



# ENERGY EFFICIENCY of Public Sector Buildings

EUROSAI WGEA  
Cooperative Audit



EUROSAI

Working Group on  
Environmental Auditing

## Eight European Supreme Audit Institutions have participated in this cooperative audit:



Court of Audit of Belgium  
(Flemish Region)



Bulgarian National  
Audit Office



National Audit Office  
of Estonia



State Audit Office  
of Hungary



State Audit Office  
of Latvia



National Audit Office  
of Lithuania



Court of Auditors  
of Portugal



Supreme Audit Office  
of the Slovak Republic

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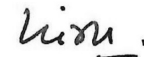
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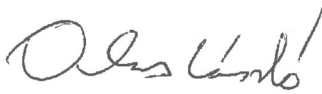
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# Executive summary

Buildings account for approximately 40% of the energy consumption and 36% of carbon dioxide emission in the European Union (EU). While approximately a third of the EU's building stock is over 50 years old, just 0,4-1,2% is renovated each year.<sup>1</sup> Publicly owned or occupied buildings represent about 10-12% by area of the EU building stock. A significant potential for energy savings therefore awaits to be tapped in this field. Public sector can lead the way in efforts to increase the rate of renovations by prioritizing energy efficiency in its own buildings and thus fostering the creation of necessary know-how in terms of new technologies and building methods.

That is the reason why in both the Energy Efficiency Directive (EED) and the Energy Performance of Buildings Directive (EPBD) the public sector's leading role and example-setting obligation is determined. In the EED this obligation focuses on an annual 3% renovation duty or, alternatively, an equivalent energy savings target for central government buildings. This allows for the development of national best practices and serves as a visible example for a wider public.

Additional requirements for public sector buildings are established in the EPBD. These include mandatory energy performance certification and public display of certificates, as well as an earlier date at which all new buildings owned and occupied by public authorities should be nearly zero-energy buildings. Furthermore, the EPBD also requires governments to encourage public authorities to implement the recommendations included in energy performance certificates.

In order to determine how well Member States are prepared to meet the requirements for energy efficiency in the public sector buildings, Supreme Audit Institutions (SAIs) of eight countries - Belgium (Flanders), Bulgaria, Estonia, Hungary, Latvia, Lithuania, Portugal and Slovakia, have examined whether these requirements have been implemented into national law. The aim on the cooperative audit was to determine whether there is sufficient planning in order to fulfil the requirements of the directives.

During the compilation of the results of the cooperative audit, participating SAIs have noted that one underlying principle has emerged from the findings that relates to several audit questions, namely that governments could do more to ensure that their public sectors serve an exemplary role regarding buildings' energy efficiency.

## **Governments could make greater and more systematic efforts for the public sector to fulfil its leading role in improving energy efficiency in buildings**

The national audits have concluded that governments could have done much more in the field of energy efficiency of public buildings and the efforts towards fulfilling the public sector's leading role should have been greater and more systematic.

Most audited countries have done well in transposing the concrete targets of the directives into national law. Most countries have put in place the 3% target and devised necessary financial instruments, as well as established requirements for nearly zero-energy

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<sup>1</sup> *Impact assessment accompanying the document "Directive of the European Parliament and of the Council on energy efficiency and amending and subsequently repealing Directives 2004/8/EC and 2006/32/EC and annexes (SEC(2011)779); Ecorys, Ecofys and BioIntelligence (2010): Study to Support the Impact Assessment for the EU Energy Saving Action Plan.*

buildings and for public sector buildings to have and display energy performance certificates. Likewise, the systems for monitoring and control have been developed.

Nevertheless, implementation has remained a challenge. Looking more closely into how the targets, requirements and systems have been implemented, the national audits have found that funding has mostly been incoherent, the effectiveness of measures has not been analysed, monitoring and control systems tended not to fulfil their purpose, checks have not been conducted in practice, and over half of the participating countries have been struggling to meet the 3% target. Henceforward the main audit findings that are in common in the majority of the national audits are presented.

**Examples of nearly zero-energy buildings are to be found in most countries, but comprehensive national policies to facilitate construction of such buildings are yet to be carved out**

While more than half of the countries show examples of nearly zero-energy buildings, comprehensive planning has been lacking in most. Though more than half of the countries have adopted a plan to increase the number of nearly zero-energy buildings, just two of the participating SAIs could report that the plan also included information about financial instruments and other measures for the promotion of nearly zero-energy buildings. The lack of comprehensive national planning for nearly zero-energy buildings entails a risk that the participating countries might not be able to fully transition to only building nZEBs by the deadlines set in the EPBD. As the deadline is earlier for buildings owned by public authorities, the risk is higher for these buildings. That also means that governments might fail in setting an

example and giving an impulse for the creation of the necessary know-how for the rest of the country through best practices obtained while building nZEB public authority buildings.

**A system of issuing and monitoring energy performance certificates has been established in all countries**

In all eight participating countries a law or a regulation sets the standards, as well as an independent control system for energy performance certificates. Also, in all of the participating countries institutions, mainly public bodies, have been appointed and made responsible for monitoring the proper quality and display of the certificates. Nevertheless, both the quantity and quality of monitoring the proper functioning of the systems exhibit shortcomings. Though regulatory measures are mostly in place, actual checks have been done rarely or only to a small extent. Without proper monitoring and control mechanisms the full potential of energy performance certificates as awareness raising tools cannot be exploited.

**Some countries are having difficulties to meet the 3 % target**

Data gathered in national audits have indicated that significant differences exist in the ways countries have chosen to define the scope of the annual renovation or energy saving target. Several countries have tried to minimize the cost and administrative burden of the requirement by choosing narrower definitions and smaller renovation and savings targets. National audits identified that, as of the end of 2017, half of the countries were on track to meet the 3% target. However, it appeared that five out of the eight countries that participated in the cooperative audit are already struggling or will be struggling in

the future to meet the target. In addition to the four countries that have not fulfilled the target, one SAI has found in the course of the national audit that, even though the government has managed to fulfil the target thus far, the target will most probably not be fulfilled in the future. The main obstacles to meet the target arise from the lack of well thought out and implemented planning and funding allocated for this purpose. Though most audited countries have a plan in place to reach the 3% target, the fulfilment of the plan has been monitored in only a few of the countries. Also, some of the national audits have indicated that monitoring the fulfilment of the target, as well as coordinating and monitoring funding, could be improved significantly.

**In most countries, funding energy efficiency in public sector buildings would benefit from better financial planning and effectiveness evaluation**

The EED lists various possibilities for funding activities geared towards improving the energy performance of buildings. National audits found, though, that countries have been modest in using these possibilities. It appears from the national audits that the funds necessary to meet the 3% target, have neither been estimated nor planned in half of the participating countries. Results from the national audits also have shown that, though the various financial instruments used have mostly been coordinated between the institutions in charge of implementing them, the general effectiveness of these financing instruments to ensure that the goals were being met, have not been assessed in most audited countries.

**Main recommendations made by audit institutions in their national audits**

National audits have made recommendations to their responsible ministries and institutions. The following recommendations can be brought out as reoccurring in many national audits:

- Four SAIs that participated in the cooperative audit have noted that energy efficiency of public sector buildings would benefit from more planning, including the creation of comprehensive strategies to enhance the energy performance of public sector buildings. The need for proper indicators, as well as coherent and well-planned goals has been indicated.
- Four SAIs also have noted that the implementation of the energy efficiency programmes could be more efficient and effective. SAIs have pointed out that there should be adequate staffing in the implementing institutions and proper measures developed.
- Three SAIs have pointed out that either the data systems or the way in which data are gathered should be updated and a comprehensive and valid overview should be developed of the state and energy efficiency of buildings falling under the public sector definition or at least under the central government definition.
- Five SAIs have recommended that the system for monitoring, including keeping updated lists of buildings that fall under the 3% target, should be enhanced. More precisely, SAIs have

recommended that a better and more systematic record should be kept of the fulfilment of the 3% target, supplemented with systematic and targeted monitoring and controlling activities. Furthermore, the findings from the monitoring and control activities should be analysed to make sure that the targets and requirements of the directives are met. According to the recommendations made by the participating SAIs, countries should also strive to ensure that the public sector buildings that are required to have energy performance certificates, indeed do have them.

- Five participating SAIs also have recommended that the funding of energy efficiency improvements in public sector buildings should be improved. For example, a better overview of financing options, including using energy service providers, should be made available and funding for the 3% target should be sufficient and well thought out.
- Finally, two SAIs have recommended that more energy saving measures should be implemented, ambitions should be increased and legislative measures should be developed to ensure that the buildings of public bodies serve an exemplary role.





# Glossary

**Energy performance of a building** – the calculated or measured amount of energy needed to meet the energy demand associated with a typical use of the building, which includes, inter alia, energy used for heating, cooling, ventilation, hot water and lighting.

**Minimum energy performance requirements** – value limits to total energy consumption of buildings, expressed via an energy performance indicator demonstrating the energy consumption of a building per heated/cooled square metre, a numeric indicator of primary energy use based on specific factors per energy carrier, and other requirements established in national regulations. Requirements may be different for existing buildings and new buildings, and may vary according to building type (residential buildings, office buildings, educational buildings, trade services buildings, etc.) and elements (external wall, roof, floor, window).

**Cost-optimal level** – energy performance level which leads to the lowest cost during the nationally estimated economic lifecycle to exploit the energy-saving potential in buildings to a maximum extent. Energy-related investment costs, maintenance and operating costs as well as disposal costs, where applicable, are considered.

**Nearly zero-energy building (nZEB)** – a building that has a very high energy performance. 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.

# Introduction

## Public sector buildings in the EU climate and energy policy framework

The European Union aims to create a low-carbon economy by 2050 with intermittent targets for 2020, 2030 and 2040. According to the roadmap, emission from houses and office buildings can almost completely be cut – by as much as 90% – by 2050. Buildings also account for approximately 40% of the EU’s energy consumption and approximately one third of the EU’s building stock is over 50 years old.

