



CONCERTED ACTION ENERGY PERFORMANCE OF BUILDINGS

(CT3) Certification, Control system and Quality Status in October 2016

AUTHORS

Xavier Loncour & Nicolas Heijmans, *Belgian Building Research Institute, Belgium*

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1. Introduction

All MSs are required to set up certification and disclosure schemes for buildings. They must also set up inspection schemes for heating and air-conditioning systems, or implement alternative measures. Most of the requirements related to certification and inspection derive from the EPBD Directive 2002/91/EC/2002, which was to be fully implemented by 2009, at the latest. Therefore, countries have systems in place that address these requirements, though a few MSs are still working on the transposition of specific parts of that directive. Most countries have developed systems, and now have significant experience, in the certification of buildings, inspection of heating systems and, to some extent, inspection of air-conditioning systems. Furthermore, over the years, MSs have developed and collected significant experience with independent control systems.

Currently, the major challenges are in the quality and effective implementation of certification and inspection systems, to ensure that the **full impact** of these systems is realised. The focus of the work in the CA EPBD is oriented towards possible improvements to existing schemes and the exchange of best practices, rather than on developing systems from scratch.

This report focuses on the quality of both certification and inspection systems as well as on the full implementation of the certification system. For consistency, issues linked to the actual implementation of inspection systems are covered in the CT2 report on existing buildings.

2. Objectives

For the general public, the EPC provision of the EPBD is one of the most visible elements of the directive. EPC systems use significant resources in the MSs and can thus be expected to deliver significant savings. However, some elements in the systems that have been developed reduce their impact. This central team's objectives are therefore to identify the elements that limit the certificates' outcomes and to investigate how these could be improved upon, using the substantial experience gained from the MSs. The differences and challenges are often found in the system's details that require improvement: for example, the quality of the reports and certificates, the monitoring and development of databases and capacity building on multiple levels.

A major challenge is the quality and use of certification and inspection systems to maximise impact whilst maintaining rational costs. Many lessons have been learned on a national level and some of the major tasks within the CA EPBD are linked to sharing these experiences and to the development of material on how to gradually improve certification, inspection reports and control systems, as well as to understanding why some systems work better than others.

The work focuses on learning from European experiences and developing lessons learned and recommendations. It focuses especially on quality and usefulness of the certification system and on specific technical elements linked to certification, which MSs have found to be of interest.

3. Analysis of Insights and Main Outcomes

Steps in the Energy Performance Certification process

The scheme that delivers EPCs or inspection reports can be divided into several steps (Figure 1). Based on this structure, those aspects that significantly influence the quality and the public's perception of the schemes have been identified and will be central to the following discussion.

Figure 1 presents the elements required to implement functional EPC schemes and regular inspection of heating and air-conditioning systems. This image presents six (6) steps necessary to develop a functional EPC or inspection scheme, to deliver the reports and to guarantee the overall quality of the system. The process begins with the legal framework (step 1), requires a methodology (step 2), training of experts (step 3), the delivery of an EPC (step 4) and the availability for third parties (step 5). It concludes with feedback from the market (step 6). The independent control system and the communication strategy are two relevant overarching elements for the whole process. Depending on the MS, some of the steps in Figure 1 can be arranged in a different order. Each step covers different elements that may not necessarily be fully developed in every MS. For instance, a few MSs have not begun working with a central EPC database and some do not have a single official EPC software.

The different EPBD articles can be linked to these steps and overarching items. In practice however, there are a number of additional attention points beyond those explicitly specified in the EPBD articles that have to be taken into account. This structure has been used to organise the discussions between MSs and is also used in the context of this report.

