



CONCERTED ACTION ENERGY PERFORMANCE OF BUILDINGS

(CCT3) Compliance, Capacity and Impact Status in November 2016

AUTHORS

Nada Marđetko Škoro, Ministry of Construction and Physical Planning, Croatia

Bojan Milovanović, University of Zagreb, Faculty of Civil Engineering, Croatia

Ivana Banjad Pečur, University of Zagreb, Faculty of Civil Engineering, Croatia

Margareta Zidar, Energy Institute Hrvoje Požar, Croatia

1. Introduction

The first steps in the implementation of independent control systems in EU Member States (MSs) focused on the development of national regulations emphasising on the importance of quality and effectiveness of controls in order to achieve full impact and reliability of EPCs and inspection reports. In practice, various control systems were tailored according to the specific procedures for EPC issuance and capacities available in different central bodies that have to implement EPC controls. Hence, the way MSs integrate sanctions into their legal framework depends on their national context. Today, several years of enforcement have given insight into the effectiveness of different control systems and an overview of the quality of EPCs on the market. Additionally, the experience revealed that checking compliance through the enforcement of control systems and sanctioning non-compliance is becoming urgent, i.e., it is not efficient to tighten requirements if, in practice, non-compliance is tolerated and thus the regulation loses its intended impact. The best-designed policies only work well if they are complied with. All MSs tend to have an effective and dissuasive sanctioning system, or on the other hand a system of rewarding in order to maximise compliance.

This report contains information about the progress made regarding the organisation and management of an independent control system, as well as the enforcement of sanctioning systems. However, to be able to assess progress in compliance checking and sanctioning systems, the comparison to the last known situation (2013 situation identified within the Concerted Action EPBD III) was made.

2. Objectives

Article 27 of the EPBD (Directive 2010/31/EU) states that MSs shall lay down the rules on penalties applicable to infringements of the national provisions adopted pursuant to the Directive and shall take all measures necessary to ensure that they are implemented. These provisions should have been applied from 9 January 2013 (EPBD Article 28). The main conclusion of the work on compliance and sanctioning performed within the CA EPBD III was that there was clear progress in the evolution of national legislations, however, in practice, there is still a long way to go, as to have a fully operational compliance checking and sanctioning system. The objective of the Cross Cutting Team Compliance, Capacity and Impact is to look into different experiences of MSs regarding the policies and implementation of control systems, capacities and resources of MSs on national and local level for compliance check, as well as the impact of MSs' control systems on the improvement of the EPC quality (EPBD Article 18, Annex II).

2.1 Compliance Checking & Sanctioning Systems

Most of the MSs consider that sanctions are essential in their enforcement strategy. Therefore, it was necessary to investigate the current state of compliance checking and sanctioning systems in different national legislations and to evaluate progress among MSs in tackling sanctions and penalties compared to the 2013 situation. However, besides having compliance and sanctioning systems on paper, all MSs should ensure that these sanctions are actively enforced in practice.

There are several targeted actions:

- the determination of the current state of compliance and sanctioning systems in legislation among MSs;
- the evaluation of progress in tackling issues regarding sanctions & penalties, compared to the situation in 2013;
- the identification of obstacles and challenges faced by MSs when enforcing the sanctions and penalties in practice;
- the rethinking of the concepts behind penalty systems (identification of the system of rewards).

2.2 Control System Improvements

There are several targeted actions to be considered for improvement of the control system:

- define alternative measures for introducing fines;
- develop cost-effective and smart control systems.

2.3 EPC Quality Improvement

There are several targeted actions for the EPC quality improvement:

- achieve higher market demand for high quality EPCs;
- filter poor quality assessors and faulty EPCs.

3. Analysis of Insights and Main Outcomes

3.A. Analysis and insights

Comprehensive investigation was conducted in order to collect valuable information on how different MSs integrate compliance checking and sanctioning systems into their legal framework. An analysis of the 2016 situation regarding these systems for 21 MSs was compared to the 2013 situation, as illustrated on Figure 1 below. Additionally, comprehensive discussions were performed among the MSs delegates in order to identify specific procedures, best practices as well as a common understanding among MSs on the possible solutions regarding the emerging issues related to compliance, capacity and impact.