Publicly owned or occupied buildings represent about 10-12% by area of the EU building stock<sup>2</sup>. Energy efficiency investments in public buildings are advantageous to the public owner in two ways. First, one can perceive both the energy savings, productivity and value improvements normally accruing to private ownership. Secondly, one can also enjoy public benefits, such as an increase of employment, a reduction of emissions and improvements to public accounts. A significant potential for energy savings therefore awaits to be tapped in this field. The energy performance of buildings could be significantly improved through implementing energy efficiency technologies in new buildings, energy efficient refurbishment of old buildings, substituting renewables for fossil fuels in heating, cooling, cooking, etc.

Both the Energy Performance of Buildings Directive (2010) and the Energy Efficiency Directive (2012) have been adopted to promote energy performance

improvement of buildings and provide a stable regulatory environment for investment decisions. Both directives aim to help consumers make informed decisions that help to save energy as well as money and give regulators a guide for building a regulatory national framework.

As laid down in EU law, European directives generally only take effect once they have been transposed into national law of a Member State. This means Member States are free to choose the form and methods best suited for their implementation. In this process they often need to adapt existing national rules and regulations, select and apply policy measures, coordinate between different ministries and authorities, as well as involve other stakeholders. It is up to each Member State to appoint institutions responsible for the implementation of these policies. Each country also needs to ensure that the roles and responsibilities of these institutions have been assigned and are clearly understood. An overall institutional scheme based on the data from national audits gathered for the cooperative audit sub-question 1.4. is presented in Appendix I. Each country adapts the requirements of the legal framework according to its needs. Comprehensive strategies and plans that address these issues are of great practical value to ensure a successful outcome.

## Role of Supreme Audit Institutions

Supreme audit institutions (SAIs) are independent, non-political, and fact-based in their work. SAIs play an important role by auditing government accounts

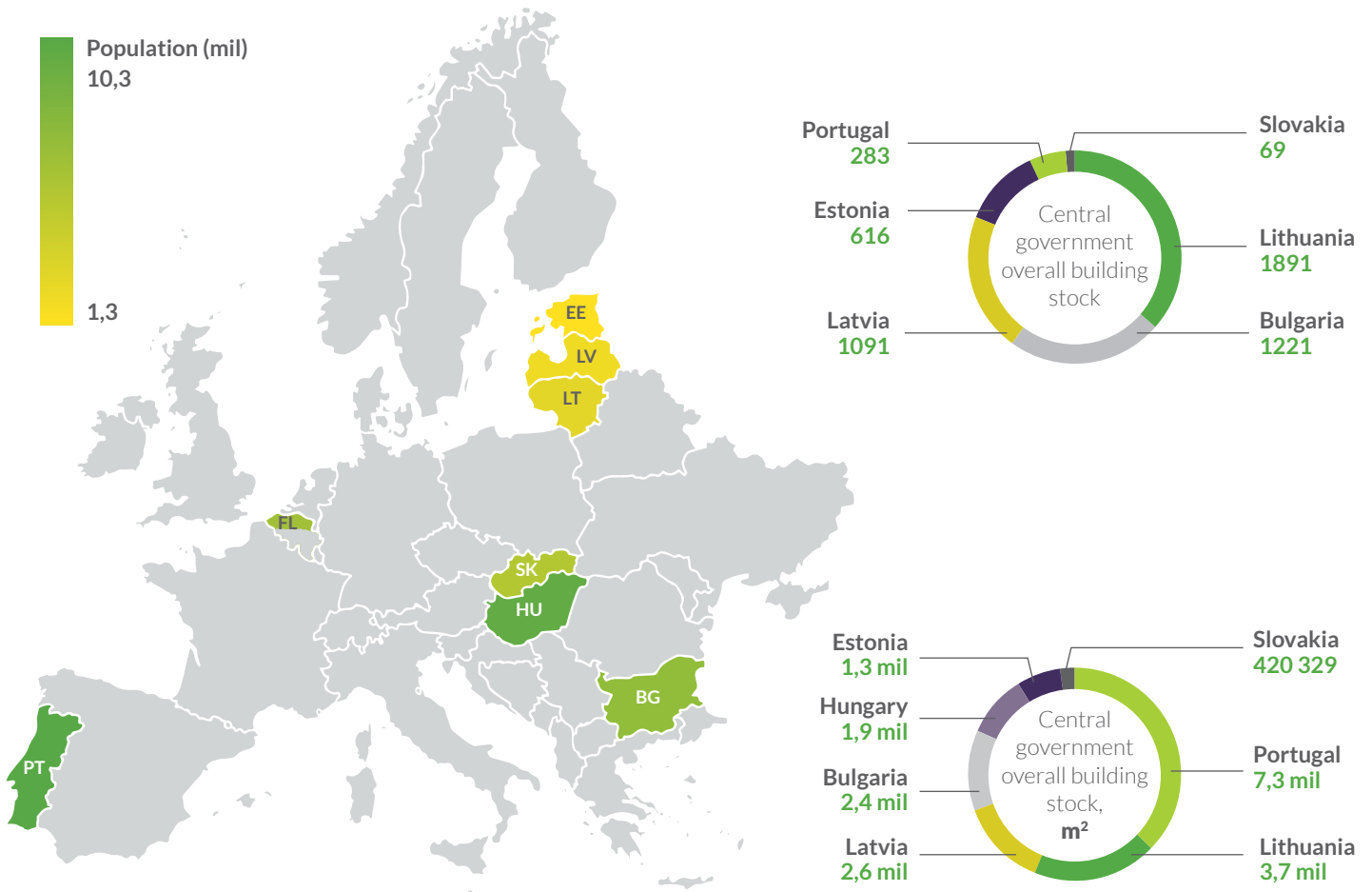
<sup>2</sup> *Impact assessment accompanying the document “Directive of the European Parliament and of the Council on energy efficiency and amending and subsequently repealing Directives 2004/8/EC and 2006/32/EC and annexes (SEC(2011)779); Ecorys, Ecofys and BioIntelligence (2010): Study to Support the Impact Assessment for the EU Energy Saving Action Plan.*

and operations. The mandates of SAIs may somewhat vary but they have similar responsibilities providing legislatures and society with necessary information to hold governments accountable. Governments' financial management, compliance with domestic laws and international agreements, policy implementation, and performance are in the focus of SAI work.

The European Organization for Supreme Audit Institutions (EUROSAI), as one of the regional groups of the International Organization of Supreme Audit Institutions (INTOSAI), provides a forum on which government auditors can discuss issues of mutual

concern and share the latest developments in auditing and other applicable professional standards and best practices. EUROSAI features several thematic working groups, including the Working Group on Environmental Auditing (EUROSAI WGEA).

During the 2015 spring session of the EUROSAI WGEA, energy efficiency of public sector buildings was chosen as a possible topic for cooperation. In February 2017 the SAIs of Belgium (Flanders), Bulgaria, Estonia, Hungary, Latvia, Lithuania, Portugal and Slovakia (BE (FL), BG, EE, HU, LV, LT, PT, SK) have signed an agreement to conduct a cooperative audit on the energy efficiency of public sector buildings.



## Methodology

The joint findings are based on the eight national audits evaluating the activities targeted at increasing the energy efficiency of public sector buildings. The main objective of the audit was to share results and experiences from audits focusing on the energy efficiency of public sector buildings and to evaluate the preparedness to meet the requirements for energy efficiency of public sector buildings. The following three main questions for the cooperative audit were established at the outset of the project:

1. Has a policy framework for increasing energy efficiency of public sector buildings been established?
2. Are there sufficient funds allocated for financing the set plan/strategy?
3. Is there a system for monitoring the achieved energy efficiency targets in place?

The legal framework (audit criteria) providing the basis for the cooperative audit<sup>3</sup>:

- The Energy Performance of Buildings Directive 2010/31/EU
- The Energy Efficiency Directive 2012/27/EU

SAIs participating in the cooperative audit have developed an audit approach template (audit design matrix), including suggested audit questions (Appendix II), criteria and comparable data to be collected. Each SAI has carried out its national audit guided by the agreed template and in accordance with its internal practices and standards, as well as INTOSAI auditing standards, including ISSAI 5140

on conducting cooperative audits of international environmental accords. The extent to which all sub-topics have been covered was decided by each SAI individually, based on the scope of its national audit. All national audits were compliance<sup>4</sup>/performance audits, focussing on policy implementation, economy, efficiency and effectiveness. The period audited was 2014-2017.

Data collected during national audits along with the main results from national audits have served as an input to developing common key messages and writing the overview of the results from the national audits, henceforth called the joint findings. All data and cases featured in this document have been provided by the eight SAIs and each SAI is responsible for the validity of the data sent.

The joint findings have been prepared by the National Audit Office of Estonia, chair of EUROSAI WGEA and coordinator of the cooperative audit, and the State Audit Office of Latvia and the National Audit Office of Lithuania, co-leaders of the audit. All eight participating SAIs have contributed with national inputs, helped develop the common key messages and provided quality assurance of the joint findings.

Hereinafter, the joint findings of the national audits will discuss in more detail how the participating countries have managed to fulfil the abovementioned targets and requirements of EPBD (part 1 of this document) and EED (part 2 of this document). During the compilation of the joint audit findings the participating SAIs have noted one underlying

<sup>3</sup> While the directives were in force at the time of the agreement of the cooperative audit and the audited period, it must be noted that amendments to Directive 2010/31/EU were adopted by the Directive (EU) 2018/844 of the European Parliament and of the Council of 30 May 2018. Revision of Directive 2012/27/EU is also underway. No significant changes regarding the requirements for public sector buildings are, however, to be anticipated.

<sup>4</sup> The SAI of Hungary conducted a pure compliance audit and did not contain performance audit elements.

principle emerged from the audits and related to several audit questions, namely that governments could do more to ensure that their public sectors serve an exemplary role regarding buildings' energy efficiency. Thus, the participating SAls have decided not to present the audit findings according to the structure of audit questions, but according to the agreed-upon audit findings, following the two corresponding directives. The first and last

questions from the audit design matrix in Appendix II are covered in both sections 1 and 2 according to the corresponding directive, and question two is discussed in sections 2.2. and 2.3. Furthermore, for each finding the corresponding sub-questions have been marked in the footnotes for easier comprehension. Results are presented by audit findings that were common in most or a majority of SAls.