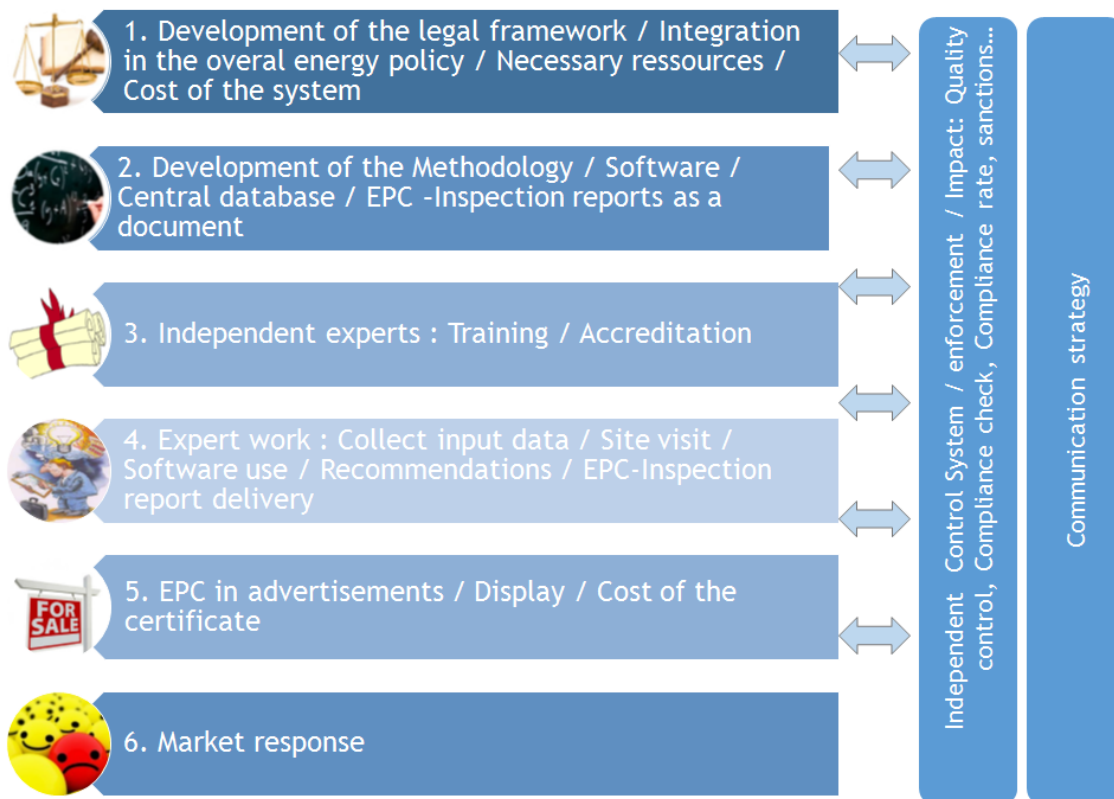


Figure 1. Steps in the Energy Performance Certification and regular inspection scheme process

3.1 Focusing on the most important topics for the MSs

Information sharing between MSs has made it possible to identify areas where international collaboration is useful for the improvement of the certification and regular inspection procedure. Therefore, the current challenges and remaining difficulties at different steps of the implementation process, as presented in Figure 1, have been identified and prioritised. Table 1 presents the average opinion among MSs on the importance of the steps to the credibility of the EPC scheme, ranging from 0 (no impact) to 4 (decisive influence) and the number of areas where improvement is necessary in at least five (5) MSs. Most topics still focus on technical issues related to the development of the methodology (step 2), independent control system and enforcement strategy (overarching element) and to the legal framework (step 1). In addition to the various topics presented in this report, exchanges of information useful for most countries have been identified on the following topics:

- development of the methodology: how to take step-by-step renovation into account in the EPC, the best way to determine realistic energy savings and the cost-effectiveness of the recommendations;
- independent control system and enforcement strategy, including use of EPC databases: strategies to organise control systems, experience gained from controls of randomly selected sample cases and with the application of sanctions in case of non-compliance;
- legal framework: strategies to encourage the implementation of the recommendations and how to integrate long-term goals and vision into the EPC for the considered building;
- market response : impact of the EPCs on the price of the buildings.

Steps in the Energy Performance Certification and regular inspection scheme Process	Number of topics where improvement is needed in at least 5 MSs	Impact on the credibility of the scheme (0 = no impact / 4 = decisive)
1 - Development of the legal framework / integration into overall energy policy / Necessary resources / Cost of the system	3	3.1
2 - Development of methodology / Software / The EPC (as document) / Central EPC database	13	3.2
3 - Independent experts - Training and accreditation	2	3.2
4 - Expert work - Collecting input data / Site visits / Software use / Recommendations / EPC delivery	1	3.2
5 - EPCs in advertisements / Display / Costs of the certificate	2	2.7
6 - Market response	1	2.9
Overarching element 1: Independent control system / Enforcement / impact assessment: Quality control, Compliance check, Compliance rate, Sanctions	3	3.2
Transversal item 2: Communication strategy		

Table 1. Summary of topics important to MSs and their impact on credibility.