3.A.1 Progress in enforcement, applying sanctions and penalties

The comparison of the 2013 and 2016 situation can be summarised as follows:

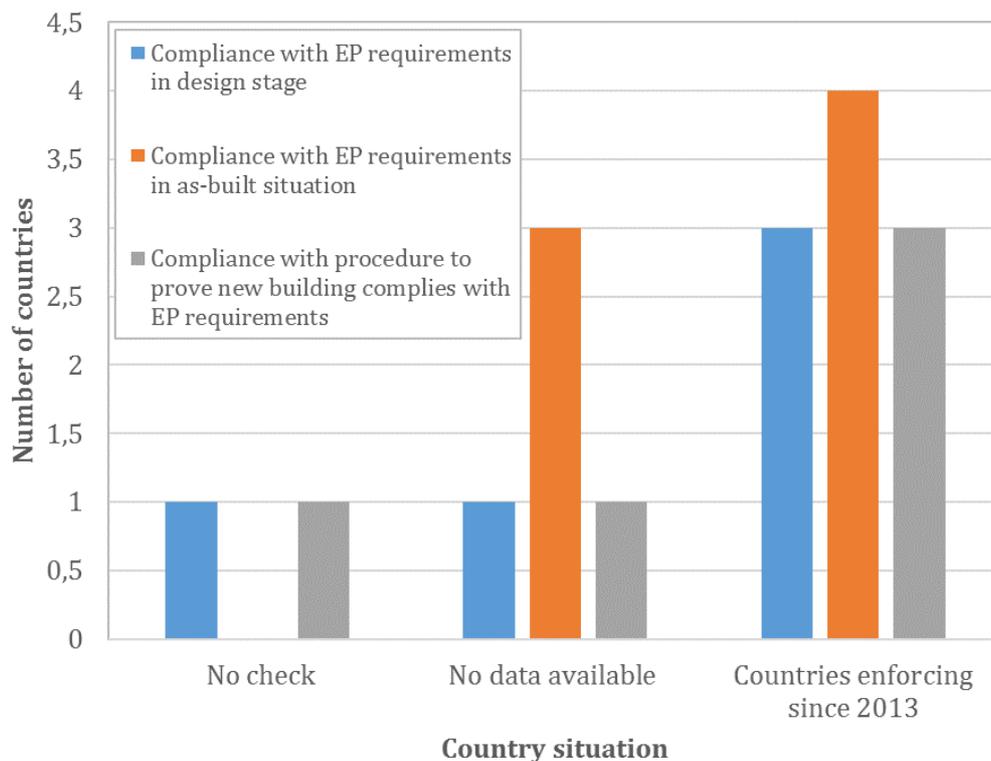


Figure 1. Compliance with energy performance requirements, procedures and guidelines.

