

DELIVERABLE D.T1.2.2

Interreg-CE eCentral solutions

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D.T1.2.2: Interreg-CE eCentral solutions

.2 Transferability assessment of past outcomes for adaptation, extension & deployment in new Pilot Areas

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1. Introduction

The deliverable T1.2.2 belongs to the activity related to the transferability assessment of past project outcomes (A.T1.2). In particular, for each previously funded EE project/solution, a document has been created reporting the information on how the outcomes could be adapted tailored, extended, and deployed in the new pilot areas to capitalize them and widespread their impact.

In the following section, the outcomes related to *eCentral* project are reported and future activities to be realised are described.

2. Adaptation and implementation of O.T 1.1 "Living EPC managing tool & database" & D.T1.3.1 "Templates and protocols for data collection"

As the Living EPC tool is a core part of the EU-project eCentral it is well developed to integrate and improve it in the frame of project TARGET-CE action. The results of the tool could be well integrated in OnePlace platform developed by project TARGET-CE.

The Living Energy Performance Certificate (EPC) Tool is a complex interactive web-based tool consisting of data from collected energy performance certificates and audit reports, as well as consumption information, that offers different combinations of cost-optimal measures for reaching nZEB requirements for each building imported. This main eCentral project's result helps in demystification of nZEB standard in renovation of buildings, defining the energy and other parameters for each building and showing which energy efficiency measures and renewable sources systems implementation measures should be combined in cost-optimal way, in order to achieve nZEB standard. The Living EPC Tool is used for education of public authorities and other relevant stakeholders, as well as promoted and disseminated in the framework of all important events of eCentral and similar projects. Inserted buildings form database of buildings which is used for systematic monitoring of the state of the public buildings and enabling a precise identification of key energy efficiency projects along with a concrete quantification of all energy and financial indicators.

There are different versions of the Living EPC Tool for each project partner region, depending on nZEB requirements on regional/national level – Croatian and Slovenian based on the similar template, while the Hungarian version differs due to completely different requirements. The version in English language has also been made due to understanding purposes, with implemented Croatian technical and legislative requirements. Nevertheless, the use principal is standardized – similar data to be inserted as input, as well as similar report as output. The basic application is in English, while the translated text into other languages has been provided by relevant partners.

Solution will be implemented in the One Place platform for pilot buildings in the Pilot Areas.

The Living EPC Tool is designed according to the needs of public authorities regarding the buildings which their own/use, providing relevant information, in order to facilitate their systematic monitoring of facilities and allow more precise identification of key projects of energy reconstruction with concrete quantification of all energy and financial indicators resulting with achievement of nZEB standard. The final product, including the source code and intellectual rights, belongs to the eCentral project consortium.



Pilot Action which is going to use the tool/solution

This solution will be used for pilot actions in Municipality of Nazarje and others interested pilot areas.



The main challenges will be:

- Choose sample buildings
- Collect data
- Involved experts at preparation level

Data to be collected:

The Living EPC Tool is a web-based application, accessible to users through standard web browsers, regardless of their location and the platform used. When creating a new account, potential user, through registration, selects the username, password, e-mail address and the country in which the buildings will be located. The user receives an e-mail activation request, which is subsequently approved or rejected by the administrator. The administrator determines the range of objects that are visible to an individual user, for example, a user from the City of Sveta Nedelja will only see buildings from his city.

Entering a new building can be done by a user with editing and admin editing capabilities. Entry takes place on two levels; with simple data entry, the most basic information is entered, which is appropriate for buildings where detailed information is not available. Other data not entered will be estimated with relevant values integrated into the application database. In complex data entry, all relevant parameters for the calculation of possibilities to reach nZEB standard are entered. The initial view of the complex data entry shows the estimated values based on the integrated database. At this point, the input is strictly manual in order to gain control over the input parameters.

The following parameters need to be entered for each building:

- All relevant energy consumption parameters for all energy consumption systems such as thermo-technical systems, ventilation systems and lighting.
- All the essential parameters of the building envelope to uniquely define the necessary data for the calculation of energy efficiency measures in the form of reconstruction of the outer building envelope



- All the essential parameters of the thermo-technical and ventilation systems necessary for calculating the improvement measures to the desired level at the user's choice
- All relevant parameters of the building lighting system

One of the essential features of every building is its energy consumption. In future, it is advisable to enable energy consumption to be entered in such a way that new consumption data is automatically loaded by importing excel tables, and that all calculations are then done with newly loaded consumption.

The building information database is integrated into the application to form the pre-defined data for all the unknown parameters while entering the building and also for potential combination of measures to achieve nZEB standard calculation (e.g. investment costs, energy prices, energy consumption info etc.). As not all data are obligatory to be entered into the Tool, in case there is not enough info in existing energy performance certificates and energy audits to be entered manually, the Tool uses this database of parameters for estimation during calculation process. The user has the possibility to enter arbitrary values of the investment price for certain parts of the building. When entering prices, the user needs to check the data collected in the integrated database. Information database derives from current cost estimates and information from energy audits to date, as well as national legislative documents and databases (such as Long-term renovation strategy for Croatia), while the accuracy will only increase with the number of buildings entered, keeping in mind that the parameters change over time, even on a monthly basis. Such parameters should be checked and updated on regular basis by administrator, based on the input provided.

The technical solutions included in the EPC Tool are strictly innovative, keeping in mind that nZEB standard is not possible to achieve through conservative measures, especially for building renovations. Although the user has a possibility to select the level of reconstruction of the building by selecting the measures to be calculated for each building and choosing whether to integrate the measures of integration of renewable energy sources, it should be noted that the nZEB standard could be achieved only through integral and deep renovation with an obligatory component of renewable energy sources share. Therefore, the ambitiousness of expected energy savings and use of renewable energy sources is not questionable.