Even if problematic situations are identified in several MSs, the issues of “*independent expert profiles*” and “*expert work*” (steps 3 and 4) generate the lowest level of interest from the MSs. However, these steps are still recognised as significantly impacting how the EPC is perceived (see §3.2).

Main Outcomes of 3.1

Most of the MSs’ challenges are linked to technical issues, control systems, and enforcement strategies. The MSs recognise that several elements ranked as a low priority for discussion during the CA EPBD can still influence stakeholder’s perceptions of the scheme. For instance, in the case of “*expert profiles*,” these topics would require specific attention at a national level in order for the overall quality of the existing schemes to remain uncompromised.

3.2 Understanding and Improving the perception of the EPC

Good quality data and information forms the backbone of confidence in an EPC system. Criticism has been expressed in the past regarding the efficiency of EPCs as they are currently implemented¹. To achieve the goals of the EPC system, stakeholders' perceptions of and trust in the system is critical. Therefore, understanding stakeholders' opinions in order to make improvements in response to their feedback can be an important part of maintaining an EPC system. In practice, numerous individuals are involved in the EPC system and even more are in contact with the documents (certificates), including: experts in charge of the delivery of the EPC, real-estate agencies, the owners of the certified buildings, and future tenants or buyers.

3.2.1 Assessment of the perception of the EPC systems

The reputation of the EPC system varies significantly between MSs. A self-evaluation of EPC systems by MSs' experts shows that no MSs' systems were rated either very-poor (0-value) or excellent (4-value). The evaluation scores are in the range of 1 to 3, with a 2.1 average. EPCs are delivered in very different situations (new buildings vs. existing buildings, residential vs. non-residential buildings), with the consequence that there can be different perceptions of the various EPC systems between different stakeholders/types of certificates in one particular MS. These multiple (positive or negative) perceptions are not the same in every MS. For instance, in Croatia the scheme for existing residential buildings has the best reputation.

More than half of MSs consider it essential or very important to be able to objectively assess the perceptions of their EPC system. Programmes or studies to evaluate the quality of the EPC scheme had been realised in 12 MSs as of the end of 2016. These programmes were conducted by the organisation in charge of the EPC or by third parties, such as consumer organisations (Figure 2).



Figure 2. Examples of EPC quality assessment undertaken by consumer organisations in Europe.

Twenty MSs intend to develop, begin or continue actions to evaluate and improve the perception of their EPC schemes. To date, no MS has an exact definition of what the “*reputation*” of the EPC system means. Further development of EPC reputation definitions should be undertaken in the future.

3.2.2 Elements identified as significantly impacting perceptions of the EPC

Based on MSs’ experience, Table 1 above presents the impact of the different steps of the certification process on the credibility of the schemes. The specific elements that have been identified as most significantly impacting the credibility of EPC schemes are:

1. communication relating to the EPC;
2. implementation and management of the independent control system;
3. effective and proportionate sanctions in case of poor quality or non-compliance with the EPC-related requirements;
4. resources necessary to operate the EPC system;
5. initial expert training and expert profile requirements;
6. continuous training of the experts (retraining according to regulation improvements);
7. quality of EPC recommendations.

Several elements have been identified as problematic for the perception of the EPC system. Table 1 presents an overview of these linked to the steps in the certification process. The top five (5) issues requiring solutions most frequently mentioned by the MSs are:

1. differences between asset rating and real energy consumption;
2. means to monitor and improve the reputation of the system;
3. resources required to operate the EPC system;
4. inputs and data required from the building owner;
5. communication and marketing campaigns related to the EPC.

Identification of these elements makes it possible for MSs to initiate specific actions to improve EPC schemes by addressing these points.

Highlights of 3.2	<p>Currently, no MS has a definition of what the “<i>reputation</i>” of the EPC system means exactly. This needs to be further investigated in the future.</p> <p>More than half of MSs consider the ability to objectively assess perceptions of their EPC system important.</p>
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Main Outcomes of 3.2

Confidence in the EPC system shapes its credibility and the general public's views towards it. Twenty (20) MSs intend to develop, begin or continue actions to evaluate and improve how their EPC schemes are perceived. Actions to objectively assess perceptions were effectively undertaken in 12 MSs. In practice, the situation varies from country to country and multiple perceptions of the EPC, according to the type of building considered, may be found at the national level. A ranking of the elements that impact perceptions of the EPC allows for specific actions to be developed to improve these perceptions.