# 1. The fulfilment of requirements arising from the Energy Performance of Buildings Directive

The Energy Performance of Buildings directive sets three main requirements for the public sector in terms of setting an example for the rest of the country – earlier transition to building nearly zero-energy buildings, having and displaying energy performance certificates and defining cost-optimal minimum energy performance requirements.



Firstly, Member States should only build energy efficient buildings in the future. As an example-setter, the public sector should aspire to do so sooner than the rest of the country.

*As such, Member States have to ensure that:*

*(a) by 31 December 2020, all new buildings are nearly zero-energy buildings; and*

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

This also means that governments have to prepare plans and measures to insure a smooth transition.

*Member States must draw up national plans for increasing the number of nearly zero-energy buildings. These plans must include also the policies and financial instruments or other measures for the promotion of nearly zero-energy buildings, including details of national requirements and measures concerning the use of energy from renewable sources.*

Secondly, the EPBD requires all Member States to lay down the necessary measures to establish a system of certification of the energy performance of buildings. The energy performance certificate has to include the energy performance of the building and reference values, such as minimum energy performance requirements, in order to make it possible for owners or tenants of the building or building unit to compare and assess its energy performance.

Buildings occupied by public authorities and buildings frequently visited by the public should set an example by showing that environmental and energy considerations are being taken into account and therefore those buildings should be subject to energy certification on a regular basis. The EPBD also requires that buildings occupied by a public authority and frequently visited by the public have energy performance

certificates placed in a clearly visible area in the building. Furthermore, government should encourage public authorities to fulfil the recommendations brought out in the energy performance certificates issued to buildings owned by them.

Thirdly, the EPBD requires Member States to calculate the cost-optimal level for minimum energy performance requirements, i.e. the energy performance level which leads to the lowest cost during the nationally estimated economic lifecycle of a building whilst exploiting its energy-saving potential to a maximum extent. After all, buildings have an impact on long-term energy consumption. Given the long renovation cycle for existing buildings, new and existing buildings that are subject to major renovation should therefore meet minimum energy performance requirements adapted to the local climate.

## 1.1. Examples of nearly zero-energy buildings are to be found in most countries, but comprehensive national policies are yet to be carved out<sup>5</sup>

Audit offices have examined whether governments have documented plans to increase the number of nearly zero-energy buildings, including the detailed application of the nZEB definition and specific requirements, as well as financial and other measures to support the construction of nZEBs.

While examples of nearly zero-energy buildings are already to be found in more than half of the participating countries, comprehensive planning was lacking in most. Though six of the eight participating

countries (BE (FL), BG, HU, LT, PT, SK) had adopted a plan of some sort to increase the number of nearly zero-energy buildings, only the SAIs of Hungary and Belgium (Flanders) reported that the plan also provided information about the policy, including financial instruments and other measures, for the promotion of nearly zero-energy buildings.

For example, Belgium (Flanders) has been supplying grants, supporting research and development, and conducting information campaigns (*see case*

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<sup>5</sup> Joint finding based on the findings from sub-question 1.5.

of Belgium (Flanders) below). In Hungary, special financial measures have been designed aiming at the construction of nearly zero-energy model projects under the EU operational programme's 2014-2020 programming period. As of the end of 2017, seven

public sector projects were underway. In all other countries such measures were lacking. Thus, comprehensive national policies to facilitate construction of such buildings in both public and private sectors are yet to be carved out.

### Campaigning for nZEB in Belgium (Flanders)

The Flemish Energy Agency, a government agency, has developed a campaign “nZEB, constructing a nearly zero-energy building is thinking ahead”. The campaign aimed at informing and sensitizing to the topic candidate builders and renovators, and all professionals involved in construction. The campaign started in September 2013 when the Flemish government defined nZEB. Various channels have been used, such as the press, the Internet, newsletters, publications, study days, construction fairs and events, booklets in general print media, targeted advertisements and editorial contributions in professional journals for (re-) builders and building professionals. A crucial element of the campaign strategy is the multiplier principle: “pioneers” may use the campaign image and receive campaigning material. These pioneers are stakeholder organizations from the professional building world, local authorities, information providers, etc., who are already promoting or applying nZEB-building methods and are eager to play their pioneer role. Pioneers can give greater visibility to their involvement by using the campaign image.

While one of the nearly-zero energy building requirements is to ensure that the energy consumed should be covered to a very significant extent by renewable sources, the share required was quantified only in Hungary ( $\geq 25\%$ ), Slovakia ( $\geq 50\%$ ) and Bulgaria ( $\geq 55\%$ ). The national audit of SAI Bulgaria has shown that, though the law states that “*no less than 55% of the total energy has to be derived from renewable sources*”, the process of transitioning to nZEB has been hampered by the not yet transposed EPBD deadlines. Other countries have been much vaguer in their indications, using phrases such as:

- “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” (BE/FL)
- “taking into account renewable energy solutions where possible” (EE),
- “the use of renewable energy is ensured at least partially” (LV),
- “most of the energy consumed is renewable energy” (LT),
- “largely satisfied with the use of energy from renewable sources” (PT).



Furthermore, what is understood under the concept of nZEB differs greatly from country to country. Mostly, nearly zero-energy buildings have been tied to energy classes and energy performance indicators (see *Table 1 below*).

Country	Numeric indicator of primary energy use, kWh/m <sup>2</sup> year
<b>BE (FL)</b>	Weighted average of each building part
<b>BG</b>	≤ 140 (for administrative buildings)
<b>EE</b>	≤ 100 (office buildings, libraries and science buildings)
<b>HU</b>	≤ 90 (for office buildings)
<b>LV</b>	≤ 95
<b>LT</b>	Building must comply with class A++
<b>PT</b>	New buildings must comply with class B- and existing ones with C
<b>SK</b>	≤ 61 (administrative buildings)

\*NB! Some of the countries only take into account energy consumed for heating and/or cooling while others calculate the total energy consumption of the building, including the electricity used, etc.

**Table 1:** Numeric indicators of primary energy use for nearly zero-energy buildings\*

The lack of comprehensive national planning for nearly zero-energy buildings, entails a risk that the participating countries might not be able to fully transition to building only nZEBs by the deadlines set in the EPBD. As the deadline is earlier for buildings owned by public authorities, the risk is higher

for these buildings, though, because of the recommendation by the European Commission, many of the participating countries also had to bring forward the date for the private sector<sup>6</sup>. Variations in the standards set for nZEB could also limit the expected energy saving effect of the planned policies.

<sup>6</sup> Recommendation 2016/1318 - <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32016H1318>

## 1.2. A system of issuing and monitoring energy performance certificates has been established in all countries, but national audits have identified certain shortcomings<sup>7</sup>

SAIs have sought to verify whether the system of energy performance certification, according to the requirements of the EPBD, has been established in their countries. Audit offices have also examined whether governments have set up functioning systems for monitoring energy performance certification in public sector buildings. Furthermore, SAIs have collected data to assure that the monitoring system also worked in practice.

All eight participating countries have a law or a regulation that set the standards, as well as, an

independent control system for energy performance certificates. In all of the participating countries institutions, mainly public bodies, have also been appointed and made responsible for monitoring the quality and display of the certificates.

### **Data about energy performance certificates were available in four of the audited countries**

Nevertheless, when SAIs assessed the quantity and quality of monitoring the proper functioning of the systems put in place, the results were not so positive.

Member States have to ensure that:

*an energy performance certificate is issued for buildings occupied by a public authority and frequently visited by the public.*

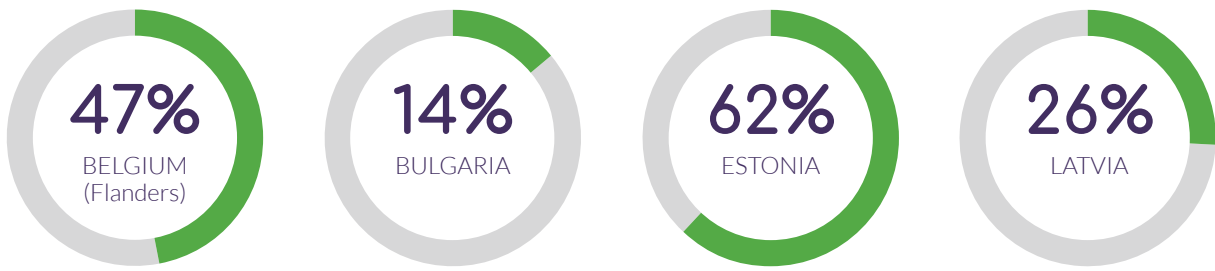
During national audits, SAIs have checked whether information about central government buildings' energy performance certificates was available. Since at least central government buildings that are frequently visited by the public, must have an energy performance certificate and annual national inventories for calculating the 3% target have to be made, it was assumed that these should include information about their energy performance. Therefore, it should be fairly easy to find this information. Nevertheless, the data were only available in Belgium (Flanders),

Bulgaria, Estonia and Latvia. In Slovakia, the information concerning energy performance certificates is stored in a central registry. Even though the registry does not separate central government buildings from other types of administrative buildings, this information can be accessed on request.

In the four countries where data were available<sup>8</sup> the audits have concluded that energy performance certificates have been issued only partly and within a broad range, as shown in Figure 1 below.

<sup>7</sup> Joint finding based on the findings from sub-question 1.6. and 3.4.

<sup>8</sup> SAI Slovakia did not request this information.



**Figure 1:** Energy performance certificates issued for central government buildings

**Frequency of energy performance certificates quality checks varied in audited countries**

According to the EPBD:

*the institutions responsible for implementing the independent control system shall make a random selection of at least a statistically significant percentage<sup>9</sup> of all the energy performance certificates issued annually and subject those certificates to verification.*

In most of the countries appointed institutions also check the quality of the certificates.

The approaches for a random selection of the “statistically significant percentage of issued energy

performance certificates<sup>10</sup>” differ significantly between countries, though. As a result, the share of all certificates checked (not only central government’s) vary within a wide range, as shown in Figure 2 below. In Latvia, Lithuania and Slovakia these data were not available.



**Figure 2:** Checks of the quality of the energy performance certificates

<sup>9</sup> Directive (EU) 2018/844 of the European Parliament and of the Council of 30 May 2018 amending Directive 2010/31/EU on the energy performance of buildings sets the following corrected wording for this requirement: “The competent authorities or bodies to which the competent authorities have delegated the responsibility for implementing the independent control system shall make a random selection of all the energy performance certificates issued annually and subject them to verification. The sample shall be of a sufficient size to ensure statistically significant compliance results.”