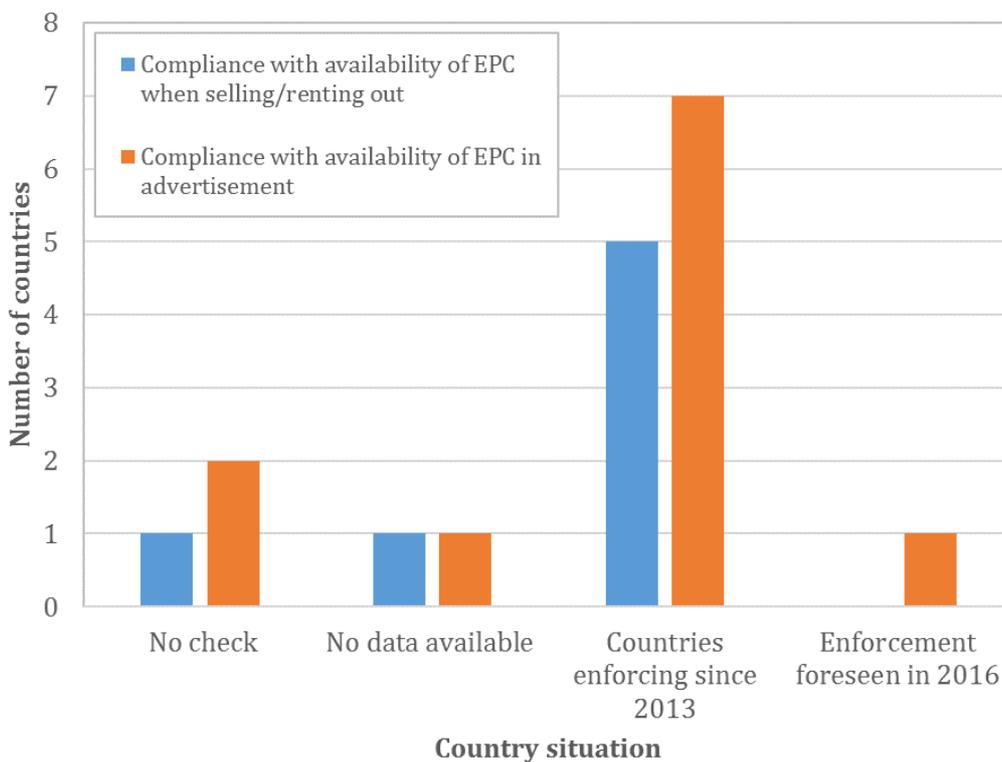


Figure 2. Compliance with availability of EPC by time of selling, renting out and advertising.

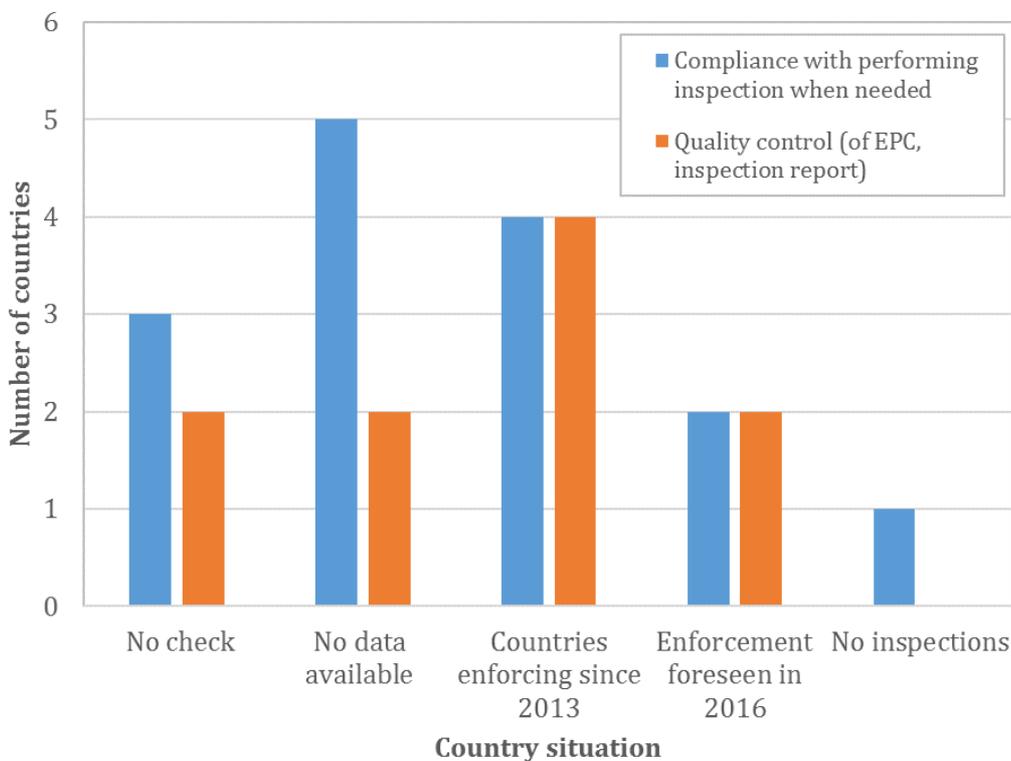


Figure 3. Compliance with performing inspection when needed and quality control.

Both the level of control and sanctions have increased.

In general, the number of MSs who check for EPC compliance and impose sanctions (regarding all the aspects of energy performance compliance) has increased since 2013. As presented in Figure 2, since 2013, 12 countries have implemented EPC systems that can be seen visually either in the form of advertisement or published when the building is being sold or rented, while one MS has foreseen to implement it by the end of 2016. These 13 countries in total also check compliance by using quality control systems or by inspecting the building.

While controls might lead to higher compliance rates, it is necessary to have a well-functioning sanction system in place to achieve the full potential. There are examples that, even with the introduction of small sanctions, a much higher compliance rate immediately takes place. There are still some MSs that do not have a system of sanctions in place. Positive progress is however evident in individual countries and in Europe as a whole. With more control systems being adopted, it is now important to concentrate on how these sanctions are practically working so as to enhance their implementation and to ensure their positive impact.