3.3 Modifying the EPC content and layout

MSs identified communication relevant to the EPC as the most significant element impacting EPC perceptions (see §3.2). Improving the attractiveness of EPCs is therefore an important lever to maximising benefits. Since the introduction of the first version of national EPCs, many MSs have in some way modified the EPC delivered to the final clients. Alterations to the EPC may include adding classes, changing limits (e.g., Figure 3), changing colours and modifying the layout (e.g., Figure 4).

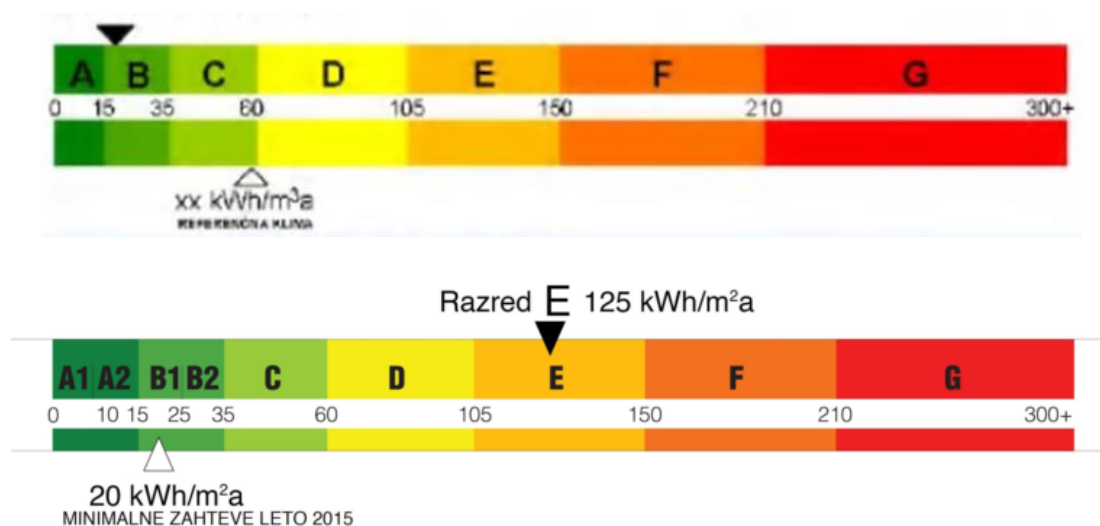


Figure 3. Example of rescaling the EPC – 2008 and 2014 EPC in Slovenia.

There can be different motivations for modifying the EPC content and layout. In 2010, the main driver for MSs to modify the EPC was the introduction of new, stricter requirements: for example, alterations to the stepped certification scale (classes) to better reflect both ends of the scale, for both existing buildings and new buildings complying with new requirements. With increasing experience in all MSs, other motivations may lead to updates of the EPC content, such as taking consumer feedback into account, integrating better knowledge of the building stock or solving specific national problems². The coexistence of old and new EPCs also needs to be taken into account.