<sup>10</sup> The European Commission (DG Energy) has provided a table for random sample size necessary to ensure statistical confidence. According to the European Commission’s findings, in 2014, at least eleven MSs used a random sample that was too small, especially when the sample is split up into subsamples (e.g., new/existing buildings or residential/non-residential buildings).

Member States have to ensure that:

*the energy performance certificate issued for buildings occupied by a public authority and frequently visited by the public are displayed in a prominent clearly visible place*

When it comes to checking public sector buildings for the proper display of energy performance certificates, Belgium (Flanders) has found in the course of their national audit that this had not been checked. In Portugal, Latvia<sup>11</sup> and Lithuania data concerning this matter were not available. In Bulgaria and Slovakia less than 1% of all public buildings has been checked annually. In Hungary, before mid 2016, no checks had been made. In the second half

of 2016 checks have been made, but inspectors found no displayed certificates. In the first half of 2017, though, 15% of the public sector buildings liable to the obligation had certificates properly displayed. Only in Estonia the Technical Regulatory Authority had checked all public authorities that should have energy performance certificates and continues to do so regularly (*see case of Estonia below*).

### **Monitoring and controlling has led to the increase of energy performance certificates in Estonia**

The Technical Regulatory Agency (TRA) is in charge of checking the quality and proper display of energy performance certificates in Estonia. Since there had been little available information about public sector buildings or the information had been scattered between authorities, the TRA has been collecting information by sending questionnaires to public sector authorities and gathering publicly available information about buildings they owned, including from the websites of the authorities. Based on that information, the TRA has checked whether all buildings owned by public authorities have acquired and properly displayed energy performance certificates. The TRA has asked for photos to prove the latter. As a consequence of their work, the number of public sector buildings both on a central government and local government level that have an energy performance certificate grew significantly.

<sup>11</sup> During inspections of public sector buildings the responsible institution in the report indicates if the energy performance certificate is not displayed in a visible place, but such data have not been summarized.

### Implementing the recommendations

Only Bulgaria and Hungary have developed policies to encourage public authorities to implement the recommendations included in energy performance certificates (see case of Hungary below). In Bulgaria the Energy Effi-

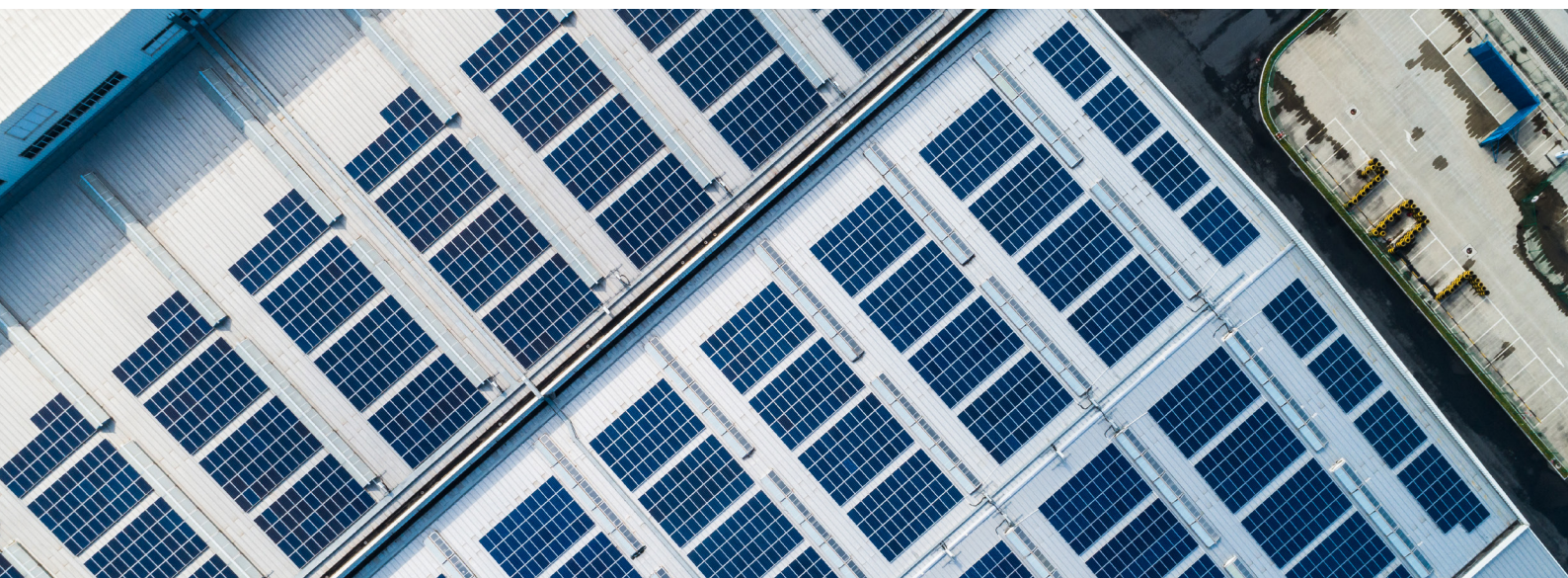
ciency Act stated that the recommendations in energy performance certificates must be implemented within 3 years of the issuing date of the certificate. Furthermore, on-the-spot checks verify whether certificate recommendations are implemented on time.

### The obligation to consider the recommendations made in energy performance certificates in Hungary

In compliance with Directive 2010/31/EU, a government decree regulates the obligation of public bodies to implement the recommendations included in the energy performance certificates issued for their respective buildings. According to the decree, the certificate's recommendation for energy saving has to be considered in the course of a building renovation that has energy saving as its purpose, provided that a full financial return on the renovation expenses is expectable during the expected lifetime of the building whenever renovations are completed within the expiry date of the certificate.

While all the requirements of the Energy Performance of Buildings Directive concerning energy performance certificates have mostly been transposed into national law, countries are doing little to ensure that these systems

work in practice. Thus, public sector authorities have not fully set the example and more awareness could have been raised about the energy performance of buildings by displaying energy performance certificates.



### 1.3. In most cases, requirements for minimum energy performance have been set close to the cost optimal level<sup>12</sup>

The EPBD foresees the application of minimum requirements to the energy performance of new buildings as well as existing buildings subject to major renovation.

*According to the EED, Member States have to take the necessary measures to ensure that minimum energy performance requirements for buildings or building units are set with a view to achieving cost-optimal levels. Cost-optimal levels shall be calculated in accordance with the comparative methodology framework set in the EPBD.*

*Member States should use this framework to compare the results with the minimum energy performance requirements which they have adopted. The difference between the two should not exceed 15%*

National audits have sought to determine whether the requirements for minimum energy performance have been set and this at a point not more than 15% below the level deemed cost-optimal when calculated according to the comparative methodology established by the European Commission<sup>13</sup>. SAIs also have sought to verify, where applicable, whether recommendations concerning minimum

energy performance requirements made by the European Commission in 2016<sup>14</sup> have been implemented.

All SAIs reported that the minimum energy performance requirements have been established and compared with calculated cost-optimal levels (see *also the case of Belgium (Flanders) below*).

#### **The Flemish Government hired academic experts to calculate the cost-optimal levels**

All requirements for minimum energy performance take into account the results of calculated cost-optimal levels. The Flemish Government has hired academic experts to calculate the cost-optimal levels. Due to the fact that the portfolio of buildings in Flanders mainly consists of residential buildings, priority was given to these buildings. Later on, a calculation method was developed for non-residential buildings. In the cost-optimal levels calculations, special attention was paid to newly built constructions because of the long-term effects of energy savings in these buildings. Requirements were equalized with calculated cost-optimal levels, unless the studies were inconclusive. Another exception was based on the fact that renovation should be stimulated, so standards were set a little lower in order to stimulate renovation.

<sup>12</sup> Joint finding based on the findings from sub-question 1.2.

<sup>13</sup> Commission Delegated Regulation (EU) No 244/2012, supplementing Directive 2010/31/EU.

<sup>14</sup> Report from the Commission to the European Parliament and the Council: Progress by Member States in reaching cost-optimal levels of minimum energy performance requirements, COM(2016) 464 final.

The total average gap was 15% or less in almost all of the participating countries. Based on the calculations made by the Member States, the European Commission has made recommendations for improving the situation in 6 of the countries that

participated in the cooperative audit. The findings of most SAIs (5 out of these 6) have shown that governments have considered the recommendations of the European Commission and have made necessary improvements regarding the minimum requirements.

## 2. Exemplary role of central government buildings

The most concrete output of the EED requirement for the central government to serve an exemplary role is Article 5 of the directive titled “Exemplary role of public bodies’ buildings”. Member States have quite a large amount of liberty to decide how to fulfil this requirement, starting from which approach they take, to what buildings are included in the scope of

the target. Thus, no one concrete path to fulfil the target can be prompted, as further elaborated in the upcoming sub-sections. As a first step, countries had to choose whether to renovate buildings or to save energy, i.e. whether to opt for the “default” or “alternative” approach.

