

# POSITION PAPER ON NZEB POLICIES IN CENTRAL EUROPE

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Deliverable D.T2.4.3

Final version

08 2019

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## The eCentral project summary

Addressing poor energy performances of public buildings is at the core of EU's Energy Efficiency Directive and Energy Performance Building Directive but also one of growing financial issues in Central European countries. To address that eCentral project will support key stakeholders to realize benefits of newly implemented building standard - nearly zero energy building (nZEB). eCentral project will prove that nZEB approach, although innovative, is optimal and cost-effective solution for renovation and construction of public buildings. Project aims to capitalise on results of previous and ongoing EU initiatives. Austria has a proven track record with nZEB renovation projects and will be leading other implementing partners (CRO, SLO, HUN) by example. Transnational cooperation will be used to receive maximum international visibility of selected pilot actions. Main outputs of the project are:

- energy performance certificate (EPC) Tool for public authorities
- deployment and promotion of innovative financing schemes
- training programme and project development assistance for nZEB projects
- building renovation strategies for selected regions
- state of the art pilot nZEB public buildings in selected regions
- established cooperation with scientific institutions and other nZEB initiatives

Transnational Assessment and Support Group, formed from project experts and scientific institutions will act as a support team and provide quality checks of each output. EPC Tool will be developed and used by public sector decision makers and project developers beyond eCentral project lifetime. Trained energy efficiency teams within the regional government will serve as a backbone for conducting future nZEB projects. The European Academy of Bolzano (EURAC), one of the leading centres of expertise on energy efficiency in the Central Europe region, will focus on policy analysis and dissemination of eCentral project results.

## About this document

The document presents opinion of eCentral partnership about nZEB policies and recommendations to amend them aiming to help removal of barriers for its uptake. The position paper (DT2.4.3) is based on the outcomes of former deliverables of eCentral and on the expertise of knowledge partners of eCentral partnership, extended with the results of a survey conducted to have a larger overview to Central Europe countries, which are Austria, Croatia, Czech Republic, Hungary, Poland, Slovakia and Slovenia, as well as part of Germany and Italy.

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## A. Introduction

In EU countries the improvement of the energy efficiency is one of the main objectives defined.

*“Putting energy efficiency first reflects the fact that the cheapest and cleanest source of energy is the energy that does not need to be produced or used.”<sup>1</sup>*

As reported in the EU Communication COM (2016) 860 of 30.11.2016, the transition to clean energy use is an opportunity to modernize the EU economy and favour job creation. In the EU economy energy prices affect the competitiveness of the whole economy and represent on average 6% of annual household expenditure.<sup>2</sup>

Currently, buildings account for 40% of total energy consumption and around 75% of them are energy inefficient<sup>3</sup>, with an annual renovating rate around 1%.<sup>4</sup>

The focus of the eCentral project is mainly based on energy renovation of existing public buildings with innovative financing schemes that need to achieve the nZEB target. The position paper on nZEB policy in Central Europe aims to understand and identify the state of the art of the nZEB target implementation in the renovation processes of existing buildings.

The renovation process to high energy performance target or new nZEBs is reduced by social (lack of trustworthy information or lack of skilled worker or doubts on the possible benefits), economic (energy savings are not clear or guarantee), and financial (scarce capital or limited financing scheme available or knowledge) barriers<sup>5</sup>.

This report gives an overview on state of the art of:

- nZEB target implementation in eCentral partners ‘countries considering the adopted regulations;
- calculation tools used to analyse the energy performance of the buildings and the cost-optimality of the renovation measures and energy performance certificates (EPC);
- possible economic instruments for energy renovations to capture opinions on used financial incentives in the CE target countries.

This report is based on the consideration coming from the reports developed within eCentral projects (D.T1.1.1, D.T1.2.1, D.T1.4.2 D.T1.5.1, D.T1.5.2) and the results obtained from the a survey on energy efficiency and retrofitting policy frameworks disseminated in CE countries (AT, HR, CZ, DE, HU, IT, PL, SK, SLO), *“Questionnaire evaluation on nZEB policy in Central Europe”*.

48 answers were evaluated from the survey.

<sup>1</sup> [https://eur-lex.europa.eu/resource.html?uri=cellar:fa6ea15b-b7b0-11e6-9e3c-01aa75ed71a1.0001.02/DOC\\_1&format=PDF](https://eur-lex.europa.eu/resource.html?uri=cellar:fa6ea15b-b7b0-11e6-9e3c-01aa75ed71a1.0001.02/DOC_1&format=PDF)

<sup>2</sup> COM (2016) 769

<sup>3</sup> Impact Assessment for the amendment of the Energy Performance of Buildings Directive, SWD (2016) 414

<sup>4</sup> Impact Assessment for the amendment of the Energy Performance of Buildings Directive, SWD (2016) 414

<sup>5</sup> <https://zebra2020.eu/>

## 1. nZEB target for renovations

Energy efficiency improvements of the buildings are considered as one of the most important objectives of the European Union, driven by the Energy Performance of Buildings Directive 2010/31/EU (EPBD). It is one of the most important frameworks to improve the use of renewable energy sources and reduce the CO<sub>2</sub> gas emissions due to the use of fossil sources. Art.1 defines minimum requirements to the energy performance of existing buildings, art. 4 asks each member state to define minimum energy performance requirements for buildings or building units using a view to cost-optimal levels approach, and art. 11-13 considers energy efficiency improvements of buildings as one of the most important objectives.

