



Republic of Serbia
Ministry of Mining and Energy



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Exemplary role of public bodies' buildings

Guidelines to implement in Serbia Article 5 from the Energy Efficiency Directive



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EXECUTIVE SUMMARY

From 1 December 2017, the Republic of Serbia will need to ensure that 1% 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. This is commonly called “the default approach”. In addition by 1 January 2017, Serbia must establish and publish an inventory of heated and/or cooled central government buildings with a total useful floor area over 500m², and expand to the buildings with over 250m² as of 1 January 2019.

Alternatively, Serbia may take an “alternative approach” by adopting measures to achieve savings that are at least equivalent to the savings that would be delivered by the default approach. If Serbia opts for this approach the government must notify the Energy Community Secretariat, by 1 January 2017, of the alternative measures that they plan to adopt, showing how they would achieve the savings equivalent to the default approach. The 1% should be calculated on the total floor area of buildings with a total useful floor area over 500m² owned and occupied by the central government of Serbia that do not meet the national minimum energy performance requirements. This threshold will be lowered to 250m² as of 1 January 2019.

The two approaches have significant differences and therefore they both have their own advantages. A choice must be taken on the basis of what is most appropriate for the national situation.

In order to implement Article 5, the Republic of Serbia needs to take several steps to fully implement the requirement, depending on the approach which it decides to take. Since a number of these steps need considerable further work, and with the deadline for notifying the Energy Community Secretariat looming, it might be more appropriate to start with assumptions about the performance level that renovations should achieve and a first list of buildings to establish the potential floor area or savings to be delivered to help make a decision on the approach to take.

Serbia has identified a high potential for energy savings in its public building stock [15], which puts it in a great position to push forward renovation of its public building stock. The requirement to ensure that 1% 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 is the first step to kick-starting wide-scale renovation. This focus on public buildings can set an example to regional and local governments to undertake similar projects, and also provide the stimulus for developing the market for energy efficiency improvements in the entire building stock.

The wider benefits of energy efficiency improvements mean that improvements in building performance are important beyond the immediate advantages of saving energy and reducing energy bills of public buildings, it also leads to cutting carbon emissions, energy security, employment creation, reduced air pollution, poverty alleviation, and improved health, comfort and productivity.

INTRODUCTION

Policy background

The Republic of Serbia is an EU candidate country [1], and therefore it is not yet mandatory to implement the majority of EU directives in Serbia, including the EU Energy Efficiency Directive. However, looking to the future it is important that Serbia plans for accession when full implementation of the EU acquis will be required. Furthermore, Serbia has signed the Energy Community Treaty that requires it to implement Article 5 of the EU Energy Efficiency Directive (2012/27/EU) [2] (EED), which concerns the renovation of public buildings. The deadlines for implementation and scale of the energy savings to be delivered in Serbia¹ differ from the text of the EED, but the scope remains the same in terms of renovating a certain percentage of specific government buildings each year to meet at least the minimum energy performance requirements.

From 1 December 2017, the Republic of Serbia will need to ensure that 1% 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. This is commonly called “the default approach”. In addition by 1 January 2017, Serbia must establish and publish an inventory of heated and/or cooled central government buildings with a total useful floor area over 500m², and expand to the buildings with over 250m² as of 1 January 2019.

Alternatively, Serbia may take an “alternative approach” by adopting measures to achieve savings that are at least equivalent to the savings that would be delivered by the default approach. If Serbia opts for this approach the government must notify the Energy Community Secretariat, by 1 January 2017, of the alternative measures that they plan to adopt, showing how they would achieve the savings equivalent to the default approach. The 1% should be calculated on the total floor area of buildings with a total useful floor area over 500m² owned and occupied by the central government of Serbia that do not meet the national minimum energy performance requirements. This threshold will be lowered to 250m² as of 1 January 2019.

Table 1 presents an overview of the requirements and differences between them for implementation of Article 5 in the 28 EU Member States and in Serbia.

Table 1 - Overview of the requirements and timeline under Art 5, EED (adapted from [3])

Requirements	EU-28	Serbia
Energy savings goal	Member States shall ensure that, as 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	Contracting Party shall ensure that, as from 1 December 2017, 1% 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.

¹ This report focuses on the targets and dates from the Energy Community Treaty.

Requirements	EU-28	Serbia
Calculation approach	The 3% rate shall be calculated on the total floor area of buildings with a total useful floor area over 500 m2 owned and occupied by the central government of the Member State concerned that, on 1 January of each year, do not meet the national minimum energy performance requirements (..) That threshold shall be lowered to 250 m2 as of 9 July 2015.	The 1 rate shall be calculated on the total floor area of buildings with a total useful floor area over 500 m2 owned and occupied by the central government of the Contracting Party concerned that, on 1 January of each year, do not meet the national minimum energy performance requirements. That threshold shall be lowered to 250 m2 as of 1 January 2019
Flexibility mechanism	If a Member State/ a Contracting Party renovates more than required in a given year, it may count the excess towards the annual renovation rate of any of the three previous or following years. Member States/ a Contracting Party 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.	
Public buildings repository	By 31 December 2013 , Member States shall establish and make publicly available an inventory of heated and/or cooled central government buildings with a total useful floor area over 500 m2 and, as of 9 July 2015, over 250 m2, excluding buildings exempted (..)	By 1 January 2017 , Contracting Parties shall establish and make publicly available an inventory of heated and/or cooled central government buildings with a total useful floor area over 500 m2 and, as of 1 January 2019, over 250 m2, excluding buildings exempted (..)
Alternative approach	Member States/a Contracting Party may opt for an alternative approach (..), whereby they take other cost-effective measures, including deep renovations and measures for behavioural change of occupants, 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 in default approach, reported on an annual basis.	
Notification	Member States opting for the alternative approach shall notify to the Commission, by 31 December 2013 , the alternative measures that they plan to adopt, showing how they would achieve an equivalent improvement in the energy performance of the buildings within the central government estate.	Contracting Parties opting for the alternative approach shall notify to the Energy Community Secretariat, by 1 January 2017 , the alternative measures that they plan to adopt, showing how they would achieve an equivalent improvement in the energy performance of the buildings within the central government estate.

Since implementation of Article 5 is already underway in EU Member States, as they were required to implement the article by 1 January 2014, the government of Serbia is in a great position to use and learn from experiences across Europe for their own implementation. The report and notifications from Member States on their plans and approaches is available on the European Commission's website [4].