*According to Article 5, Member States have to ensure that from 1 January 2014, 3% of the total floor area of heated and/or cooled buildings owned and occupied by its central government is renovated each year to meet at least the minimum energy performance requirements **(default approach)**.*

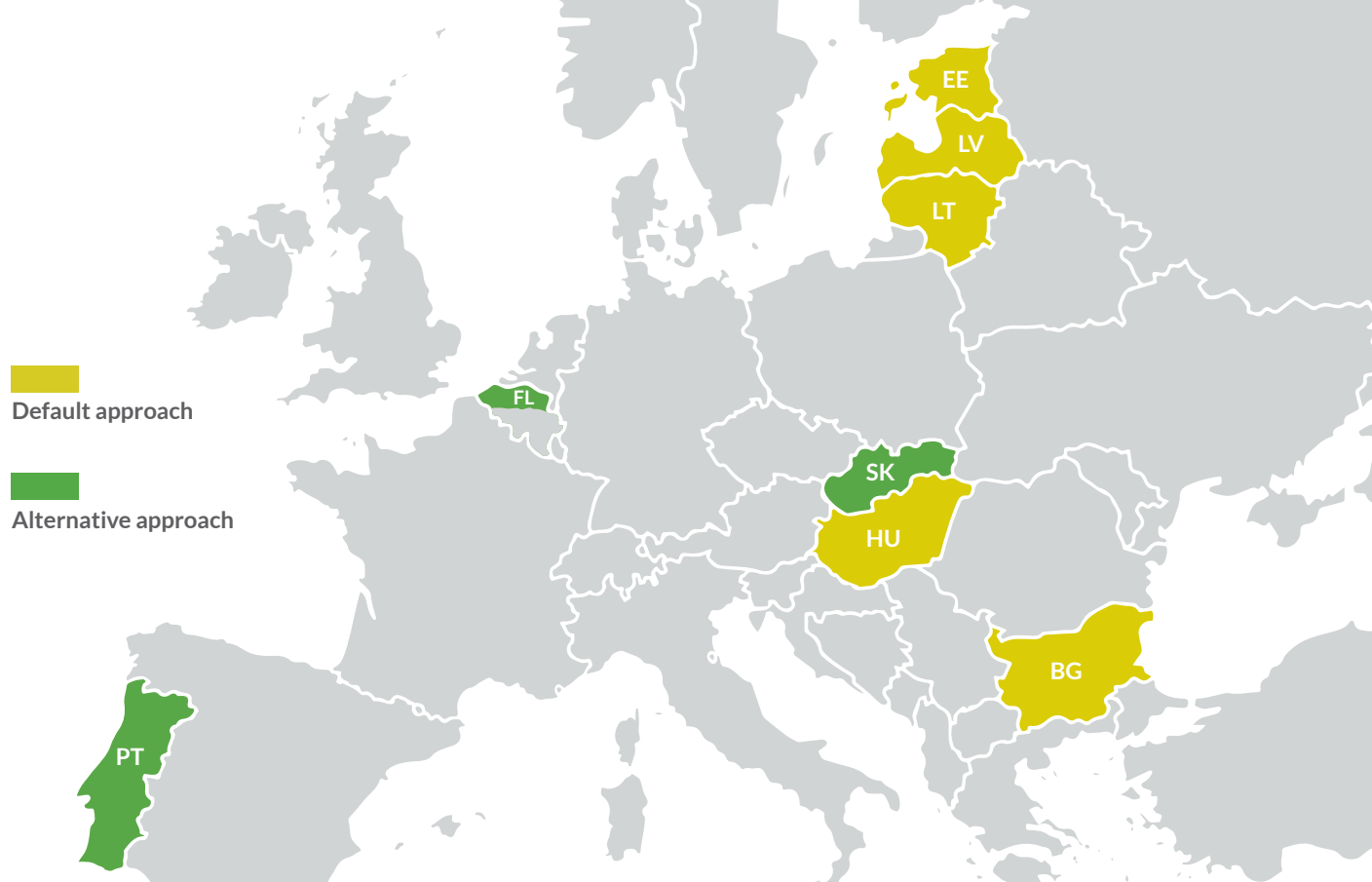
*As an alternative to the 3% annual renovation target, Member States may take other cost-effective measures to achieve, by 2020, an amount of energy savings in eligible buildings owned and occupied by their central government that is at least equivalent to that required by a default approach, reported on an annual basis **(alternative approach)**.*

### **Audited countries used different approaches for reaching energy savings in central government buildings**

Five of the countries (BG, EE, HU, LV, LT) participating in the cooperative audit have chosen the default approach and have opted for renovating their central government buildings, while three (PT, SK, BE (FL)) have chosen the alternative approach (see also map below) and have decided to save the equivalent amount of energy.







**Map:** Participating countries divided by chosen approach

In the alternative approach, countries needed to notify the alternative measures to the European Commission and had to calculate how much energy could be saved by 2020 if they would have taken the

default approach. Types of the chosen alternative measures for countries participating in the cooperative audit are listed in Table 2 below.

Country	Types of alternative measures
<b>BE (FL)</b>	<ol style="list-style-type: none"> <li>1. Implementation of recommendations included in the Energy Performance Certificates</li> <li>2. Construction of new energy efficient buildings</li> <li>3. Deep renovations</li> </ol>
<b>PT</b>	<ol style="list-style-type: none"> <li>1. Implementation of an energy action plan that may include measures such as: <ul style="list-style-type: none"> <li>• Installation of an energy management system</li> <li>• Replacement of equipment to increase efficiency</li> <li>• Behavioural change</li> </ul> </li> </ol>
<b>SK</b>	<ol style="list-style-type: none"> <li>1. Improving energy efficiency in public buildings (including thermal modernisation as well as renovation of technical building systems)</li> <li>2. Energy audits for public buildings</li> <li>3. Behavioural change of occupants of public buildings</li> </ol>

**Table 2:** Types of the alternative measures

In the default approach, buildings must be renovated to meet at least national minimum energy performance requirements set according to the EPBD. In the alternative approach, the same minimum energy performance requirements are to be used to calculate the possible energy savings.

### National inventories of central government buildings

As for the default approach, to apply the renovation requirement in practice, national inventories of heat-

ed/cooled central government buildings had to be established and published by the end of 2013. In the alternative approach, making an inventory was not mandatory but it was suggested for the better calculation of the energy saving potential. The statistics of central government buildings by country can be seen in Table 3 below.

Country	Central government overall building stock			Central government buildings failing to meet minimum energy efficiency requirements			Floor area failing to meet minimum energy efficiency requirements from total, %
	Number	Floor area, m <sup>2</sup>	Average floor area per building, m <sup>2</sup>	Number	Floor area, m <sup>2</sup>	Average floor area per building, m <sup>2</sup>	
1	2	3	4 = 3/2	5	6	7 = 6/5	8 = 6/3*100
<b>BE (FL)</b>	N/A*	N/A*	N/A*	150	535 396	3569	N/A*
<b>BG</b>	1221	2 399 068	1965	1168	2 279 393	1952	95%
<b>EE</b>	616	1 284 822	3163	423	777 551	1838	40%
<b>HU</b>	N/A*	1 900 000 <sup>~</sup>	N/A*	80	413 072	5163	22%
<b>LV</b>	1091	2 636 713	2417	872	1 910 441	2191	62%
<b>LT</b>	1891	3 719 563	1967	1570	2 777 042	1769	75%
<b>PT</b>	283	7 329 150	25 898	N/A*	82 284	N/A*	N/A <sup>^</sup>
<b>SK<sup>-</sup></b>	69	420 329	6092	67	404 816	6042	99%

(Central government buildings over 250 m<sup>2</sup> and buildings with excluding exceptions counted out – last available data)

\* – data not available

<sup>^</sup> – The total areas in the Portuguese inventory are not reliable, because some of them include the land area and not only the area of buildings.

<sup>~</sup> – Data estimate from 2014

<sup>-</sup> – Data from 2015

**Table 3:** Statistics of central government buildings

## 2.1. Countries have opted for a limited scope of the 3% target<sup>15</sup>

In the course of the cooperative audit, SAIs have examined how the definitions connected to the Article 5 commitment have been applied in practice in their countries. The concept of “central government buildings”, focal in the case of Article 5, was explored in comparison with other countries, as regards the institutional range, number and types of buildings covered. The scope, and thus also the fulfilment, of the 3% target are very much dependent on how countries have defined “central government”.

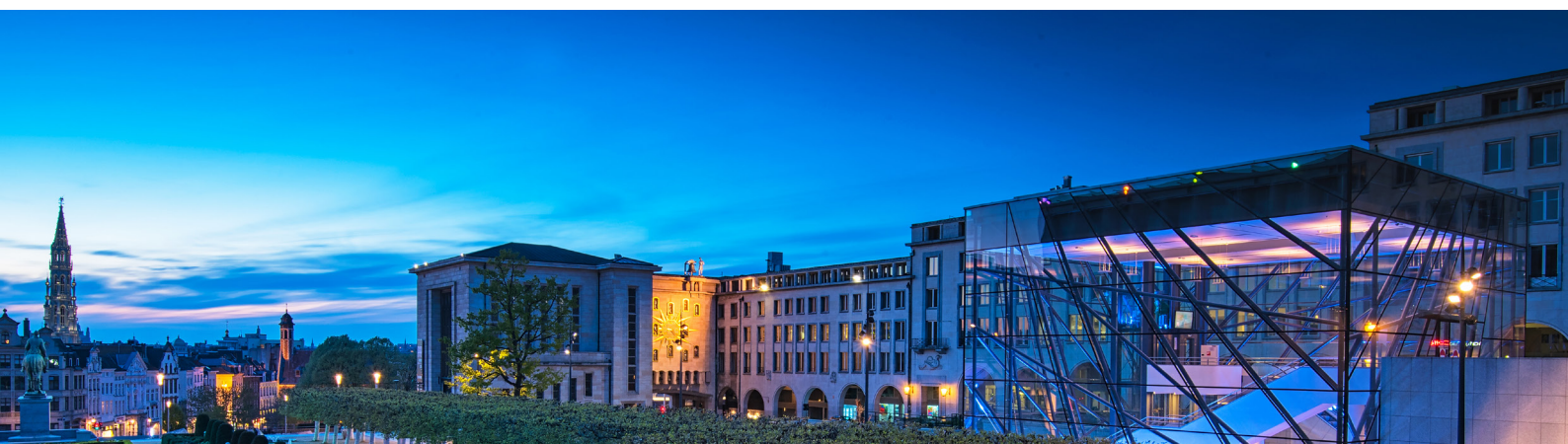
*In the EED “central government” has been defined as “all administrative departments whose competence extends over the whole territory of a Member State”.*

*In putting this definition into practice, the European Commission has recommended Member States to refer to Annex IV of the Public Procurement Directive or to the data on public accounts collected by Eurostat based on Council Regulation 479/2009/EC, i.e. the European System of Accounts classification<sup>16</sup>.*

### Scope of “central government buildings” varied in countries

Data gathered in national audits show significant differences in how countries have interpreted Article 5 of the EED. Both the Public Procurement Directive (PPD) and the European System of Accounts (ESA)

classification have been used as a basis for identifying central government entities to which Article 5 applies (see also Table 4 below). Some countries have chosen a more limited approach (see also case of Portugal below) or an ambiguous approach, lacking a concrete definition, as was the case in Bulgaria.