There is a great variety of penalties among the MSs, e.g., warnings, withdrawal of work licences and fines ranging from ~200 – 2,000 € for individual assessors and up to a potential 64,000 € for companies. As it can be seen on the example of Italy, sanctions imposed to owners in the form of fines are ranging from 3,000 to 18,000 € when an apartment/building is sold and the EPC is not available. When it comes to renting, fines are lower and range from 300 to 5,000 €. The responsible for the advertisement is fined between 500 and 3,000 € if the EPC does not appear in commercial advertisement for the apartment/building on sale or offered for rent. Since even large fines do not seem to always have the desired impact, there is a general agreement among MSs that fines are not the only option for sanctions. This means that the concepts of penalty systems need to be reconsidered. Alternative/additional penalties to fines could include the following:

- Sanctions that involve an aspect of education for the expert could be applied, e.g., additional education of poor quality assessors, to avoid the same mistakes being repeated.
- Banning experts from working on EPC assessments for a short time.
- The creation of an award/reward system as well as penalties rather than relying on penalties alone.
- Compliance being checked at the design stage and also at a second stage after construction, either at as-built stage or when the permit to use a building is awarded (this is becoming more common in MSs). This was seen as a good evolution, as there is room for improvement in defining the type of sanctions imposed at design and as-built stage.
- Defining fraud in cases of issuing and quality control of EPCs in order to be able to tackle it efficiently as well as to limit neglect of the assessors.
- Promotion of good quality EPCs and enhancement of the importance of customer protection rights.

Some countries expressed interest to trigger discussion among MSs about the issue of free movement of professionals, i.e., how to control the work of foreign energy assessors and how to ensure the enforcement of inspections in the case when the owner does not allow access to HVAC systems or fails to provide the required documents.

Highlights of 3.A.1	<ul style="list-style-type: none"> • Positive progress is evident regarding the integration of penalty systems in the legal framework among MSs when compared to the 2013 situation. • Penalty systems did not make desired impact on the market regarding the compliance and EPC quality improvement. • There is a need to reconsider the concepts of penalty systems in order to have a greater impact.
----------------------------	--

3.A.2 Levels of control system

Crucial for the control system is the determination of whether the non-compliance is a result of negligence or fraud in order to define proper action. Different levels of control and action are proposed and some examples are highlighted below:

<ul style="list-style-type: none"> • Administrative control is the action of checking the compliance with administrative rules and guidelines of the certification or inspection of technical system. If deviations are found only on this level it can be defined as neglect. In practice, there are many deviations that are not crucial for the final results but these deviations do not represent correct description of a building in terms of inputs and precise description of building elements and/or systems.
<p>Action: Some MSs have defined effective procedures for submitting improved EPCs. Denmark requires a pre-check in the assessor company by a quality control manager to reduce the administrative mistakes. In Portugal, there is a software-based validation of inputs when submitting an EPC.</p>
<ul style="list-style-type: none"> • Calculation checks are the checks of compliance with calculation procedures and the use of default values. Some MSs (e.g., Bulgaria) check the calculation in all of the submitted EPCs, and others (e.g., Estonia) only those of new buildings when building permits are issued. On the other hand, in some MSs (e.g., Croatia) a calculation check is done for randomly chosen EPCs based on the percentage (0.25%) of yearly issued number of EPCs. If the calculation leads to a derivation for overall performance but stays within the same energy class (usual variation is less than 30%) then the EPC is declared accepted and when the calculation mistake is higher and energy efficiency measures are not given, the EPC is annulled. In Portugal, the calculation check is done for specific input data range and for a ratio of primary energy needs and its limit. If the variance is found higher than 5%, the assessor is fined.
<p>Action: The building owner is responsible for acquiring a new certificate either from the same or newly appointed accredited assessor/assessor company (e.g., Estonia). In other countries, the reissuing of the new EPC after annulment is the responsibility of the original assessor/assessor company.</p>
<ul style="list-style-type: none"> • On-site inspection or a full control is the action of checking calculation and administrative procedures, as well as collected information through an on-site visit. In some MSs (e.g., Denmark) full control on-site collection of data is undertaken at random and in the number of the percentage (0.25%) of EPCs issued yearly. Both building owner and individual assessors/assessor company are invited to participate in the control process. In other cases, such controls are a response to mistakes found by initial controls.