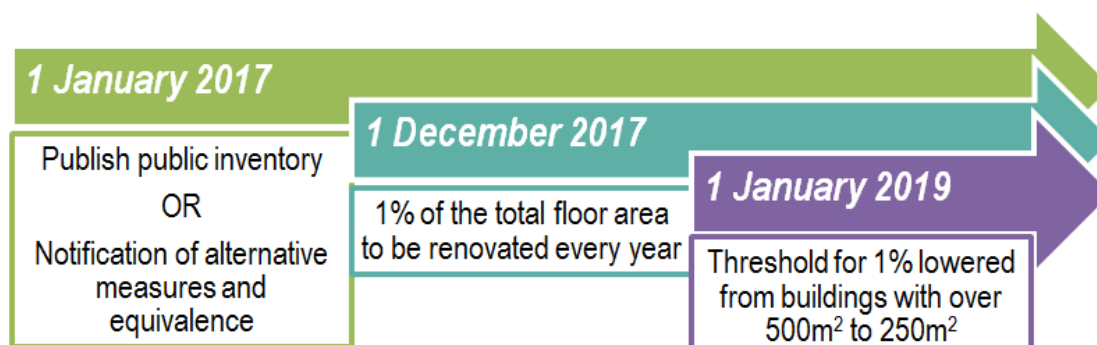
As well as the core objective of Article 5, ensuring an annual rate of renovation in public buildings, it is also important to keep in mind the wider implications of implementation of the Article. Action in the public sector can be an important trigger for wider stimulation of the market for energy efficiency improvements. Therefore, implementation of Article 5 can pave the way towards large-scale renovation of the whole building stock.

The EED (and related Energy Performance of Buildings Directive) are being reviewed and proposals for revisions to the Directives are expected from the European Commission in Winter 2016. Articles that drive renovation may be strengthened, so good implementation of the existing acquis will set a good basis for potentially strengthened requirements in the future².

Timeline

Figure 1 shows the timeline for Serbia to implement Article 5 of the EU Energy Efficiency Directive.

Figure 1 - Timeline



² A decision to implement the revised provisions as part of the Energy Community Treaty would need to be agreed by the Ministerial Council of Energy Community.

IMPLEMENTING ARTICLE 5: LEGAL REQUIREMENTS AND LESSONS FROM ACROSS EUROPE

Defining central governmental buildings

As a first step towards implementing Article 5, the scope of Central Government buildings must be defined. From this, an inventory of heated and/or cooled central government buildings with a total useful floor area over 500m² (the scope will expand to the buildings with over 250m² as of 1 January 2019) should be developed, and the area to be renovated or the amount of savings to be delivered calculated.

Minimum scope

Article 2(9) of the EED, as adopted by the Energy Community, defines of “central government” as follows

'Central government' means 'all administrative departments whose competence extends over the whole territory of a Contracting Party.'

This definition sets the minimum scope for the requirement. The definition also allows extension as it does not limit the scope to only Ministry buildings but includes entities that are directly dependent on them in terms of authority and financing.

Exemptions from the list of central governmental buildings

Exemptions are also allowed and therefore some types of buildings may be excluded from the requirement. These are defined by Article 5.2 of the EED as the following:

- Buildings officially protected as part of a designated environment, or because of their special architectural or historical merit, in so far as compliance with certain minimum energy performance requirements would unacceptably alter their character or appearance;
- Buildings owned by the armed forces or central government and serving national defence purposes, apart from single living quarters or office buildings for the armed forces and other staff employed by national defence authorities;
- Buildings used as places of worship and for religious activities.

Lessons from across Europe – Definitions of central government buildings

The majority of EU Member States followed the definition in the EED of the central government buildings to define the minimum scope of the requirement. Some countries decided to use the list in Annex of IV of the Public Procurement Directive [5], which includes all central government bodies in all Member States, since these building are the part of national inventories. Governments may also refer the definition of central government in the Guidance to Council Regulation 479/2009/EC on the application of the Protocol on the excessive deficit procedure.

If there is an existing programme for renovating or refurbishing public buildings, this is a good reason to extend the definition to cover all of the building covered by the programme. Others extended the scope of the definition to include regional government buildings, central government buildings that are occupied (but not owned), schools, and social housing.

Table 2 provides an overview of the definitions used by Member States – this is only available for countries opting for the default approach.

Table 2 - Examples of countries that follow different scope of the central government building definition under Article 5 of the EED (Source: [6])

Country	Definition	Floor area (m ²) planned to be renovated in 2014	
Cyprus	EED definition	All central governmental buildings with floor area over 500m ²	18 500
Greece		All central governmental buildings with floor area over 500m ²	≤ 9 291
Lithuania		All central governmental buildings with floor area over 500m ²	66 703
Luxemburg		All central governmental buildings with floor area over 500m ²	4 785
Spain		All central governmental buildings with floor area over 500m ²	336 007
Estonia	Public Procurement Directive	All state owned and occupied properties	45 000
Bulgaria	Extended definition	All central and regional government buildings with floor area over 250m ²	≤ 225 668
Latvia		All central and regional public buildings with floor area over 500m ²	≤ 77 679
Slovenia		All central and regional government buildings with floor area over 250m ²	21 249

Table 3 shows how the Flemish Region of Belgium considers different buildings types in relation to its inventory of central government buildings.

Table 3 - Example from Flemish Region in Belgium, setting the central government definition for different building typologies

Building typology	Included in the inventory of central government buildings	Explanation
Social house or apartment	No	<ul style="list-style-type: none"> < 250m² Not occupied by the central government
Regional administration for social housing	Yes	<ul style="list-style-type: none"> Owned and occupied by central government Administrative department
Sports hall for regional fire department	No	<ul style="list-style-type: none"> Not an administrative department
Army barracks >500m ²	No	<ul style="list-style-type: none"> Considered as an exception
School building	No	<ul style="list-style-type: none"> Not occupied by the central government Not an administrative department
Ministry for education	Yes	<ul style="list-style-type: none"> Owned and occupied by central government Administrative department
Ministry for environment and energy - rented	No	<ul style="list-style-type: none"> Not owned by central government
Town hall	No	<ul style="list-style-type: none"> Not considered as central government since competence does not extend over the whole territory of a Member State
Department of science – protected monument	No	<ul style="list-style-type: none"> Considered as an exception
Church	No	<ul style="list-style-type: none"> Not owned by central government Considered as an exception

In Croatia the choice of eligible buildings is similar to the Flemish region, based on whether they are owned by central government and/or used by central government bodies. Croatia has a registry of its building stock, originating from the national energy management and information system, which includes:

- Administrative buildings
- Hospitals
- Children's homes
- Dormitories (general)
- College buildings
- Public buildings

The inventory includes more than those considered central government buildings, but can be filtered to extract information on the relevant buildings³⁴.