<sup>15</sup> Joint finding based on the findings from sub-question 1.1.




<sup>16</sup> According to the European Commission staff working document SWD (2013) 445 final, accompanying the document Communication from the Commission to the European Parliament and the Council Implementing the Energy Efficiency Directive, these two options are possible. Countries have already made lists of central government buildings for the purpose of these two EU law documents. Depending on the country, these two options can vary quite significantly and, thus, the Commission has decided to let each country decide for itself.

## Limiting the definition of central government in Portugal

The exemplary role of public bodies' buildings in Portugal has become limited as a consequence of the reduced number of buildings in the inventory due to the concept of central government applied. The Portuguese definition considers only the direct administration of the State, excluding institutions such as ministerial cabinets, agencies, schools, higher education institutions and many more. Furthermore, as the inventory only listed buildings both owned and occupied by central government, many buildings occupied by direct administration have not been included because they are formally owned by a state-owned real estate company which is not part of the direct administration. As a result, 250 out of the 283 buildings listed in the inventory of central government buildings were military barracks and premises, including 5 Air Force bases that could be excluded if later analysis show that these buildings serve defence purposes. Given the confidentiality associated with a significant part of these buildings, it was not possible to determine the affectation of each of these in a precise way in due time.

Furthermore, while Estonia has included both buildings owned, as well as buildings occupied by the central government, others have only included

buildings that are owned and occupied by the central government at the same time (see Table 7 below).

Country	Approach (PPD/ESA)	Owned/occupied	Examples	Heritage buildings excluded by default
BE (FL)	ESA		Central government administration and agencies and their local offices; state social care centres and state scientific institutes, museums and theatres	No
BG	None		Buildings used by the state administration only – ministries, agencies, etc.	Yes
EE	PPD		Central government institutions and agencies, including public schools, excluding local and municipal schools which make up the majority of schools and state higher education institutions which are public law institutions, state-owned enterprises, social care institutions and hospitals	Yes

Country	Approach (PPD/ESA)	Owned/occupied	Some examples (schools, hospitals, museums, etc.)	Heritage buildings excluded by default
HU	PPD		Only central government administration and agencies and their local offices, as well as courts and prosecutor's office, SAI office, Central Bank and social security funds	Yes
LV	PPD		Central government institutions and agencies, including state higher education institutions (state universities etc.), state museums, state social care centres, state scientific institutes, courts and prosecutor's office as well as social security funds, except state-owned companies, such as state hospitals, state theatres, post offices, railway stations and airports	Yes
LT	PPD		Central government institutions and agencies, including state museums and theatres, but excluding post offices, social security funds, railway stations and airports	Yes
PT	None		Only government departments, not including ministerial cabinets, agencies and local offices, schools, higher education institutions and state-owned enterprises	No
SK	ESA		Only central government administration, state scientific institutes, court and prosecutor's office, the Parliament building and the SAI office	Yes

**Table 4:** Use of alternative counting opportunities by countries

Upon comparing countries, it appears that public services can be provided by different levels of government and different types of institutions, or by municipalities, depending on the national law<sup>17</sup>. As a result, supported by data gathered during the cooperative audit, the range and types of buildings included in the 3% target vary by country.

EED Article 5 provides an opportunity to exclude heritage buildings, in so far as their compliance with minimum energy performance requirements would unacceptably alter their character or appearance. The audits have shown that such buildings have indeed by default been excluded in most countries.

Though EED Article 5 also provides the opportunity to extend the 3% target to the floor area owned and occupied by administrative departments at a level below central government, only the SAI Slovakia could report that this option has been used. In Slovakia the 3% energy savings target has been calculated based on the total floor area of all public sector buildings, including those owned and occupied by regional and local governments.

### **Countries have also been using other ways to fulfil the target**

The EED also grants Member States the opportunity to count new buildings towards the renovation target.

*Member States may count towards the annual renovation rate of central government buildings new buildings occupied and owned as replacements for specific central government buildings demolished in any of the two previous years, or buildings that have been sold, demolished or taken out of use in any of the two previous years due to more intensive use of other buildings*

Interpretation of this opportunity differs from country to country. Exactly half of the participating countries (BE(FL), BG, LV, SK) have not used either of the above mentioned EED options, be it because no new buildings have been built or the government has decided not to use these options. The latter is the case in Latvia, for example, as the Latvian government did not find it necessary to use either of the provided options because they were able to fulfil the target without including these buildings in the calculations.

Two countries (HU, LT) have opted to count towards the fulfilment of the target buildings that were no longer in use (see Table 5 below). Estonia was the only country that has both counted the floor area of the buildings that were no longer used or had been demolished because a new building had been built, as well as the floor area of buildings that had been sold, demolished or taken out of use, mainly as a result of optimizing building space, with no new buildings erected to replace them.

<sup>17</sup> See also European Commission report „A Comparative Overview of Public Administration Characteristics and Performance in EU28“, 2018. One of the conclusions of the study is that there is high heterogeneity among the countries with regard to the size, set-up and competences of central government.

Country	New buildings occupied and owned as replacements for specific central government buildings demolished in any of the two previous years	Buildings that have been sold, demolished or taken out of use in any of the two previous years due to more intensive use of other buildings
<b>BE (FL)</b>	No	No
<b>BG</b>	No	No
<b>EE</b>	Yes	Yes
<b>HU</b>	No	Yes
<b>LV</b>	No	No
<b>LT</b>	No	Yes
<b>PT</b>	No	No
<b>SK</b>	No	No

**Table 5:** Use of alternative counting opportunities by countries

As a result of these various interpretations of how to define “central government”, the proportion of buildings included in the scope of the 3% target by each country and, thus, also the required renovation or energy saving rate, can vary quite significantly. Participating SAIs have found that their countries have tried to minimize the cost and administrative

burden of the requirement by choosing the narrower definitions and smaller renovation and saving targets. The overall situation of the energy efficiency of central government buildings might therefore appear better than it is in reality and could also quite considerably reduce the potential positive effects of the energy performance of public sector buildings.

## 2.2. Some countries are having difficulties to meet the 3 % target<sup>18</sup>

SAIs have examined how their governments have been able to ensure the fulfilment of the Article 5 commitment and have found that, even though the definitions for “central government” have skimmed

down the target for renovation and energy saving, participating countries are to a large extent still struggling to meet the 3% target (see *Table 6 below*).

<sup>18</sup> Joint finding based on the findings from sub-questions 1.3.; 1.4.; 2.1. and 3.1.

		2014	2015	2016
Default (% of renovated floor area of buildings)	BG	N/A	N/A	N/A
	EE	1,46%	6,16%	3,01%
	HU	-	2,29%	4,78%
	LT	2,24*%	1,71%	0
	LV	8,98%	5,45%	1,36%**
Alternative (energy saved)	BE (FL)	5,93 GWh of 5,93 GWh (by 2020)		
	PT	0,16 GWh of 3,8 GWh (by 2020)		
	SK	111 GWh of 365 GWh (by 2020)		

\* If a Member State renovates more than 3 % of the total floor in a given year, it may count the excess towards the annual renovation rate of any of the three previous or following years. In the fulfilment of the targets for years 2014 onwards the renovations done in years 2011 to 2013 have been included.

\*\* Indicative information

**Table 6:** Progress towards fulfilment of the 3% target in central government buildings

In four of the audited countries the 3% target has up to now been met. Belgium (Flanders) has set the energy saving target at 5,93 GWh for 2020 and has, as of 2017, already fulfilled it. Nevertheless, the national audit has shown that the fulfilment could mostly

be attributed to the limited number of buildings involved in the calculation of potential energy saving target, as well as the method of calculating the fulfilment of the target under the alternative approach (see case of Belgium (Flanders) below).

### Calculating the fulfilment of the energy savings target in Belgium (Flanders)

In order to calculate how much energy should be saved, Belgium (Flanders) has calculated how much primary energy it could have saved if it had chosen the default approach. Since no precise data of all buildings concerned were available, Flanders has made the calculation for an existing office building that was selected as a reference building and extrapolated the result to the part of the building stock for which insufficient data were available. Flanders argued that according to the EPBD a 'major renovation' of a building means the renovation of more than 25 % of the surface of the building envelope. It argued that in the reference building, the roof forms approximately 25% of the envelope. Roof renovation therefore could be considered a major renovation of the building. A study has shown that an improvement of the roof insulation could reduce primary energy consumption of the building by 14 kWh/m<sup>2</sup>/year.



Hungary, Latvia and Estonia have also fulfilled the annual 3% renovation target. While not part of the initial scope of neither the cooperative nor the national audit, the SAI of Estonia has found that the future fulfilment of the target was questionable. The main problem in Estonia was that neither the fulfilment nor the financing of the 3% target has been planned ahead and energy efficiency has not been a priority when making public sector real-estate decisions. Thus, the Ministry of Finance has indicated that the future fulfilment of the target is questionable<sup>19</sup>.

In Hungary, the fulfilment of the target was partly due to the fact that, as a result of the reorganization of government institutions, the area designated for renovation decreased by 4.78%. At the time of the Hungarian audit, decisions have been made about the use of EU funds for the renovation of central government buildings, which, according to the audit, ensures that the 3% renewal target will be met in 2017 and 2018 also.

All other countries are struggling to fulfil the target. In Portugal energy savings have only been estimated for 2016 and the conclusion has been that the country was far from achieving the objectives set. Furthermore, the national audit has shown that, similarly to Estonia, no plan has been drawn up to meet the target in Portugal. Also, the SAI of Portugal has noted that the available data about the fulfilment

of the objective should be taken with reserve as the reliability of the data was questionable, since the estimated savings were the result of including potential savings from implementing proposals made in energy performance certificates, whereas no one has ever verified whether these savings were actually made.

The SAI of Slovakia has found in the course of its national audit that, though in 2014 a plan was already in place to meet the 3% saving target, only two central government buildings have been renovated as of 2017. The main issue was the lack of funds in the state budget for renovating central government buildings (*see also section 2.3 below*). Nevertheless, Slovakia has managed to slightly overfulfil the energy saving target in 2016. In both 2014 and 2015 the target was not met, and SAI Slovakia has concluded that the future fulfilment of the target is only possible if government continues to count in savings in buildings on an administrative level below central government.