	Action: If found faulty, the EPC assessor/assessor company is obliged to issue a new EPC and receives the appropriate penalty (e.g., Denmark).
--	---

There is a common understanding that an effective control system should be organised as a three level control system, as follows:

- Administrative compliance checks should be implemented for every EPC submitted.
- Calculation compliance checks should be undertaken on a representative statistical sample.
- Targeted on-site inspections or full control should be completed, if the previous control level has shown major deviations.

Furthermore, MSs have defined differently both the control volume (i.e., statistically significant percentage of all energy performance certificates issued annually, according to Annex II) and the level of control (administrative, calculation check and on-site inspection, according to Annex II). An option to perform a calculation check for every building permit issuance is a highly reliable approach to communicate the accurate energy performance of a building. On the other hand, the high percentage of faulty certificates found in many MSs indicate that the control volume must be bigger in all levels of control to increase EPC accuracy and reduce non-compliance issues in regular practice.

3.A.2.1 Fraud and neglect issues

General definitions were discussed among the MSs and there was a general agreement on the definitions as shown in the textboxes.

<p>Fraudulence refers to intentional faulty data inputs made to present a false energy performance level (i.e., results in better label) or to issuance of false documents. Besides faulty calculations of EPCs, which are found in the databases of different MSs, there are also cases of EPCs issued that are not reported into a database. This can be deemed as a case of severe fraud or identity violation and can influence customer rights and the reliability and safety of the energy performance certification system in general.</p> <p>Fraudulence should be penalised and most MSs have already defined high financial fines and/or authorisation withdrawal for the expert or the company that produced a false EPC. Additionally, financial fines are normally imposed by the court system, while authorisation withdrawal or other non-fiscal sanctions might be possible to be regulated by the control body directly.</p> <p>When submitting an EPC, a specific number or QR-code should be acquired stating its legality (e.g., Denmark, Greece).</p>	<p>Negligence refers to non-compliance of input data (i.e., important technical aspects or inappropriate use of binding definitions). Such inputs should be prevented either by using software databases with automatic control of most important input data related to technical aspects or regulatory definitions, or can be regulated by a quality control manager / procedure in the assessor company before submitting the EPC.</p> <p>Defining range values for the most important technical aspects is a qualitative control mechanism and should be in place on administrative level control. If an assessor company undertakes this, the responsibility lies with them and obliges them to make post-corrections if needed (e.g., Denmark).</p> <p>Results of administrative checks should be stored in the database and this should be done for every energy assessor/assessor company (e.g., Portugal). If a continuous trend of mistakes is noticed, a warning can be issued to improve the quality of EPCs, or further operation of the assessor will not be permitted.</p>
---	---

Both fraudulence and negligence issues should be defined in national regulations so that proper actions can be taken against it.

3.A.2.2 Cost-effective and smart control system within EPC database

In the discussion among the CA experts it was identified that one control body seems to be the best way to enforce and implement the control system effectively. Third party control has not yet been proven to be effective, since there are multiple bodies involved in the system, one regulatory body and another enforcing compliance checks and possibly fines, but this could still be a possible approach.

An automatic quality control system integrated in the EPC database is identified as a smart, efficient and relatively cheap tool, which can be implemented and used to enhance the quality of issued EPCs. Cost-effectiveness and smartness is achieved by an automated check of specific elements such as major technical aspects and regulatory definitions. Smartness is assured so no EPC is accepted in the database without complying with a range of values for technical aspects and regulatory definitions. More in-depth quality check schemes include calculation checks and are more costly thus requiring continuous flow of funding and technical experts to be available. Funding of the control system is often performed through EPC registration fees and fines imposed. If the control system includes automated check of specific elements for every EPC then the possibility of issuing a faulty EPC is low, which is also an improvement of safety and reliability of the EPC system. Also, only initial costs for developing such a system are needed while operation costs are low, resulting to more available funds for the next level of control when expert knowledge needs to be applied for pre-checked cases.

Highlights of 3.A.2

There is a common understanding that an effective control system should be cost-effective, smart and organised as a three level control system, whereby:

- An automated administrative check should be implemented for every EPC submitted.
- A calculation check should be done on cases filtered through a previous control level and should include a representative statistical sample.
- On-site inspection and full control should be done only if the previous control level has shown major deviations.