³ More information is available in the Croatian National Renovation strategy [19] and Croatia's notification to the European Commission on Article 5 [20].

Minimum energy performance requirements

Article 5 targets public buildings that do not meet minimum energy performance (MEP) requirements. In relation to setting these requirements, Articles 4 and 5 of EU Energy Performance of Buildings Directive (EPBD) (31/2010/EU) [7] set out specific actions:

- 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 levels⁵.
- Differentiate between new and existing buildings and between different categories of buildings.
- Calculate cost-optimal levels in accordance with the comparative methodology framework in the European Commission guidance [8]. The cost optimal methodology is a tool to facilitate a smooth transition towards nearly zero energy buildings (nZEB).
- Report on the comparison between the existing minimum energy performance requirements with the calculated cost-optimal levels.

Serbia should have submitted their first report on cost-optimality to the Energy Community Secretariat by 30th June 2013, with regular reports at least every 5 years.

In Serbia there are minimal energy performance requirements for new buildings (class C of EPC) and for renovations (to reach one class better), but it is not clear whether these meet cost-optimal levels. Since cost-optimal levels must be set in order to implement Article 5, further detailed work is needed to define and set these requirements in Serbia.⁶

Lessons from across Europe - setting minimum energy performance requirements

The timeline for implementation for EU Member States is presented in figure 2. To date all Member States have notified the European Commission of their cost optimal levels. Furthermore, the European Commission has published an assessment of these calculations [9], based on the notifications from Member States in 2013. This assessment identifies best practices from countries across Europe and could provide inspiring examples for the Serbian Government.

Despite the general framework and guidelines provided by European Commission, a very large degree of flexibility has been given to Member States regarding the selection of input data and the necessary assumptions for the cost-optimal calculation. A study by BPIE [10] provides additional guidance with examples of calculations for new residential buildings in Austria, Germany and Poland. Implications of using different values for key factors of the calculation (discount rates, simulation variants/packages, costs and energy prices) are also highlighted. Moreover, the study presents the advantage of considering ambitious packages of measures towards nearly zero-energy levels and to evaluate the carbon emissions in the light of long-term climate goals.

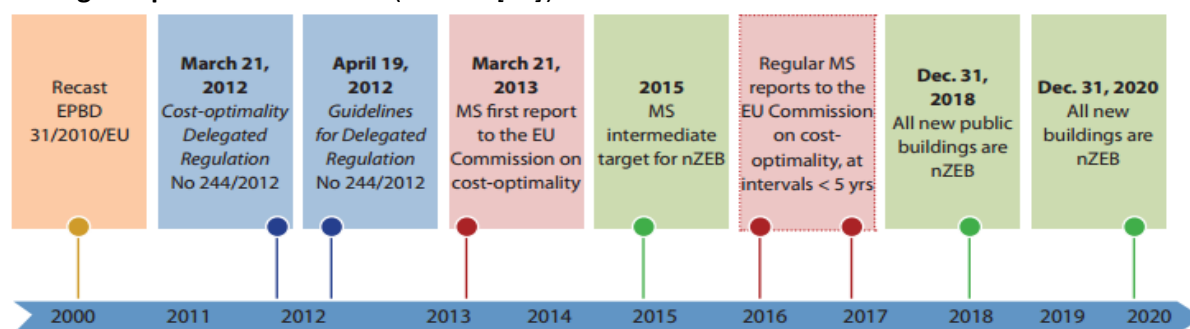
Having in mind EU-28 experience, it is important to introduce effective compliance and enforcement measures for the energy performance requirements: including compliance checks and penalties for non-compliance.

⁴ Since court buildings are not administrative generally they are not within this scope.

⁵ The cost-optimal level is defined as “the energy performance level which leads to the lowest cost during the estimated economic lifecycle”.

⁶ This is a complex process and this report only deals with this to a limited extent, briefly explaining what is required and has been done at EU level. Useful references on setting these requirements are listed in Annex 1.

Figure 2 - Implementation timeline for Member States for cost-optimality and nearly Zero-Energy Buildings' requirements of EPBD (Source: [10])



The default approach - Monitoring the energy savings

Article 5 of the EED also sets the framework for monitoring and reporting of the energy savings from public buildings. This differs between the default and alternative approaches.

Under the default approach, (as shown in figure 3) Serbia should establish and make publicly available an inventory of central government buildings. This inventory is the starting point and a key element to build the basis for policy decisions, such as which identifying the buildings with the lowest energy performance that could be tackled first.

The scope of the public inventory is specified in EED, including:

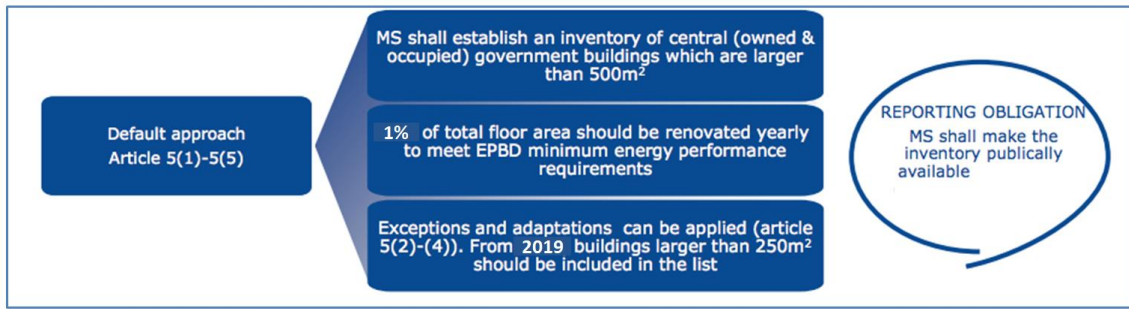
- A list of all central government buildings, as per the definition;
- For each building:
 - its floor area expressed in square metres; and
 - data on the energy performance, or relevant energy data - this means data on energy consumption or total energy use, or data from Energy Performance Certificates (EPCs).

There are a number of flexibilities in terms of the delivery of actual energy savings and renovations. If a Serbia renovates more than 1%⁷ of the total floor area of central government buildings in a given year, it may count the excess towards the annual renovation rate of any of the three previous or following years (Article 5.3 of the EED).

Member States may also 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 (Article 5.4 of the EED).

