from public funds for the elaboration of the documents mentioned above, and for the execution of the major renovation works for single- and multi-family buildings and buildings occupied by public authorities and for some categories of buildings frequently visited by the public.

In order to improve financing in support of implementing Directive 2010/31/EU, the use of financial incentives for major renovation works is regulated by:

- the Government Emergency Ordinance no. 18/2009, for increasing the energy efficiency in residential buildings, approved by Law no.158/2011, with further amendments: 50% is covered as a subsidy from the state budget allocations, 30% from the local public funds and 20% from the building repair fund of the single-family building/apartment building owners' association, representing owners' contribution;
- the Government Emergency Ordinance no. 69/2010 for increasing the energy efficiency in residential buildings via funding from bank loans with governmental guarantees: 10% is covered from the owners' association funds and 90% from the bank loans with governmental guarantees;
- EU regulations and procedures related to Structural and Cohesion Funds from the European Union: 60% is covered from the European funds and state budget allocations approved annually for this purpose in the MDRAP budget and 40% from the funds approved annually for this purpose in local budgets, as well as from the owners' association building repair fund and/or other legal sources;
- funding from local dedicated programmes.

## **2.II.vi. Information campaigns / complementary policies**

Information campaigns are organised in compliance with Law no.372/2005 (recast 2016) announcing initiatives as follows:

- programmes and other activities disseminating information through the media on implementing different methods and practices to increase energy performance and for using high efficiency alternative systems;
- awareness programmes on available financial instruments, including the use of funds for promoting green technologies by developing green investment schemes<sup>5</sup>;
- policies and programmes to increase the number of NZEB using energy from conventional sources by 2020 will be developed after the approval of the national housing strategy by government decision;
- programmes for increasing energy efficiency and for installing and operating alternative energy supply systems in buildings financed by the Environmental Fund Agency through the programmes Casa Verde<sup>6</sup> and Casa Verde Plus<sup>7</sup>, and by the Regional Programme through Priority Axis 3, IP 3.1, Operation A - Residential Buildings, dedicated to encouraging sustainable energies, and through Priority Axis 3, "Supporting the transition to an economy low carbon emissions", Specific objective 3.2, "Reducing carbon emissions in urban areas based on sustainable urban mobility plans".
- Information regarding ongoing thermal renovation programmes, including funding mechanisms, is presented on the MDRAP website<sup>8</sup>.

The Government Programme for 2017-2020 aims to inform, educate and alert consumers to conserve energy and increase efficiency.

One of the main barriers for the effective application of the NZEB concept in Romania was recognised during the BUILD UP Skills initiatives<sup>9</sup> pertaining to the skills gaps experienced by the building sector. To tackle this, the qualification schemes developed under BUILD UP Skills and the developments of the Train-to-NZEB project are used as effective tools to satisfy the existing demand for practical training of trainers and teachers, to provide opportunities for organising courses to certify builders of NZEB and to update existing skills. The Building Knowledge Hub (BKH) in Romania<sup>10</sup> (one of the 5 BKHs set up in 5 countries) will provide the capacity for conducting practical trainings for on-site professionals, high-level specialists and decision makers. For deep renovations of existing buildings, the Fit-to-NZEB project<sup>11</sup> aims to increase the competence and skills of the building professionals in Romania through unique educational programmes and pilot training courses, which is expected to contribute to both the quality and the scale of the deep energy building renovations.

## **2.III. Energy performance certificate requirements**

The new ministerial order approved in April 2017 amends the current general format and content of building and building unit EPCs by introducing the primary energy conversion factors used for determining primary energy use.

Amending Law no. 372/2005 and Law no. 156/2016 enforces more effective directive transposition through:

- revised definitions and content, including recommendations of EPCs:
- new obligations for public authorities and owners of buildings frequently visited by the public;
- better procedures conducted by the State Inspectorate for Construction (ISC) for the independent control of EPCs and inspection reports.

### ***2.III.i. Progress and current status on sale or rental of buildings and EPCs***

For all new buildings (residential and non-residential, public and private), building permits shall only be granted when the minimum energy requirements are fulfilled and the study on the technical, environmental and economic feasibility of energy use from RES is presented. The minimum energy requirements shall be checked based on detailed calculations (similar to those needed for the EPC) taking into account design data, while the EPC is required at the commissioning phase, based on as-built data.

The EPC shall present recommendations for energy use reduction in the building, as well as estimates and measures to be taken for energy savings, including detailed information on rentability and the steps to be taken to implement the recommendations, including specific information on the financial incentives or other funding means to be used.

### ***2.III.ii. Quality Assurance of EPCs***

In compliance with Law no. 372/2005 (recast 2016), with further amendments and based on its specific control procedure approved by MDRAP Order no. 3152/2013 (PCC 001-2013 indicative), the ISC has conducted random checks between January 2015 and September 2016, as follows:

- 2015: 613 new and existing buildings, 579 deficiencies, 5 sanctions imposed on energy auditors, 1,000 € penalty amount,
- 2016: 381 new and existing buildings, 274 deficiencies, 16 sanctions, 10,000 € penalty amount.

The ISC control mainly focuses on:

- the display of the EPC in buildings with total useful floor area of over 250 m<sup>2</sup> owned and occupied by public authorities and institutions providing public services;
- energy auditor/assessor certification requirements (specific higher education, area of expertise);
- signatures and stamps on EPCs and energy audit reports for buildings based on the legal provisions in force;
- the completeness and accuracy of information presented in EPCs and energy audit reports.