3.A.3 EPC quality improvement

3.A.3.1 Achieving higher market demand for a high quality EPC

The focus of EPCs should be on grading into energy classes and providing straightforward information on energy efficiency measures. Poor quality EPCs do not provide clear information on energy savings and do not contribute to awareness-raising of building users. The market seeks for information related to future operational steps in the following ways:

- Future energy grading after implementation of cost-optimal energy efficiency measures.
- Up-to-date financing mechanisms available for energy efficiency measures and use of RES.
- Local initiatives for energy efficiency and RES to achieve NZEB levels (energy networking, public or citizens cooperative for development of decentralised RES energy generation).

Information should in any case be included by 2020 but should be adapted to the local availability of these concepts. If the market demand for high quality EPCs is low, and predominately poor EPCs are issued, then in most cases the policies do not actually result in energy savings and efficiency gains.

Additionally, consumers' rights protection should be addressed in order to protect consumers from fraudulence and/or negligence. Some MSs are facing special challenges as implementation of improvements of regulations in terms of EPC reliability needs to progress faster to meet the set deadlines on NZEB from 2018/2020 onwards, or because other systems are changing simultaneously. This results in a large number of EPCs being issued in a very short time, and if the capacity of the MS is not adequate (i.e., the number of assessors, databases, control system in place, etc.) it could mean that even though the policies are implemented (and the market demand is high), the quality of EPCs is poor. Quality control should be an integral part of EPC assessment and can be the responsibility of either the assessor/assessor company at the point of EPC issuing (e.g., Denmark) or predefined by the administration system's database at the point of EPC submission. Only after quality control (a simple and automatic screening of data and results) should the EPC be considered legal and can be delivered to the consumer. In case of mistakes, there is a request to review, correct and resubmit. A manual or automatic quality control system can be achieved through the specification of the most important input data to achieve high quality EPC, and then the comparison of the values entered to the applicable value span.

3.A.3.2 Filter poor quality assessors and faulty EPCs

In the case of poor quality assessors and faulty EPCs, one of the penalties (which is clearly not being properly implemented in practice in many MSs) identified as a plausible measure was education of poorly performing assessors. Another measure to consider is the use of faulty certificates as case studies for training seminars, where commonly occurring mistakes could be shown to the future assessors. Reporting any technical errors and faulty procedures in a central database after control results are entered could provide useful statistical presentation of common mistakes. Based on reporting from the control, training can be improved to tackle areas of common issues and voluntary top-up training can be offered to assessors. The reoccurring mistakes and procedures could be used to develop automatic software check, which would then, over time, replace the detailed control procedures. Equally, providing FAQs for common errors with clarifications, as well as identifying and focusing on good assessors can improve the assessors' performance.

Highlights of 3.A.3

- Achieve higher market demand for high quality EPCs.
- Filter poor quality assessors and faulty EPCs.
- Use the knowledge gained from the EPC quality control procedures to improve the training, as well as the quality control itself.

3.B. Main Outcomes

Even the best designed policies can only work well if they are complied with. The way policies are enforced and monitored is hence of highest importance for their impact. MSs have developed various systems of building codes, certification and inspection schemes to ensure that energy performance of buildings policies have a real impact and actually result in energy savings as well as efficiency gains. In recent years, many MSs have realised that some issues exist regarding the quality, compliance, and impact. Thus, MSs have increased their focus on monitoring and improving existing policies. The work performed by the Cross

Cutting Team Compliance, Capacity and Impact focused on the exchange of experiences and definitions of best practices of compliance regimes, capacity building and measurement of the impact and success of the existing policies.

Additionally, some topics were emphasised as interesting so as to be addressed in the future in order to give more positive examples that could be used by MSs still working with this challenge. Also, some common issues for many MSs were identified for future discussion.