Figure 3 - Requirements for the default approach under Art 5 of EED as adopted by the Energy Community (adapted from [11])

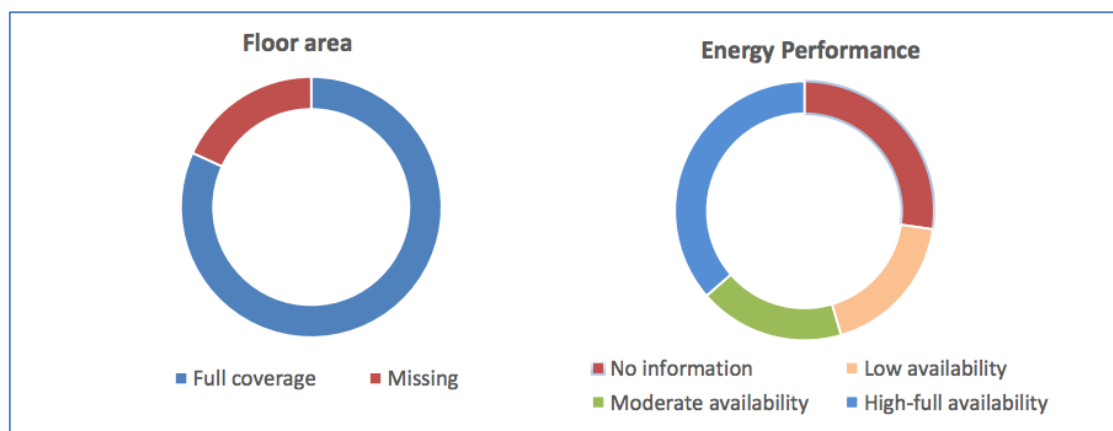
⁷ Or more than 3% in the case of EU Member States.



Lessons from across Europe - National inventories of public buildings

11 Member States have followed the default approach: Cyprus, Estonia, Latvia, Lithuania, Greece, Hungary, Luxembourg, Spain, Bulgaria, Romania, and Slovenia⁸. A public database, with information on floor areas of central government buildings, is available for 9 of these Member States (Hungary and Romania only presented aggregated data). However, only 2 countries (Latvia and Slovenia) provide comprehensive information in terms of energy data for each building listed in their inventory. The majority only provide limited information on energy performance (Figure 4). Some countries provide information for some buildings but not all of them, and the majority of Member States use their energy labels as an indicator of energy consumption.

Figure 4 - Availability of information in public buildings inventories under art 5, EED (default approach) (Source: [11])



⁸ Inventories for Cyprus, Estonia, Latvia, Lithuania, Luxembourg and Spain are available at <https://ec.europa.eu/energy/en/topics/energy-efficiency-directive/buildings-under-eed>

Having such gaps in energy consumption data is unfortunately a common problem (table 4). Although Member States have or are establishing a dedicated certification programmes for public buildings which should bridge this gap.

Table 4 - Scope of public inventories under Article 5 of the EED (as of October 2015)

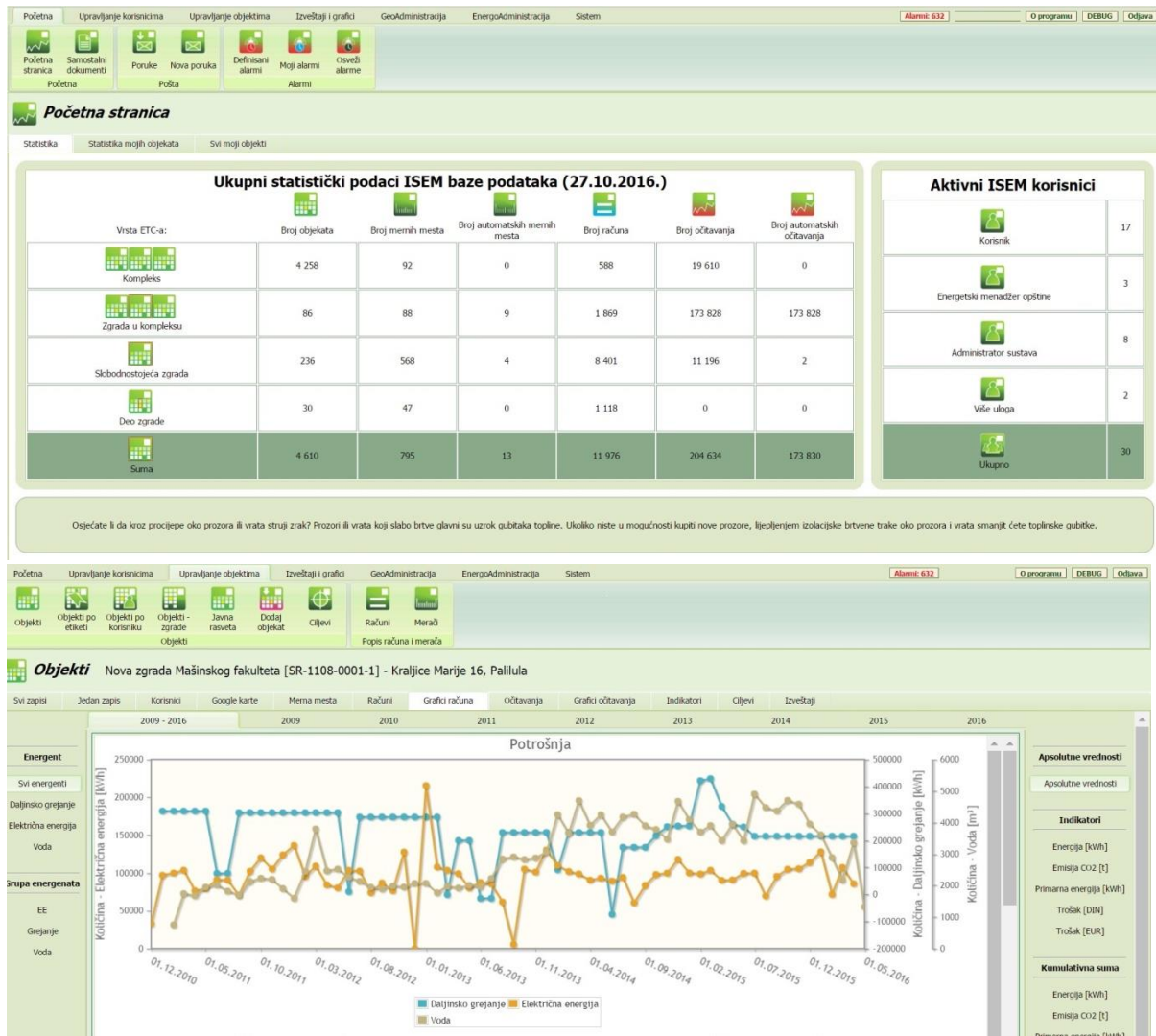
	Is information on the floor area of buildings available?	Is information on the energy performance per building available in the inventory? EPC	Energy consumption in kWh/m ² /year
Bulgaria	100%	Low availability ~15%	NA
Cyprus	100%	Low availability ~ 10%	Moderate availability ~ 64%
Estonia	100%	Low availability ~ 30%	NA
Greece	100%	NA	NA
Latvia	100%	Low availability ~10%	Full availability ~100%
Lithuania	100%	Moderate availability ~60%	NA
Luxemburg	100%	Moderate availability ~30%	Moderate availability 28%
Slovenia	100%	NA	Full availability ~100%
Spain	100%	Moderate availability ~ 40%	High availability ~90%
Romania	NA		
Hungary	NA		