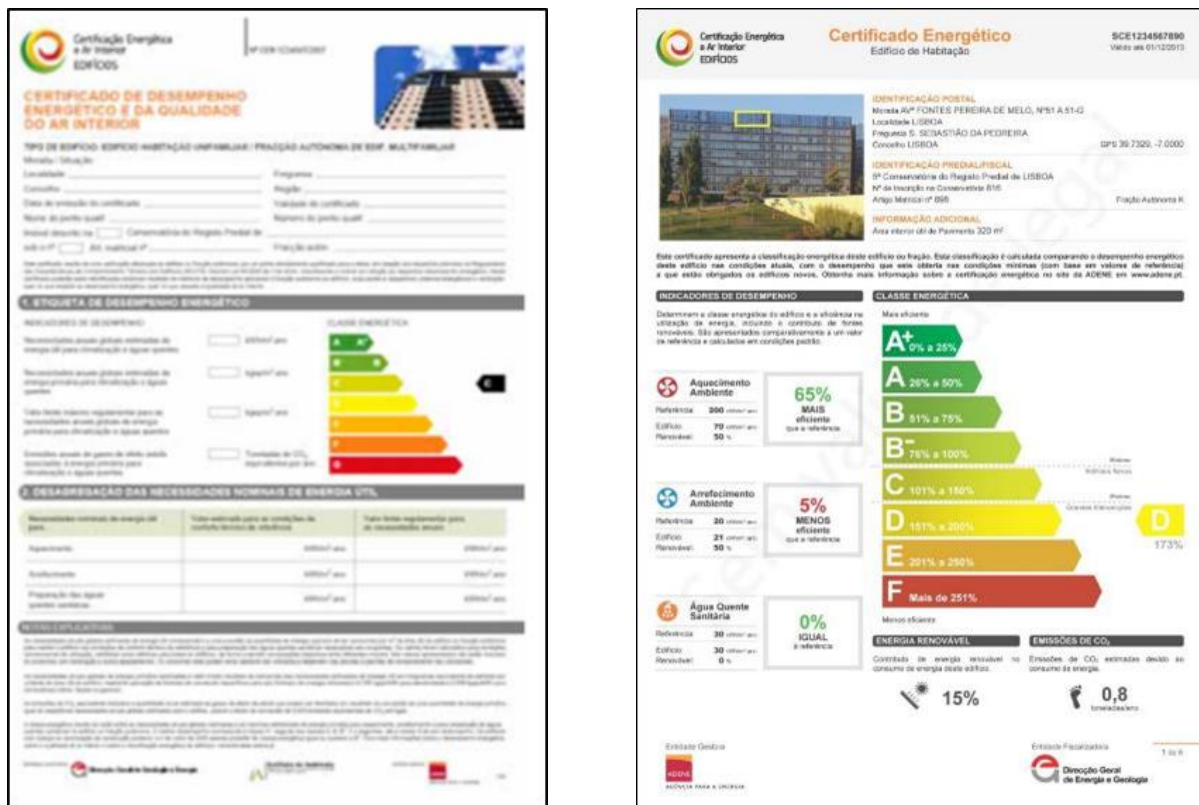


Figure 4. Example of modifications to the EPC layout – 2008 and 2014 EPC in Portugal.

3.3.1 A wealth of existing experience

Comparison between EPCs issued in 2008 and 2014 shows that half the MSs have modified the layout of their EPCs. A second type of modification results from a change in the definition of the label, the consequence of which is a rescaling of the new EPC. Such a rescaling has taken place in 15 MSs. This rescaling can take different forms: a full change of the EPC concept, dividing some of the A to G classes, changing or merging the classes' limits (Figure 5). After several years of experience, many MSs have a better knowledge of their national building stock. This information from past EPCs and those included in the database, if any, may be used to define the new scale and band boundaries.

3.3.2 Managing the coexistence of several EPC versions at the same time

Most EPCs have a maximum validity of ten (10) years. Modifying the EPC content means that EPCs with different content could coexist for several years. When a new version of the EPC is launched, no new EPCs based on former versions will be issued but EPCs already issued under the previous version could still remain valid for several years. In 2010, this was deemed a risk that could create confusion for the public. This coexistence is, in general, taken into account when modifying EPC content, e.g., to make a comparison possible, and MSs that have experience with overlapping versions of EPCs do not consider it to be a major issue any longer.