NZEB standard becomes mandatory for all public buildings by 2019, which means new buildings (or existing ones that needs important renovation) must be carried out in a highly efficient way.

Deliverable *D.T1.1.1 “Report on nZEB initiatives from the Central Europe region”* reports the nZEB definitions for residential and non-residential buildings, in new or existing buildings in CE countries. Results show as some Central European countries use absolute numerical indicators (as Czech Republic, Germany, etc.) and other ones used a reference building (as Italy) to determinate the maximum value of several indexes (as primary energy demand). Despite that the refurbishment of building stock is critical to reach EU level goals for improving energy efficiency and cutting CO<sub>2</sub> emissions, the high level of missing information on nZEB definition and minimum requirements for the renovation process of existing buildings is evident: only some countries like Austria, Italy and Slovenia have already defined nZEB requirements for building renovations.

In parallel achieve the nZEB target requires the development of new design approach that focuses more on the energy flows in buildings and requires a more dynamic and holistic approach in all topics. On this regard, the Deliverable *D.T1.2.1 “Analysis of EU state of the art tools for deep renovation of buildings”* analyses the existing nZEB tools used in the eCentral partner countries to determine the deep renovation measures of public buildings. The results show that a useful nZEB tool for existing buildings needs to have some features: from one side it should be an easy decision support tool for approaching cost optimized nZEB refurbishment strategies completed of database continuous update on case studies, solutions sets (energy performance features and relative costs), and LCC, and from the other one a high quality use-friendly tool for building experts, owner and tenants.

The renovation process to nZEB target sometimes results a complex and difficult theme to achieve and manage. In the survey, half of participants (52% energy experts, 27% public representatives and 13% building professionals, 8% others) stated to have already worked in the design or construction process of new or renovated nearly zero energy buildings, and one public representative of two confirms to have this experience.

Based on survey results to favourite the building market transition to nZEB target it is needed to have initiatives able to enhance the knowledge of the building design and construction professionals (architects, engineers...) and to improve the knowledge of final tenants that for first affects the energy consumption with their user behaviour. In parallel, more guarantees on the energy savings planned are required, also using a certification protocol or specific instruments to monitor, verify and guarantee the earned savings during the lifetime of the building. In this regard, benefits come from nZEB target should be real and concrete, in terms of energy savings and comfort.

## 2. Energy performance certificates (EPC)

Energy Performance Certification (EPC) is a crucial instrument to enhance the energy performance of the buildings (art. 11-13 of Directive 2010/31/EU): EPC is required for buildings or building units which are constructed, sold or rented out to a new tenant; and buildings where a total useful floor area over 250 m<sup>2</sup> is occupied by a public authority and frequently visited by the public. EPCs are crucial to enhance the energy performance of the buildings.

EPC will should include data on: energy performance, annual energy consumption, energy from renewable sources of the building or building unit and recommendations for the cost-optimal or cost-effective improvements of energy performance of the building or building unit, completed of payback periods or cost-benefit over economic lifecycle period. This information should be available for owners and tenants to compare and assess several different buildings.

Starting from these considerations the survey investigated the current utilization of EPC instrument: positive and negative aspects, barriers and limits.

A very positive result is that 96% of the participants know what an EPC is. This is in line with the EPBD: EPCs should be mandatory in EU countries.

75% of the survey participants consider EPC as a useful and easy-to-use instrument to understand the energy efficiency of a building, but at the same time, EPC results an “additional paperwork and excessive bureaucracy” (62%) that and increases the “costs for owners/investors” (64%). Only the 46% of participants considers EPC an effective tool that can be used by non-professional users as well.



### 3. Economic instruments for energy renovations

Economic instruments for energy renovations are manifold and can be divided between (i) financial instruments such as loans, grants and subsidies, (ii) fiscal instruments such as tax credits or (iii) VAT reductions and market-based instruments such as energy saving obligations or white certificates.

In Table 1 an overview of the economic instrument on energy efficiency investments in existing buildings operating in the year 2013 is shown. Most of the economic instruments targeted in the residential sectors are grants/subsidies, followed by loans. Only in Italy Tax incentives or Energy Efficiency Obligation (EEO) and White Certificate (WC) are used. EEO/WC are set up only in a handful of Member States, but this is likely to change with the implementation of the Energy Efficiency Directive (2012/27/EU) and introduction of article 7 on energy efficiency obligations.