To overcome the problem of lack of data in Estonia its government have assumed that all buildings that do not have an Energy Performance Certificate are worse than minimum requirements.

In Flanders, a region of Belgium, their public buildings inventory is linked with their EPC database for public buildings, which includes reference buildings (building typologies), reference values energy performance according building typologies, and reference values energy performance after renovation. This allows for extrapolation for buildings without energy related data based on reference buildings. The Agency for Architectural and Historical Merit maintains a list of protected buildings. There is legislation in place which makes it mandatory for all entities owning buildings (there are 12 in Flanders) to provide annual data to the building database/inventory manager on usable floor surface of cooled or heated buildings, energy consumption and the Energy performance Certification (EPC).

The United Nations Development Programme (UNDP) has supported the development of a database, which currently includes 4000 public buildings, the majority being schools. Although data on energy consumption is missing for many of the buildings, it could be a useful basis for an inventory. The UNDP database is also in place in Croatia, where energy consumption data is available through energy utility companies.

Figure 5 – Screenshots from data base on data availability and an example of the type of data collected



The alternative approach - calculating savings and establishing measures

As mentioned throughout this report, it is also possible to take an “alternative approach” to implementing Article 5. The requirement of this approach (figure 6), is to deliver cumulative energy savings every year to 2020, rather than renovate a certain percentage of floor area.

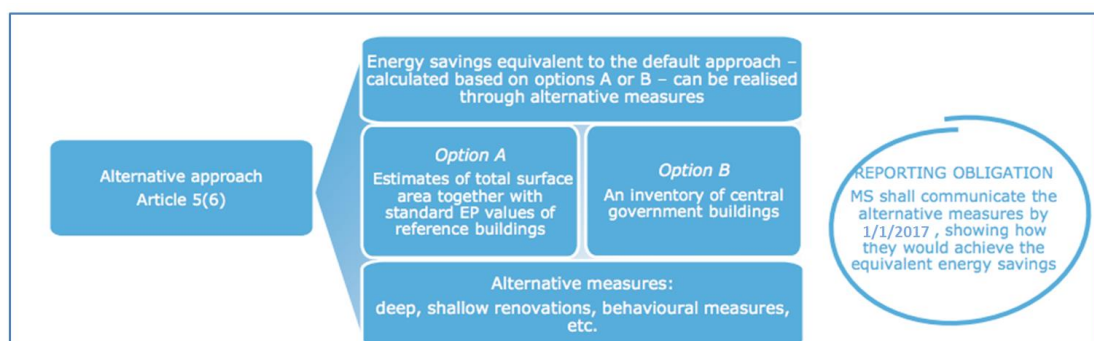
Serbia may take alternative measures, including deep renovations and measures for change the behaviour of occupants, to achieve, by 2020, an amount of savings in eligible buildings owned and occupied by their central government that is at least equivalent to 1%⁹, reported on an annual basis. The expectation is that this will lead to an equivalent targeted improvement in the energy performance of buildings. Calculating and providing equivalence is critical. It can be calculated on the basis of either an estimation of the total floor area based on standards values for reference buildings, or an inventory of central governmental buildings. Guidance on how to calculate this equivalence is provided by the European Commission [12].

If Serbia decides to adopt the alternative approach, it must notify this decision, the cumulative energy savings planned by 2020 and the set of measures it planned to put in place¹⁰ to achieve these savings to the Energy Community Secretariat by 1st January 2017.

While the inventory of central governmental buildings is not required by the alternative approach, it is a helpful starting point. It allows a country to calculate the floor area of central government buildings to be renovated and equate this to energy savings. It would also provide detailed information about the energy performance of each building and the potential for savings that renovations could generate. Thus, providing a good basis for making policy decisions, such as identifying buildings with the weakest energy performance to target measures.

It is important to note that the energy savings under the alternative approach are cumulative, meaning Serbia is required to achieve the sum of annual savings over the whole period from 2014-2020 [12].

Figure 6 - Requirements for the alternative approach under Article 5 EED as adopted by the Energy Community (Source: adapted from [11])



⁹ 3% for EU Member States.

¹⁰ The list of measures notified are not binding.

Figure 7 – How to correctly calculate equivalence

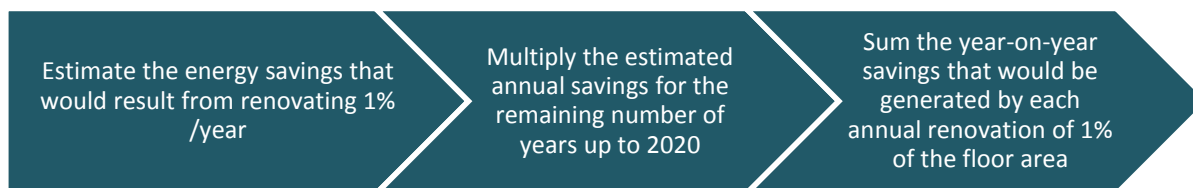


Figure 8 – Calculation example



Lessons from across Europe - Calculating savings

EU Member States that decided for an alternative approach had to notify their decision, the cumulative energy savings planned by 2020 and the set of measures to achieve the energy savings to European Commission, by 1st January 2013. 17 Member States opted for the alternative approach: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Italy, Ireland, the Netherlands, Malta, Poland, Portugal, Slovakia, Spain, Sweden and the United Kingdom. Six Member States that opted for the alternative approach established public building inventories (Ireland, Croatia, Malta, Slovakia, Portugal and Belgium). But not all of these inventories are publicly available.