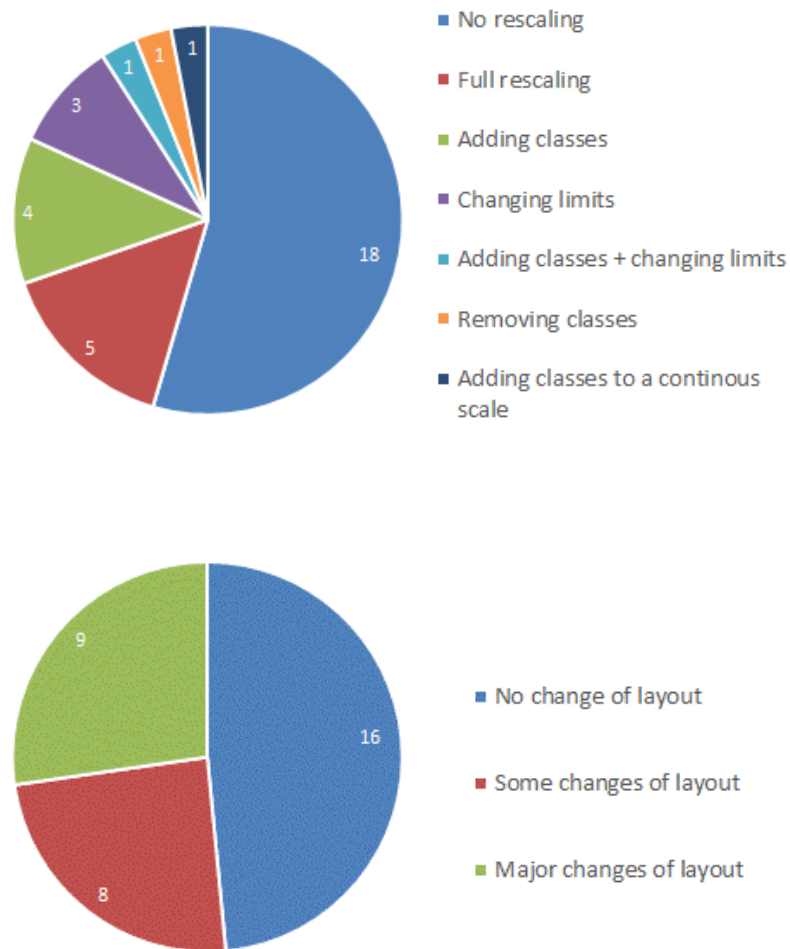


Figure 5. Types of rescaling (top) and layout changes (bottom) made to EPCs between the 2008 and 2014 versions³

Highlights of 3.3 When comparing the 2008 and 2014 versions of the EPC, 17 MSs had modified the layout over time. Major changes to the layout had been made in nine (9) MSs. During the same period, 15 MSs rescaled EPCs, ranging from light changes to a full rescaling.

Main Outcomes of 3.3

MSs have identified communication related to EPCs as the element with the most impact on the perception of the EPC. There is significant experience in Europe of modifications of EPC content to improve attractiveness. Changes may be motivated by customer’s feedback on previous versions of EPCs, by the integration of improved knowledge of the building stock and/or by the need to acknowledge the improved energy performance of new buildings complying with stricter energy performance requirements.

3.4 Linking EPC and regular inspection schemes

The EPBD mandates energy performance certification of buildings (Articles 11-13) and regular inspection of heating and air-conditioning systems (Articles 14-15). Not all MSs have operational inspection schemes, since the EPBD allows for the possibility to adopt alternative measures. EPCs and inspection systems in place in MSs are generally kept completely separate. However, several countries have experience in linking these two requirements, at, for example, the level of data storage or tools used to deliver the reports.

3.4.1 Interactions between the EPC and the inspection reports

Seventeen (17) countries or regions have inspection schemes for both heating and air-conditioning systems, one (1) has an inspection scheme set up only for heating systems and another five (5) only have an inspection scheme for air-conditioning systems. Alternative measures were adopted in 13 cases for heating systems and nine (9) cases for air-conditioning systems (Figure 6).