Bulgaria and Lithuania are also struggling to meet the 3% target (*see Table 6 above*) and, as the national audits indicated, will most probably also do so in the future. In Bulgaria the main problem is the lack of comprehensive planning (*see case of Bulgaria below*), as well as incomplete and poor-quality data about performed renovations (*see also section 2.4 below*).

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<sup>19</sup> *The Estonian Government has since taken steps to ensure the future fulfilment of the 3% target and developed measures to enhance the financing and planning of central real-estate investments.*

### **Lack of planning and proper implementation has been a major obstacle to fulfilling ambitious targets in Bulgaria**

When transposing the Energy Efficiency Directive objectives into national legislation the Bulgarian authorities have taken a more ambitious approach. The 3% renovation target was increased to 5% and the national plan for renovation of the buildings owned and occupied by the state administration sets up a more ambitious goal for these buildings' energy performance – they have to reach class B after renovation while the statutory minimum energy performance requirement is class C. Nevertheless, as of January 2018 no practical implementation of these targets was begun because the renovation plan was officially only adopted at the end of 2017. Prior to this date, a coordinated centralized approach to renovating public sector buildings had not been planned nor implemented. An inventory of buildings had been compiled, however no prioritization nor selection of buildings for annual renovation took place. Also, until 2018 data on renovations gathered by central and local authorities and sent to the Sustainable Energy Development Agency in annual reports, were often incomplete and sometimes inaccurate, making them unsuitable for correctly calculating the fulfilment of the 3% target.

In Lithuania a plan to meet the 3% target has been in place since 2014 but no buildings have been renovated. The progress towards the fulfilment of the target has been made by counting in buildings taken out of use (*see also section 2.1.*).

Thus, it appears that most of the countries that participated in the cooperative audit, are already struggling or will be struggling in the future to fulfil Article 5 of the EED on central government's obligation to fulfil an exemplary role in energy efficiency.

## **2.3. Funding for energy efficiency in public sector buildings would benefit from better planning and evaluation<sup>20</sup>**

Promoted by the EED, Member States have a range of opportunities to choose financial instruments when allocating resources for improving the energy performance of buildings: from national budgets and

national energy efficiency funds to several EU funds, revenues from annual emission allocations, energy service companies (ESCOs) and energy performance contracting.

<sup>20</sup> Joint finding based on the findings from sub-question 2.1.; 2.2. and 3.2.

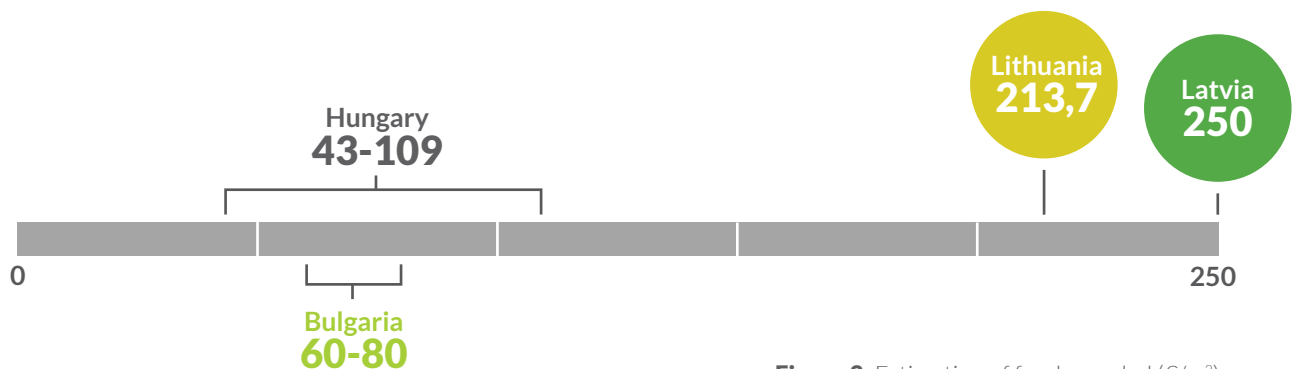
**Energy Efficiency National Fund** - As a means of supporting national energy efficiency initiatives, obligated parties under national energy efficiency obligation schemes (large energy distributors and energy sales companies) could fulfil their obligations by contributing annually to an Energy Efficiency National Fund an amount that is equal to the investments required under the scheme.

**Energy service companies (ESCO)** – Companies delivering energy services or other energy efficiency improvement measures in a final customer’s facility or premises.

**Energy performance contracting (EPC)** – A contractual arrangement between the beneficiary and the provider of an energy efficiency improvement measure, verified and monitored during the whole term of the contract, where investments (work, supply or service) in that measure are paid for in relation to a contractually agreed level of energy efficiency improvement or other agreed energy performance criterion, such as financial savings.

National audits have sought to determine whether financial instruments necessary to meet the requirement of Article 5 have been developed and are being coordinated, as well as whether the effectiveness of the said mechanisms has been assessed. The SAIs of Latvia, Lithuania, Hungary and Bulgaria have reported

that the necessary funds have been estimated per square meter (*see also Figure 3 below*). In Slovakia the funds have been estimated in total, but the cost of renovation per square meter has not been calculated. In other countries, no separate estimation or planning of funds have been made.



**Figure 3:** Estimation of funds needed (€/m<sup>2</sup>)

Four SAIs (LV, LT, HU and SK) have also reported that institutions responsible for monitoring and controlling the financing of renovations have been

appointed in their country (*see the case of Lithuania below*). In other countries, monitoring and control of the funds have not been assigned to a specific institution.

### Good planning is not always sufficient to achieve sound results – case of Lithuania

Pursuant to the provisions of Article 5 of EED, authorities have developed the national energy efficiency programme for public buildings, appointed institutions in charge of programme implementation, supervision and management, and allocated funds. Nevertheless, no buildings have been renovated under the previously mentioned programme as of January 2018. Since investments in renovation of public buildings are paid back in 30-40 years and the renovation being financed with a repayable assistance model, authorities were not interested in the renovation of buildings. To reach the implementation of the objectives set out in the Directive, public sector entities are obliged to renovate a concrete amount of building area.

### Countries have been using different financial instruments for energy efficiency investments; ESCOs and Energy efficiency funds have not widely been used

Financial instruments marked for the 3% target vary significantly across the countries. Mechanisms most used were the EU Structural and Cohesion Funds, followed by the state budget and the income from sale of emission allowances. The cooperative audit

has shown that in Belgium (Flanders), Bulgaria and Estonia ESCOs have been used in the public sector, albeit little and not for the purposes of fulfilling the 3% target. Similar conclusions can be made about Energy Efficiency funds. Four of the participating SAIs (BG, LV, LT, PT) have established a fund, but none of these funds have been utilized for the renovation of central government buildings in the audited period.

Country	EU Structural and Cohesion Funds	Income from sale of emission allowances	State budget	Loans, guarantees	Energy Performance Contracting (ESCO)	Other
BE (FL)		X	X			
BG	X	X	X			KIDSF <sup>12</sup> (EBRD)
EE			X			budget of the central real estate management agency
HU	X		X			
LV	X	X	X			
LT	X		X	X		
PT	X					
SK	X	X	X	X		

**Table 7:** Financial support instruments marked for the fulfilment of the 3 % target

<sup>21</sup> The Kozloduy International Decommissioning Support Fund (KIDSF) – established and administered by the European Bank for Reconstruction and Development (EBRD).

## Countries do not always make investment decisions according to energy performance

The EED also stipulates that:

*investments should be prioritized for central government buildings with the poorest energy performance.*

On a project level, countries have set similar selection criteria for renovations: minimal energy saving requirements; planned energy savings/reductions of CO<sub>2</sub> emissions in relation to investments; energy savings larger than investments, considering the time value of money. Nevertheless, the lack of data provided either by energy performance certificates (see also section 1.2.) or energy audits for central government buildings has made it difficult to put this principle into practice as a selection criterion for determining which buildings to renovate as a priority. As detailed data, such as energy performance

certificates, are key to identifying the condition in which a building is in efficiency wise, it has been difficult for governments to adequately decide which buildings to prioritize.

It was also concluded from most national audits that while cost-effectiveness was being evaluated for individual projects, effectiveness of the whole of financial support mechanisms for the renovation of central government buildings has been assessed only in Latvia (see also the case of Latvia below).

### Evaluation of financial instruments in Latvia

For the EU (2014-2020) funds used for the renovation of central government buildings, an ex-ante assessment has looked into the effectiveness of previous financial instruments (EU funds, guarantees and income from the sale of emission allowances (Climate Change Financial Instrument) for energy efficiency improvement in buildings), as well as possible alternatives for the planned instruments.

Total necessary funding for the mechanism was identified, calculating the required fulfilment of the 3% renovation target, taking into account the cost-effectiveness of previous instruments (€/m<sup>2</sup>).

Though financial instruments have mostly been coordinated between the different institutions in charge of implementing them, the responsible institutions have rarely evaluated whether the funds spent have in

reality brought about the intended results. This has led to a situation where money was being spent but countries have no systematic overview if or to what degree the spending has fulfilled its purpose.

## 2.4. Monitoring and supervision over the fulfilment of the 3% target was not sufficient in most countries<sup>22</sup>

Monitoring is essential to assessing the progress of any given policy effort, and it will also provide an opportunity to identify possible shortcomings and devise means for improvement. Effective monitoring relies on accurate and consistent information about the targeted objects and the implementation of policy measures. National audits have sought to determine whether the monitoring and supervision

over the fulfilment of the EED Article 5 target has been arranged effectively in their countries.

The audits have identified that institutions responsible for checking the progress of fulfilling the national plan or strategy in place to ensure the fulfilment of the 3% target have been appointed in 5 out of 8 countries (BE (FL), HU, LV, LT, SK) (see the case of Slovakia below).