For some of the countries without inventories there was also no information on the expected energy savings, and therefore no evidence of equivalence to the default approach. [13] [6].

Lessons from across Europe - Alternative measures

Many different measures have been implemented to comply with this approach. Notifications of the measures planned under the alternative approach are available on the European Commission website [14] and a summary provided in BPIE factsheet [6] and Coalition for Energy Savings report [13]. Table 5 provides some examples of typical measures across Europe.

Table 5 - Examples of measures taken/planned under the alternative approach

Type of measure	Example
Buildings renovation	<ul style="list-style-type: none"> ▪ Existing financial schemes for public building renovations (many Member States) ▪ EU funds, i.e. Cohesion Funds (HR) ▪ Energy performance Contracting; ESCO (AT, PT)
Renewable energy	<ul style="list-style-type: none"> ▪ PVs installation for own consumption (MT, PL)
Energy management	<ul style="list-style-type: none"> ▪ Appointing an energy officer appointed in each building (IE, PT) ▪ Operations optimisation (DK, AT) ▪ Metering for energy and water (HR) ▪ Smart meter installation (MT) ▪ Control of Air condition (MT)
Inspections	<ul style="list-style-type: none"> ▪ Inspections of down time electricity use (FI)
Rationalisation measures / Property management	<ul style="list-style-type: none"> ▪ Reduction of area and selling off (FR) ▪ Moving over to energy efficient construction (DK) ▪ Penalties and bonuses in contracts with property management companies (FI)
Public procurement / Sustainability procurement	<ul style="list-style-type: none"> ▪ Switching to energy saving devices (DK) ▪ Rental contracts being renewed will take the form of Green Lease contracts (FI)
Behaviour change	<ul style="list-style-type: none"> ▪ Raising awareness of building users (FR, DK) ▪ Large scale behavioural change campaign (IE) ▪ Reallocation of employees in offices and habitual behaviour of employees (NL)

Comparing default versus alternative approach

The EED is clear that a choice must be made between the default and alternative approach, with clear notification deadlines for each. However, Spain, as the only country to do so, has stated that it wants to link both approaches, in case renovations do not deliver the required savings. However, no feedback has been provided from the European Commission on whether this is correct implementation of the Directive. Under the alternative approach it would be possible to report savings from measures to renovate public buildings.

Figures 9 and 10 set out the main difference between the approaches. It is clear that they both have their own advantages and a choice must be taken on the basis of what is most appropriate for the national situation

Figure 9 - Comparison between default and alternative approach

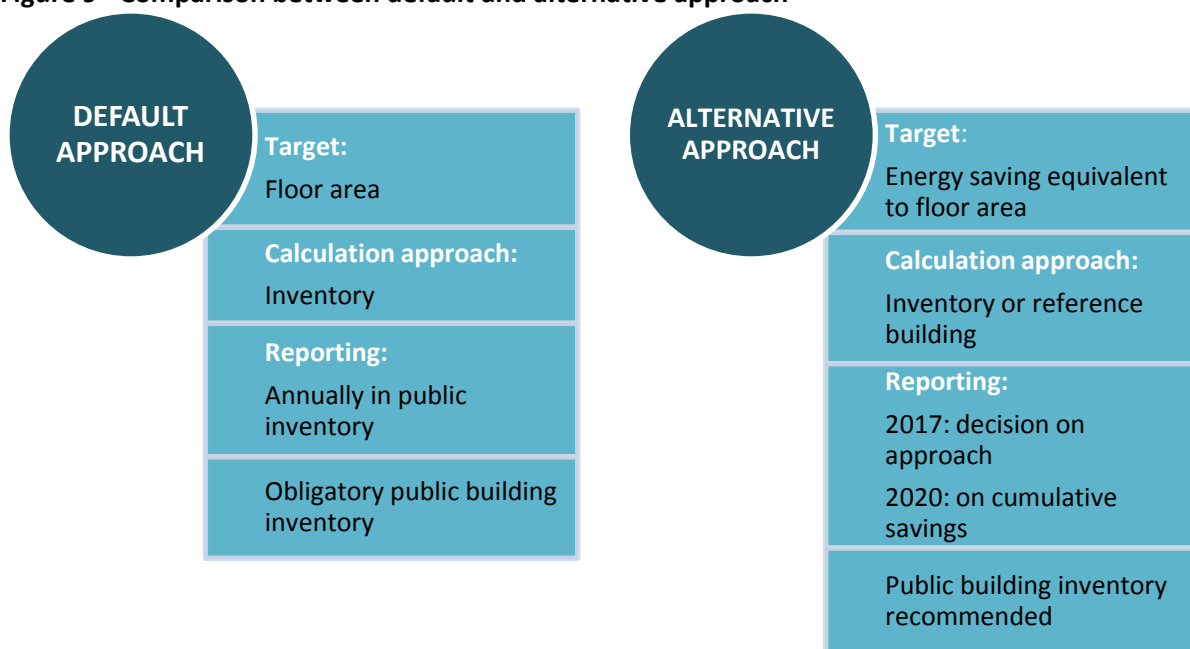
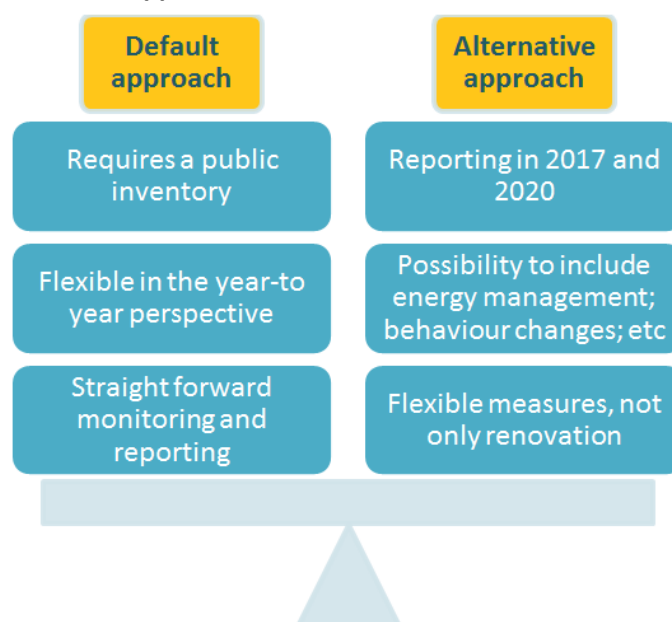