### ***2.III.iii. Progress and current status of EPCs on public and large buildings visited by the public***

The public authorities and the owners or managers of buildings frequently visited by the public shall display the EPC for buildings where a total useful floor area of over 500 m<sup>2</sup> (250 m<sup>2</sup> starting 9 July 2015) is occupied by a public authority and frequently visited by the public.

For public buildings, the public authorities shall implement the recommendations included in the EPC within its validity period. In this respect, the public buildings shall first be structurally inspected and energy audited, and the building design, execution and handover shall be conducted based on the legislation and technical regulations in force.

The renovation works may be financed by local public funds and European structural funds or cohesion funds.

Annually, 10% of the EPCs, energy audit reports and heating and AC systems inspection reports are randomly checked by the ISC and registered in dedicated databases.

### ***2.III.iv. Implementation of mandatory advertising requirement - status***

No practical information is available on the current status of commercial media advertising around EPCs of buildings or building units for sale or rent.

## **2.IV. Inspection requirements - heating systems, air conditioning**

In order to reduce energy consumption and limit CO<sub>2</sub> emissions, inspections of heating systems are carried out regularly and inspection reports are issued by certified technical experts. There are two institutions that have responsibilities, tasks and shared competencies in the field of heating systems, namely the ISC (State Inspectorate for Construction), which ensures the integrated heating and heating control system, and the State Inspection for Boiler Control, Pressure Vessels and Hoisting Installations (ISCIR), which ensures the control of the installation and operation of equipment, boilers and pressure vessels.

Inspections of AC systems are carried out regularly and inspection reports are issued by certified technical experts.

In the case of AC systems, the consumers shall be informed of possible measures to be taken on the replacement of AC systems or on other modifications to the AC system, which may include inspections to assess the efficiency and appropriate sizing of the system.

The system inspections are carried out in compliance with energy performance requirements for technical building systems set in the technical regulations in force on the date of inspection.

### ***2.IV.i. Report on equivalence of model A and B for Heating Systems***

Law no. 372/2005 (recast 2016) with further amendments lays down the necessary measures to establish the regular inspection of heating systems.

### ***2.IV.ii. Progress and current status on heating systems***

Inspection is performed based on the provisions of the technical regulations (guidelines) for energy performance inspection of boilers and heating systems in buildings

The inspection report presents recommendations for improving the energy performance of the heating system.

### ***2.IV.iii. Progress and current status on AC systems***

Inspection is performed based on the provisions of the technical regulation (guidelines) for energy performance inspection of AC systems of an effective rated output of more than 12 kW.

The inspection report presents recommendations for improving the energy performance of the AC system.

### ***2.IV.iv. Enforcement and impact assessment of inspections***

#### **Enforcement and penalties**

Law no. 372/2005 (recast 2016) with further amendments, states that regular inspections of heating and AC systems in buildings or building units shall be carried out periodically by certified technical experts.

There is no information available on penalties or use of these inspections.

#### **Quality control of inspection reports**

There is currently no information available on quality control of inspection reports.

#### **Impact assessment costs and benefits**

There is no information available on the impact assessment, costs and benefits.

## **3. A success story in EPBD implementation**

In order to improve the energy performance of residential buildings and achieve the annual target on specific energy for heating consumption, a national programme was promoted in compliance with:

- Government Emergency Ordinance no. 174/2002 enforcing provisions of the Directive 76/1993/EEC;
- Government Emergency Ordinance no. 18/2009, with further amendments, repealing Government Emergency Ordinance no.174/2002 and enforcing provisions of Directive 31/2010/EU.

The programme was targeted towards building and building unit owners and/or owners' associations, and establishes different funding mechanisms, as follows: 40% public and 60% private funds (Government Emergency Ordinance no.174/2002); 80% public and 20% private funds (Government Emergency Ordinance no.18/2009, with further amendments).

According to Law no. 273/2006 regarding local public funds, with further amendments, the public funds for building thermal renovation started to be recovered from beneficiaries through further taxation by local authorities since 2014 (Government Emergency Ordinance no.63/2012 amending Government Emergency Ordinance no.18/2009).

For the efficient use of public funding in implementing various thermal renovation measures, the standard for costs of housing thermal renovation was developed and approved by Government Decision 363/2010.

The standard (currently repealed) set costs per square metre of building floor area for the thermal improvement of the building envelope.

The 2012 version of the standard was developed based on the implementation of its 2010 provisions in the ongoing programme. The new standard sets the costs for:

- individual building elements that form part of the building envelope;
- technical building systems (domestic hot water and AC, including passive cooling systems) and related equipment to allow its connection to the central heating systems, as appropriate.

In 2016, the thermal renovation works on residential buildings have been carried out for 88 housing units, accounting for 3,026 apartments.

## 4. Conclusions, future plans

For better implementation of Directive 31/2010/EU, the methodology for calculating energy performance of buildings (Mc 001-2006, with further amendments) shall be revised taking into account the proposed amendments to the directive and the provisions of the new/revised European Energy Standards. In addition, a new technical regulation shall be developed including guidelines of good practice for calculating cost-optimal levels of minimum energy performance requirements for buildings and building elements in new, existing, residential and non-residential buildings. Elaboration of the above technical regulations began in March 2017.

For increasing the energy efficiency in non-residential buildings, the next call for application from public authorities to participate in the 2014-2020 regional operational programme financed from structural funds began in spring 2017.

## Endnotes

1. [www.monitoruloficial.ro/emonitor/index.php?zi=30&luna=9&an=2016](http://www.monitoruloficial.ro/emonitor/index.php?zi=30&luna=9&an=2016)
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