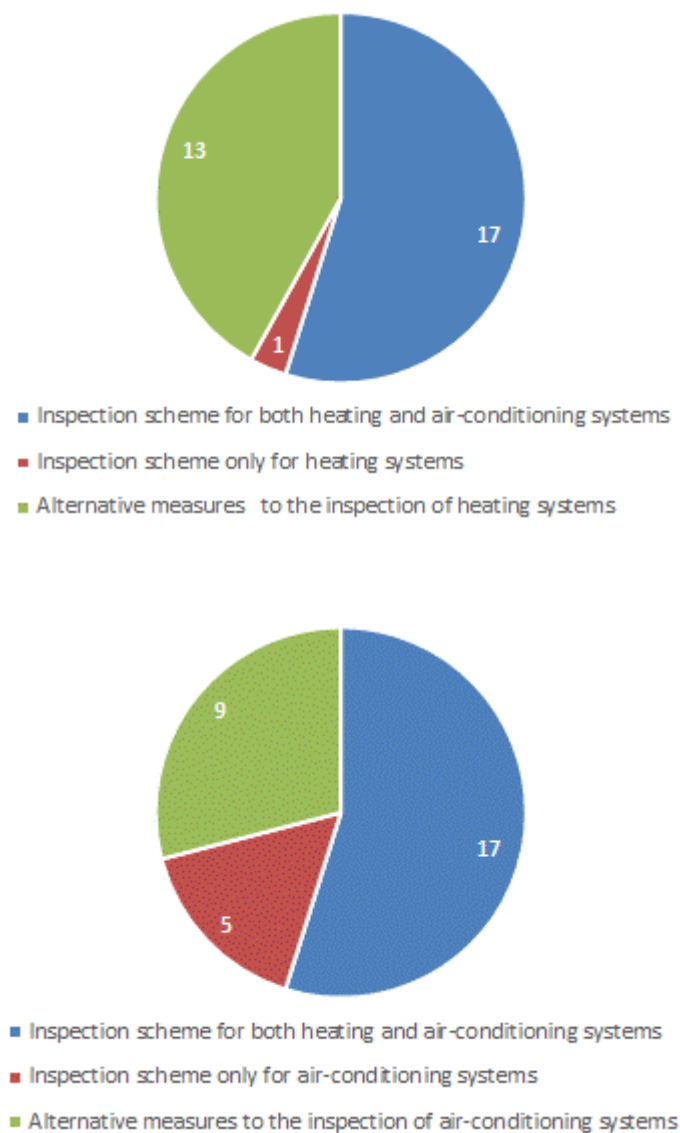


Figure 6. Provisions implemented in MSs regarding the regular inspection of heating and air-conditioning systems.

In most MSs, the EPC and operational inspection systems are totally separate, with few to no links (in five (5) countries) made between them. Six (6) countries do make use of valuable interaction between these two tools, while four (4) have developed strong interaction. It should be mentioned that due to the exchange of best practices between MSs, 15 now intend to create or further develop the links between the EPC and the regular inspection scheme. The following connections are the most common between the two schemes:

1. EPCs and inspection reports are stored in the same database system;
2. data for both EPCs and inspections can be collected during a single building visit;
3. the applied control systems are similar for both systems;
4. EPCs and inspection reports are both used to assist energy efficiency programmes;
5. EPCs and inspection reports are stored in different systems but a link can be made between the two certificates / reports;

In five (5) MSs, data from EPCs can be useful and may be used to produce inspection reports. On the other hand, ten (10) MSs allow information from inspection reports to be used to establish EPCs. In both cases, these links are optional and not mandatory.

There are several potential levels of interaction between the systems. Simple levels of interaction were the most beneficial, e.g., building owners having access to all certificates and reports for an individual building in a single register.

3.4.2 Identifying sequence of EPCs or of inspection reports

In the lifecycle of a building, several EPCs or inspection reports may be issued. Most MSs (11) do not identify sequences of EPCs or inspection reports applicable to a particular building. In cases where they do, the relevant EPCs are identified based on the address of the building (in ten (10) MSs) or based on a unique property reference number (in five (5) MSs).

Main Outcomes of 3.4

While EPC schemes are implemented in all MSs, not all have regular inspection schemes for heating and air-conditioning systems. Within the 23 operational inspection schemes, very few have interactions with the EPC system. Six (6) countries recognise the potential for valuable interactions between these two schemes, and only four (4) of these countries currently have strong links between the two. There are several potential levels of interaction between the systems, and simplest levels were considered most beneficial, e.g., building owners having access to all certificates and reports for an individual building in a single register.

4. Lessons Learned and Recommendations

Analysis of the topics that the MSs chose to investigate shows that most still focus on the technical aspects of the EPC process. Other key issues relate to the quality of the schemes, independent control systems and compliance and enforcement issues. The importance of expert training and their work in the field is key, but the MSs estimate that few improvements are required in these areas.

MSs are investigating strategies for more effective EPC schemes. Creating synergies with the regular inspection of the heating and air-conditioning system is one of the methods used by some MSs to improve their national systems.

MSs are developing a vision based on the most important factors influencing EPC quality and how the market perceives this tool. Actions or studies to evaluate the quality of the EPC scheme were realised in 12 MSs. It should be noted that no country has a precise definition of the perception of the EPC system by stakeholders. This element will certainly have to be developed in the future to enable a common understanding at the EU level.

Communication related to EPCs is recognised as the factor with the most impact on how this tool is perceived. Communication has been and still is carefully taken into account in most countries. In 2014, half of the MSs have changed the layout of their EPCs in comparison to the 2008 versions. A modification of the definition of the label, causing a rescaling of EPC levels, was also made in almost half of the EPC schemes. In several cases, these modifications were designed based on possible improvements identified during national studies, for instance from consumer organisations, or on the findings from the quality control systems.

Endnotes

1. EPBD CA III, *Implementing the EPBD 2016* – Editor's message (p7)
2. An example is the case of apartments, where inefficient buildings appeared “too good” in the former version of the EPC.
3. More information related to this topic is available in a factsheet



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