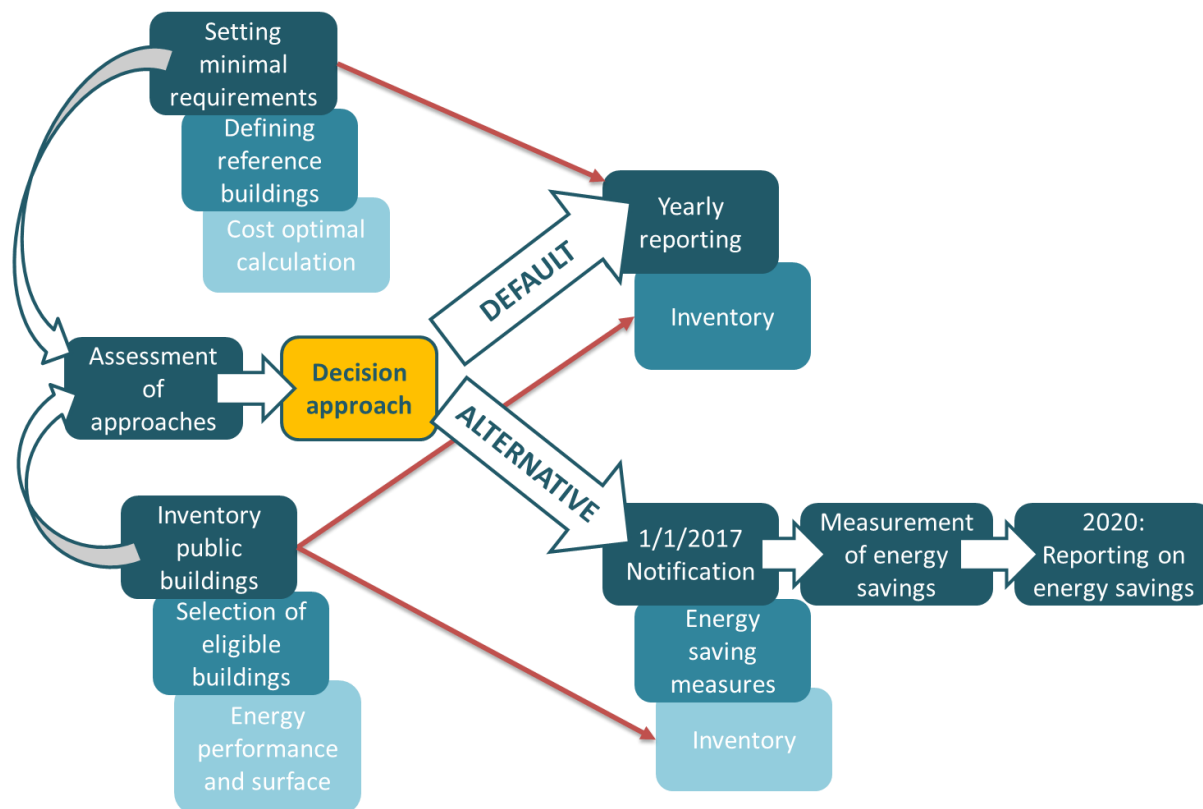
Figure 10 – Advantages of each approach



STEPS TO IMPLEMENTATION

In order to implement Article 5, the Republic of Serbia needs to take the steps set out in figure 11 building on the experience with implementation across Europe which is already underway.

Figure 11 – Steps to implementing Article 5

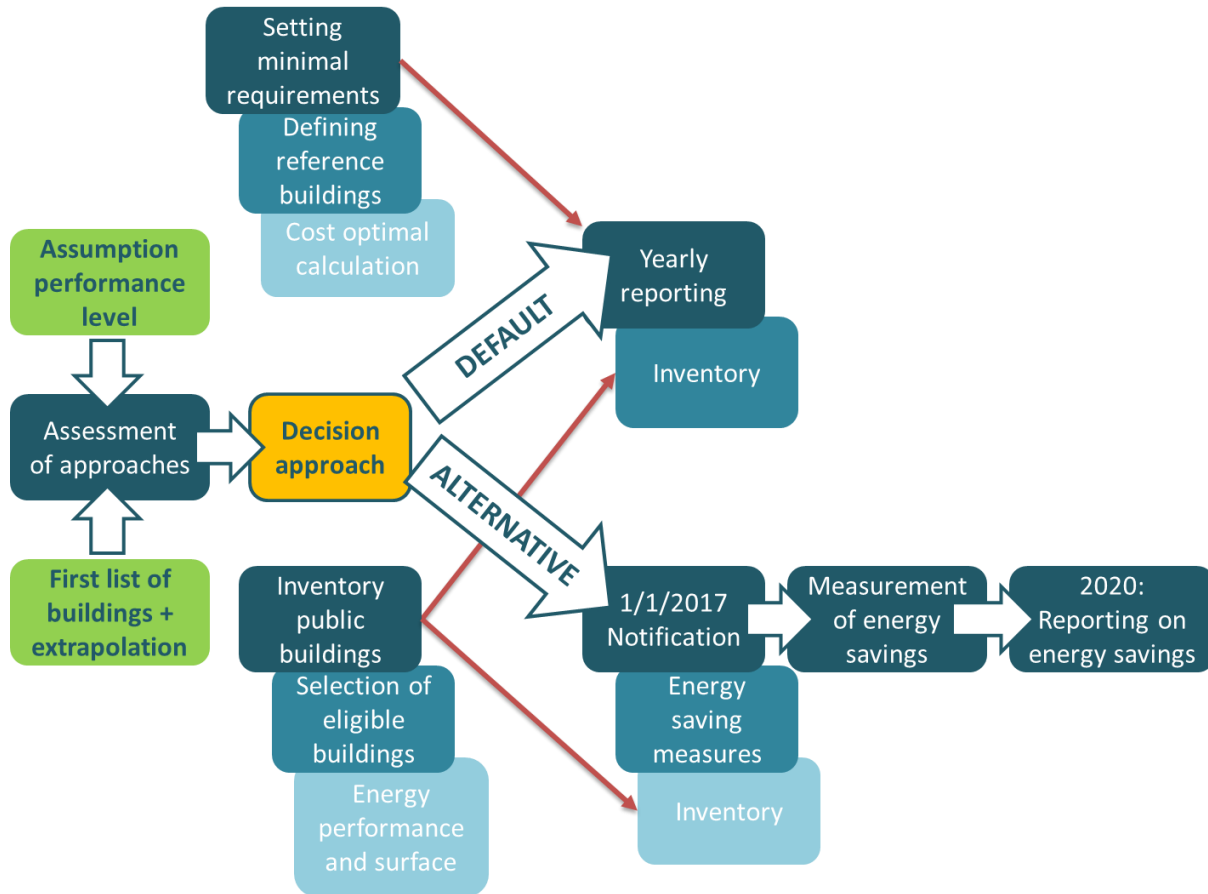


Implementation should start with calculating cost-optimal energy performance levels and defining reference building to do this, setting minimum energy requirements, and establishing an inventory of public buildings, including selecting eligible buildings and gathering energy performance and building data. This should feed into assessing the approaches and deciding the approach to be adopted. Then based on this decision the government should either, if choosing the default approach, publish the inventory and report annually; or notify the Energy Community Secretariat that it will take the alternative approach and provide a list of measures. The inventory is not required for the alternative approach but is important and useful for assessing which approach to take. Under the alternative approach, continuous monitoring of the savings being delivered is needed, with reporting on these savings in 2020.