	AT	CZ	DE	HU	HR	IT	PL	SI	SK
<b>Grants/subsidies</b>	X	X	X	X	X	X	X	X	X
<b>Loans</b>		X	X	X	X		X		X
<b>Tax incentives</b>						X			
<b>EEO/WC</b>						X			

Table 1. Economic instruments on energy efficiency investments in existing buildings operating in the year 2013.  
Source: <https://e3p.jrc.ec.europa.eu/articles/financing-energy-renovations-european-building-stock>

The participants of the survey find that improvement of the economic instruments (grants/subsidies, loans, tax incentives, energy efficiency obligations and white certificates) for investors/owners/tenants and simplification of the procedure for obtaining economic instruments are the most important measures to stimulate energy efficiency renovations. Improvement of the national frameworks with easy, accessible and appropriate indicators and to share the risks between investor and tenant in case of energy savings are lower than expected are also considered useful in this regard.

To realize the full potential of nZEB standard, public funds will not be sufficient and innovative third-party financing and investing models such as PPP, EPC and crowdfunding will have to be unlocked at a larger scale. To enhance this, mentioned financing were analysed by eCentral partners in detail in D.T1.5.1 “*Analysis of innovative financing schemes for deep renovation of public buildings*” and D.T1.5.2. “*Assessment of policy framework in CE partner countries for introduction of new financing schemes*”. Most valuable output of the D.T1.5.1 “*Analysis of innovative financing schemes for deep renovation of public buildings*” is a decision making tree, supporting the choice between the analysed financing schemes keeping in mind that financing scheme choice is strictly connected with the public monetary resources available, payback time of the investments, internal personnel resources and risks.

Regarding the policy frameworks for these financing schemes, positive improvements have been recorded in most target countries although differences between markets are extremely high, mostly due to uneven development of financial markets and national policies which regulate each financing model.



## B. Conclusions and recommendations

In Central Europe countries involved in eCentral project (AT, HR, HU, IT, SLO) the building policies adopted to facilitate the nZEB transition in the public building markets followed the EPBD requirements although a wide level of information on nZEB definition and minimum energy performance requirements for the renovation process of existing public buildings is under development or in some cases results missed. Only some countries as Austria, Italy and Slovenia have already defined nZEB requirements for building renovations, as described in the *“Report on nZEB initiatives from the Central Europe region”* the nZEB definitions for residential and non-residential buildings, in new or existing buildings in CE countries.

In order to identify the nZEB integration in the public building markets, within eCentral project was organized a survey (48 participants) involving several building experts. The participants were energy experts (54%), public authorities (27%), building experts (13%) and others (NGO, CSO and no-profit organization...) who indicate and confirm some benefits delivered from the adoption of a national nZEB standard for the renovation of existing building. The most important benefit was *“an increased rate of energy savings”* or the opportunity *“to increase the environmental conscious thinking”* together with *“to boost the knowledge of energy efficiency in the building market and construction sector”*. For these reasons the actions considered significant to boost and facilitate the nZEB implementation process of existing buildings were *“to increase knowledge on the benefits of the nZEB target in terms of energy savings and comfort”*, *“to increase and facilitate the use of public subsidies”*, and *“to improve the knowledge of the building workers, designers and construction professionals (architects, engineers...)”*.

As highlighted in the national and international discovering overview of nZEB initiatives already implemented in project partner’s countries (*“Report on nZEB initiatives from the Central Europe region”*) the main important objective is to *increase knowledge* and capacity of public authorities, supporting the building market to introduce the nZEB target.

Energy Performance Certificate (EPC) can be considered one of the most important European instrument, able to enhance the energy performance of the buildings, and mandatory required by EPBD: 96% of the participants know what an EPC is and for 75% of participants EPC is considered a useful and easy-to-use instrument to understand the energy efficiency of a building, also by non-professional users (46%).

EPCs are considered very important in the *“comparability process of energy performance of buildings”* stimulating the renovation of the existing building when driven by energy efficiency improvements. Furthermore, for the 80% of participants it is necessary to invest in action focused to increase the knowledge of final tenants, both to increase the energy savings and to increase the EPCs utilization.

At European level the yearly energy renovate rate is between 0.4-1.2% (depending on the country) of the building stock. Survey’s comments of participants highlight the possibility *“the improvement of the economic instruments (grants/subsidies, loans, tax incentives, energy efficiency obligations and white certificates) for investors/owners/tenants”*, receive public incentives in case of energy efficiency achievements as a good strategy to boost and increase the investments in the renovation of existing buildings. Most of the economic instruments targeted in the residential sectors are grants/subsidies, followed by loans. Only in Italy Tax incentives or Energy Efficiency Obligation (EEO) and White Certificate (WC) are commonly used. Survey participants considered *“the improvement of the economic instruments (grants/subsidies, loans, tax incentives, energy efficiency obligations and white certificates) for investors/owners/tenants”*, the most effective action to boost the renovation of existing buildings to nZEB





target. Followed by “*simplification of the procedure for obtaining of the economic instruments for energy renovations*”.

To conclude, reaching EU energy efficiency goals is a complex task that includes different professionals’ skills (public representatives, architects, engineers, constructors, investors, tenants...). Investment in action and initiatives able to increase the knowledge on nZEB target result an important and necessary strategy to adopt in CE countries. In particular, public authorities play an important role, because they have to demonstrate for first that achieve the nZEB target in renovation of existing public building is possible. Trainings targeting experts of public sector to be organized in the frame of eCentral project aims to raise the level of knowledge about nZEB and related technical and financial possibilities.