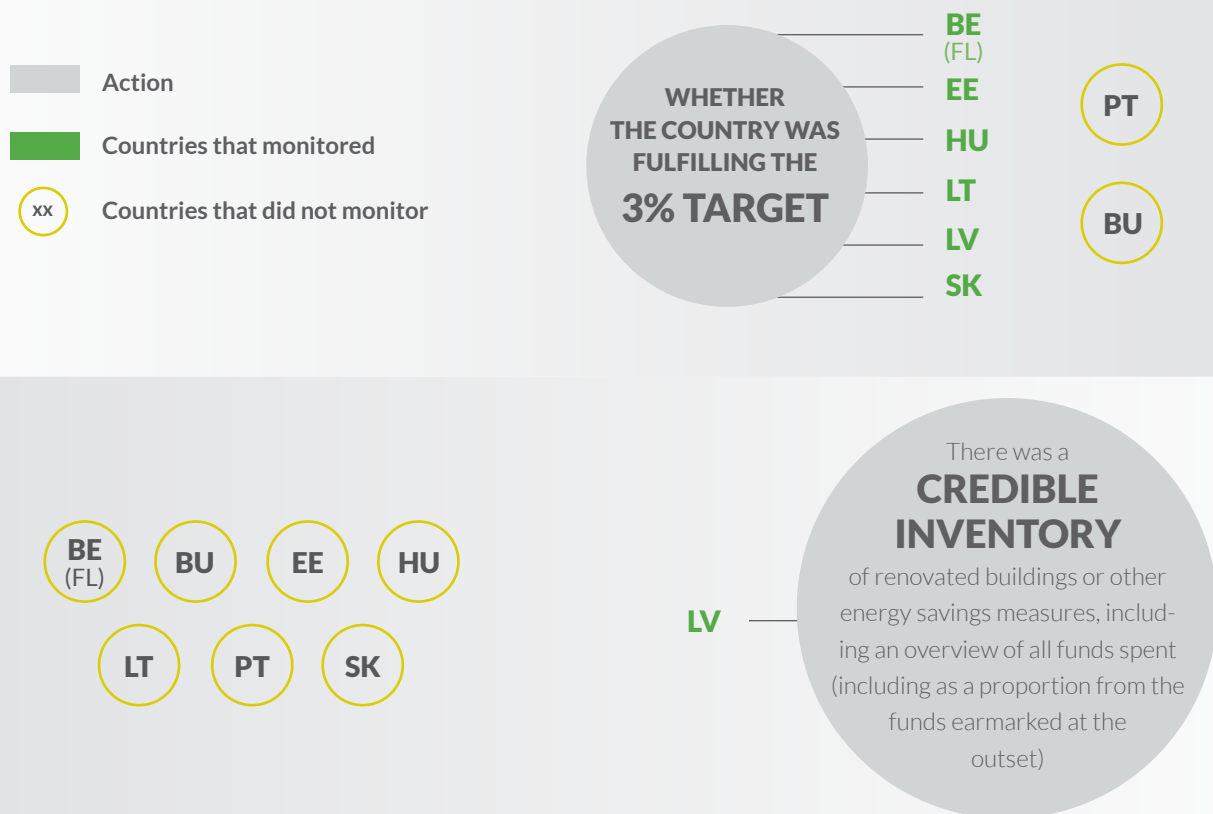
### Monitoring energy efficiency in Slovakia

Central government authorities, higher territorial units, municipalities, organizations within their sphere of responsibility and other statutory bodies were required to send their data about the accomplished renovations to the Energy Efficiency Monitoring System operator through the web interface. The Slovak Innovation and Energy Agency has annually issued a Monitoring Report on the Renovation of the Central Government Buildings, including information on the total floor area of central government buildings that do not meet the minimum energy performance requirements, the total renovated area of relevant buildings and the total volume of energy savings achieved in relevant buildings. The Agency has not only assessed the fulfilment of the energy savings target by analysing the documents of the central state administration authorities, but also by looking into the energy performance certificates issued to the buildings.

Comprehensive monitoring of the 3% target, though, has not been done in most countries, as shown in Figure 4 below: while the overall progress of fulfilling the target was being monitored in most countries, detailed data necessary for tracking progress and measuring impact was often partial or missing altogether.



<sup>22</sup> Joint finding based on the findings from sub-question 3.1.



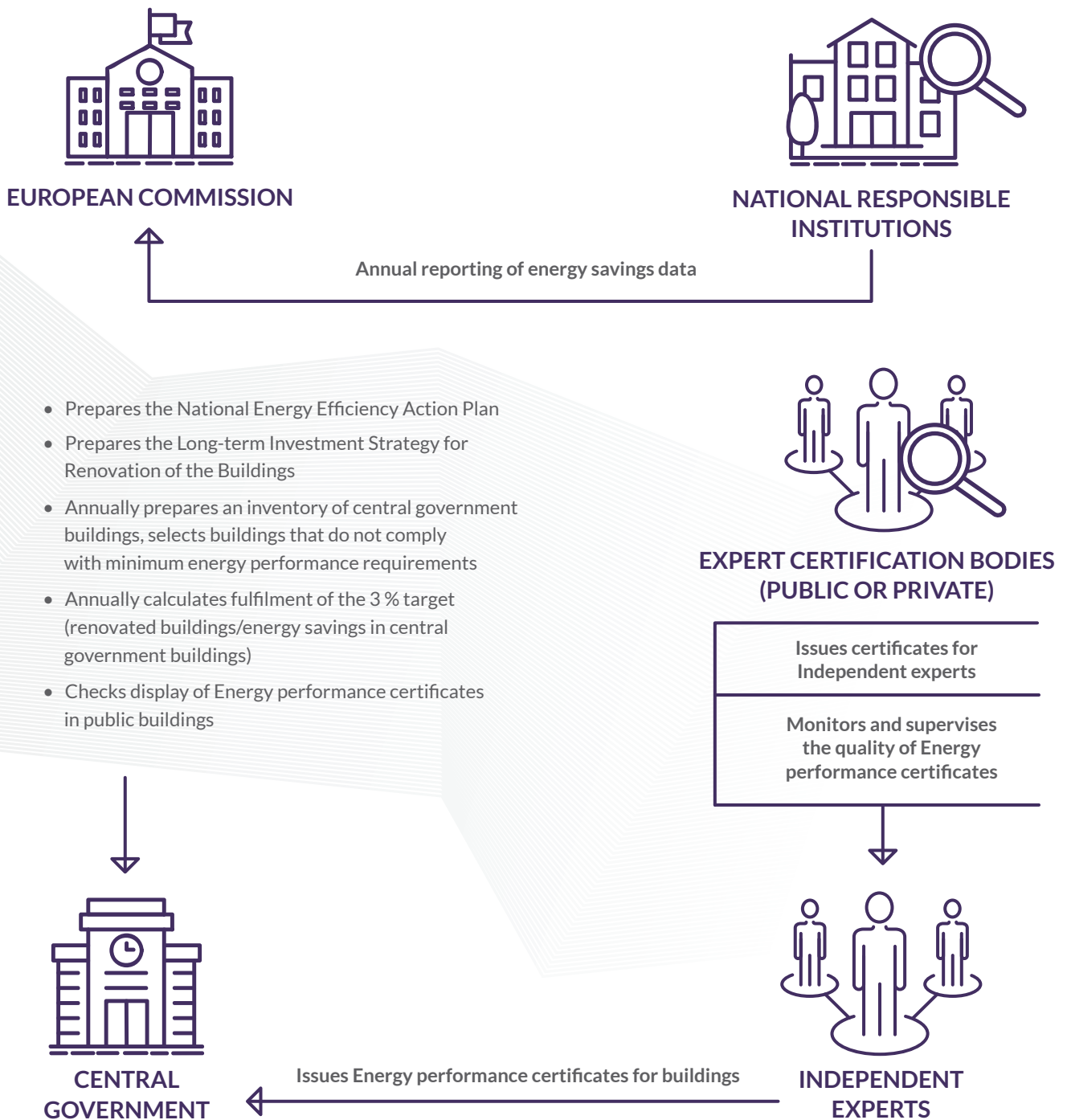
**Figure 4:** Monitoring and supervision over the fulfilment of the 3% target by countries

Audit findings of most countries have indicated that the general performance of Article 5 “Exemplary role of public bodies’ buildings” related policy instruments, both prior to and after implementation, was difficult to evaluate. In some countries the issue lay

in the lack of planning – with no plan it was difficult to estimate whether the policy was on track. Other countries had a problem with collecting credible data. Altogether, countries could do more to properly monitor the funding and fulfilment of Article 5.

# Appendices

## Appendix I – Institutional scheme





## Appendix II – Audit questions

### 1.

**Has a policy framework for increasing energy efficiency of public sector buildings been established?**

- 1.1.** Is there a clear definition for “public buildings” on a national level?
- 1.2.** Have the requirements for minimum energy performance been set?
- 1.3.** Has a renovation strategy/plan for central government buildings in accordance with Article 5 of the Directive 2012/27/EU been adopted?
- 1.4.** Have the institutions responsible for the implementation of the measures set in the strategy/plan and monitoring and supervision been appointed?
- 1.5.** Has a strategy/plan for ensuring that from 2019 all new buildings owned and occupied by public authorities are nearly-zero energy buildings been adopted?
- 1.6.** Has the central government developed policies for promoting energy efficiency in public buildings in accordance with Directives 2010/31/EU and 2012/27/EU?

### 2.

**Are there sufficient funds allocated for financing the set plan/strategy?**

- 2.1.** Are there enough investments nationally allocated to fulfil the 3% target for renovating central government buildings or to make the planned energy savings?
- 2.2.** Have appropriate criteria for allocating financial instruments been set?

### 3.

**Is there a system for monitoring the achieved energy efficiency targets in place?**

- 3.1.** Has a functioning system for monitoring and control been established to guarantee the fulfilment of the renovation strategy/plan for central government buildings in order to meet minimum energy performance requirements?
- 3.2.** Has a functioning system for monitoring and control for financing energy efficiency renovations been established in the member state?
- 3.3.** Has a functioning system for monitoring and control for energy audits been established in the member state\*?
- 3.4.** Has a functioning system for monitoring and control for energy performance certification been established in the member state?
- 3.5.** Has a functioning system for detecting and penalizing infringements been established in the member state\*?

*\*These questions have not been further elaborated in the joint findings document, since the national audits did not produce significant results that could be consolidated and compared in the joint findings report.*

## Appendix III – Participants

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