Since a number of these steps need considerable further work, and with the deadline for notifying the Energy Community Secretariat looming, it might be more appropriate to start with assumptions about the performance level that renovations should achieve and a first list of buildings to establish the potential floor area or savings to be delivered to help make a decision on the approach to take.

The UNDP have supported the development of a database, which currently includes 4000 public buildings, the majority being schools and data on energy consumption missing for many of the buildings. However, data is available for around 400 buildings and these could serve as relevant reference buildings for assumptions to asses which approach should be taken.

Figure 12 – Steps to implementing Article 5 starting with some assumptions



The timeframe for implementing each step depends on the existing policies in place and political drive for implementation. The Concerted Actions on the Energy Efficiency Directive [16] and Energy Performance of Buildings Directive [17] have collated the experience of a number of Member States in implementing these steps. Useful references on also are listed in Annex 1.

CONCLUSIONS

Serbia has identified a high potential for energy savings in its public building stock [15], which puts it in a great position to push forward renovation of its public building stock. The requirement to ensure that 1% 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 is the first step to kick-starting wide-scale renovation. This focus on public buildings can set an example to regional and local governments to undertake similar projects, and also provide the stimulus for developing the market for energy efficiency improvements in the entire building stock.

While the 1% requirement sets the basis for longer-term energy efficiency improvement in buildings in Serbia, the creation of a public buildings inventory is required to set a good basis for policy decisions and securing financing and funding for renovation of public buildings.

The EU Energy Efficiency Directive and Energy Performance of Building Directive will be reviewed later in 2016 and therefore the focus on energy efficiency in buildings and building renovation will gain further momentum for 2020, 2030 and beyond.

The wider benefits of energy efficiency improvements mean that improvements in building performance are important beyond the immediate advantages of saving energy and reducing energy bills of public buildings, it also leads to cutting carbon emissions, energy security, employment creation, reduced air pollution, poverty alleviation, and improved health, comfort and productivity.

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ANNEX 1: RENOVATING PUBLIC BUILDINGS

Existing studies

BPIE (2015) Renovation in Practice

Coalition for Energy Savings (2015) Implementing the EU Energy Efficiency Directive: Analysis of Member States plans to implement Article

BPIE (2014) Boosting building renovation: An overview of Good Practices

BPIE (2014) Setting the 3% Target for Public Buildings Renovation, factsheet, Brussels

BPIE (2014) Energy Performance Certificates (EPC) across the EU: mapping of approaches

Coalition for Energy Savings (2014) Guidebook for strong implementation of the EU Energy Efficiency Directive

BPIE (2013) Supporting EU Member States in developing ambitious renovation strategies

BPIE (2011): Implementing the Cost-Optimal Methodology in EU Countries, Brussels

Concerted Action EED, Role of Public Buildings: [http://www.esd-ca.eu/themes/articles-of-the-
eed/role-of-public-buildings](http://www.esd-ca.eu/themes/articles-of-the-eed/role-of-public-buildings)

ANNEX 2: ONGOING INITIATIVES IN SERBIA

Inter-institutional working group lead by the Ministry of Mining and Energy

The Ministry of Mining and Energy (MoME) established a working group with the objective to set up cross- institutional collaboration in order to apply article 5 of the EED “Exemplary role of public bodies’ buildings”, according to the Energy Community Decision. It is expected to work for 12 months. Its task is to analyse possible models for implementing article 5, suggest the best one and draft legislative the document needed for its implementation. The working group includes representatives of relevant governmental bodies (such as Ministry of Construction, Transport and Infrastructure (MoCTI), Directorate for properties of the RS, directorate of maintenance and properties) and experts (University of Belgrade, UNDP, GIZ). A list of those involved is in the table below.

Ministry – organisation	Contact person	Function
Ministry of Mining and Energy (MoME)	Miloš Banjac	Assistant minister
Ministry of Mining and Energy (MoME)	Antonela Solujic	Head of Department for EE
Ministry of Mining and Energy (MoME)	Aleksandar Puljevic	Advisor
Ministry of Mining and Energy (MoME)	Biljana Mlinar	Expert working on JICA project
Ministry of Mining and Energy (MoME)	Dragana Jovic	Advisor on EE financial mechanisms
Ministry of Mining and Energy (MoME)	Srdjan Kostic	Expert working on GIZ ORF EE project
Ministry of Construction, Transport and Infrastructure (MoCTI)	Jasminka Pavlović	Advisor in the Department for EE and Construction Product
Directorate for properties of the Republic of Serbia	Vladana Sipovac	Advisor
Ministry of Finance	Jelena Markovic	Junior Advisor
Administration for Joint Services of the Republic of Serbia	Deana Vlašak	Head of the Department for investment, reconstruction and adaptation of objects
Administration for Joint Services of the Republic of Serbia	Maja Dimitrijević	
Administration for Joint Services of the Republic of Serbia	Nebojša Popović	
UNDP	Tatjana Pokrajac	Legal Advisor
UNDP	Dragan Urosevic	Project Coordinator
GIZ	Evelin Richter	Project Manager
GIZ	Jovana Stamenkovic	Junior Project Manager
Others involved		
Ministry of Mining and Energy (MoME)	Biljana Miljkovic Puljevic	
Faculty of Architecture, UoB	Milica Jovanovic Popovic	Professor
Faculty of Mechanical Engineering, UoB	Branislav Zivkovic	Professor
Faculty of Mechanical Engineering, UoB	Tamara Bajc	Teaching Assistant
Ministry of Finance	Jelena Filipovic	
GIZ	Renate Schindlbeck	