Topic	Main discussions and outcomes	Conclusion of topic	Future directions
Organisation & management of independent control systems	There is progress in the implementation of national regulations, emphasising the importance of quality and effectiveness of controls for full impact and reliability of EPCs and inspection reports. Sharing of experiences.	Gain of insight into what has and has not been effective, in practice.	How to implement automatic checks to ensure compatible inputs and provide warning flags to the assessor. Specify the right balance between the detail of Quality Assessment and credibility/sustainability of the system
	Avoid using fines-identification of other available measures (alternatives to fines). Define a control system that gives enough information but at a reasonable cost. Increase the market-demand for high-quality EPCs. Filter out poor assessors.	Rethink the penalty system concepts. Use an effective three level control system. Use the knowledge gained from the EPC quality control procedures to improve the training, and the quality control itself.	How to simplify the control process and lower the administrative costs. How to focus on good assessors and change attitude instead of just disciplining faults found. Training of assessors. A smart quality control system integrated in the EPC database and based on automated check of specific elements as major technical aspects and regulatory definitions.
Enforcement & compliance – Sanctions & penalties	Identification of difficulties and challenges faced by MSs in enforcing the sanctions and penalties → basis for future work.	There is a clear progress in the evolution of the national legislations, however, in practice, there is still a long way to go to have fully operational compliance checking and sanctioning systems completed.	Methods of enforcing sanctions to replace EPCs, which fail in compliance. Training of assessors as result of miscompliance.
	Discussion on the lessons learned from creating the penalty systems.	Recognition of importance to develop the enforcement system in	Different entities in charge of control and sanctions.

Topic	Main discussions and outcomes	Conclusion of topic	Future directions
		parallel to the legislation to avoid confusion over roles and responsibilities. Efficient enforcement through the use of an electronic EPC database.	Enforcement of inspections if the owner does not allow access to HVAC systems or fails to provide documents.
	Discussion on the lessons learned from enforcing the penalty systems.	Lack of enforcement will lead to a lowering of quality. Loop holes must be tracked down and closed. Checks and controls are made more efficient and effective if a single entity is responsible for databases, assessor accreditation and control.	Compliance of new buildings with energy performance requirements at the design and as-built stage. Interesting examples of fraud/misconduct.
	Discussion on the effectiveness of enforcing the penalty systems.	More success achieved from a system of award/reward plus penalties rather than relying on penalties alone. Communication of the details of the sanction system is important to ensure compliance and trust.	Communication about the penalty system. Penalties other than fines. Reward systems rather than only penalties.

4. Lessons Learned and Recommendations

Despite the recent improvements in penalty systems in the MSs, the efficiency and effectiveness of compliance checking should still in general be improved across the whole of Europe. To achieve this, MSs have to identify and communicate the obstacles that hinder them from having a fully operational and effective compliance and sanctioning system. Exchange of experience among MSs helps to achieve a common goal – the smart and effective enforcement of the energy performance requirements. Another important goal is to ensure the EU building stock has overall low energy consumption, and in order to do so, it is vital that the MSs improve their compliance systems.

Some of the lessons learned by MSs while creating and enforcing their penalty systems include:

- Sanctions of more than ~1,000 € were found to be difficult to enforce, but conversely some MSs reported that enforcement was not cost-effective for smaller amounts.
- It is important to develop the enforcement systems as an integrated part of the legislation. If the checks and penalties are developed independently, then this can lead to a system, which is difficult to enforce and to confusion over roles and responsibilities.
- Enforcement is made efficient through the use of smart and cost-efficient quality control systems integrated in the EPC database. Primarily, checks on data and calculation can be carried out automatically and for every EPC submitted.
- Lack of enforcement leads to the EPC system having a poor quality and a bad reputation.
- Loopholes must constantly be tracked down and closed.
- More success can be achieved from a combined system of award/reward plus penalties rather than relying on penalties alone.
- Open communication of the details and results of the control and sanction system is important to ensure compliance and trust in EPCs and inspection reports.
- Controls have been found to be more efficient and effective if a single entity is responsible for databases, assessor accreditation and the control system.
- Double-check of compliance (at design and as-built stage) represents a good evolution in the way MSs check compliance with energy performance requirements in new buildings.
- A smart and effective control system should be organised as a three-level control system:
 1. electronic screening of values entered on major technical aspects and regulatory definitions for all EPCs submitted, including verification of legality;
 2. performance calculation check for reference sample; and, lastly
 3. on-site inspections for most poorly done EPCs or as final control.
- It is important to use the knowledge gained from the EPC quality control procedure to improve the training, as well as the quality control aspect itself.
- There is a need to stimulate market demand for high quality EPCs at MS level.
- It is important to filter poor quality assessors and faulty EPCs and apply re-certification of experts and educational measures.
- Current penalty systems have not had the desired impact on compliance nor have they ensured sufficient EPC quality improvement.
- There is a need to reconsider the concepts of penalty systems in order to have a greater impact



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 692447.

The sole responsibility for the content of this publication lies with the authors. It does not necessarily reflect the views of the European Commission. Neither the EASME nor the European Commission are responsible for any use that may be made of the information contained therein.