Parameters based on which the calculations to achieve nZEB are performed (Eprim, Qh,nd, share of renewable energy sources) are managed through the admin interface and it is enabled to modify these parameters, based on relevant legislative framework. This interface can be accessed by all users, however only the admin administrator can edit the data. The administrator should be noted as soon as a change in relevant legislation occurs.

Buildings can be assigned with different labels according to which the results can be filtered. Labels are assigned by the administrator and are visible only to the user through whose account they were created. The filtering and sorting criteria are wide-ranging:

- Name, type, building area, simple payback period of the investment, investment, savings etc.;
- Complex criteria such as:
- Overview of the most cost-effective projects that can be implemented with, for example, a budget of HRK 5 million;
- Print of all objects whose total primary consumption exceeds 300 kWh / m2 and exceeds 1000 m2 of net usable area;
- Ownership / legality.

Previously mentioned criteria are to be used for identification of key building renovation projects in Living EPC Tool database.

Reporting can be done in the following ways:

- Automatic report generation;



- Generate on-demand reports for one or more selected buildings;
- Report on the energy consumption of all buildings by division by buildings by purpose;
- Report on proposed combinations of energy efficiency and renewable energy sources integration measures for achieving nZEB standard.

The user can generate a printout of all the current data currently viewing. Generating on-demand reports refers to a logical sequence of reviewing data according to the filtering and sorting criteria provided. Database data are generally exported in pdf format, while users can choose from other formats such as doc and xls.

Each building can be accompanied by different documentation in doc, jpg, xls, pdf, dwg and similar formats that will remain stored online. In addition, each building as an integral part of the description contains the associated energy certificates and energy audit report. Accordingly, the categorization of contributions to each building is as follows:

- Energy certificate;
- Project documentation;
- Ownership and legality;
- Photo-documentation.

Buildings and relationships between buildings is uniquely identified by the introduction of a unique object identification code. All buildings are displayed in Google Maps with the ability to click on a link that opens a window with tabular information about the building.

The user support module (customer support) is implemented through the following layers:

- User documentation;
- Technical documentation.

Each user interface has a help option prominently displayed. Activating the help action opens a separate application window to allow user to work simultaneously and read the support document.



3. Adjustment of O.T1.3 "Decision support tool for nZEB renovation with innovative financing schemes"

Step by step guide on HOW TO TURN PUBLIC BUILDINGS INTO NZEB aims to support public authorities to identify and manage the renovation process, with a particular focus on eCentral project countries. The guide identifies the main important phases of the renovation process, from the early stage of the project development, through the design and construction phase, up to the service life of the buildings.

Public tenders are crucial for the success of the project: how they are carefully defined and managed can have an impact on the later stages of the process.



Step by step guide on
**HOW TO TURN
PUBLIC BUILDINGS
INTO NZEB**



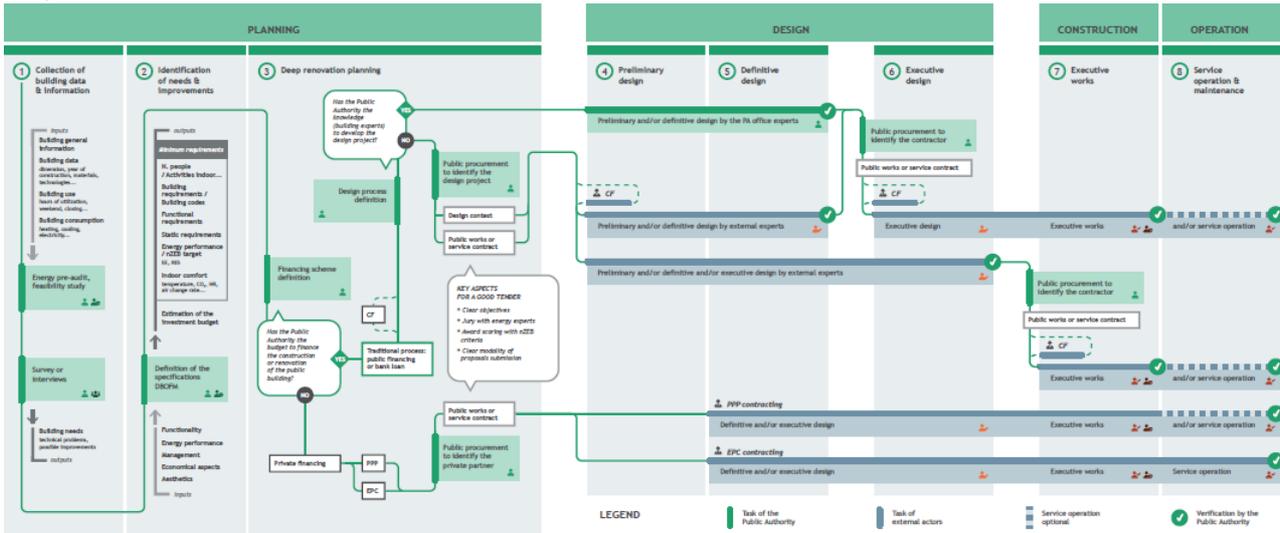
The Guide consist of different segments:

- EU regulation of Public buildings
- EU regulation on Nzeb
- Renovation scenarios
- Energy renovation glossary

The main part is, the Renovation process of public buildings, where the main steps, instruments and stakeholders are presented in an illustrative and understandable way. The presentation of three different financing models in three phases is an essential part of the guidelines. The financing models are EPC – energy performance contracting, PPP – a public-private partnership, and crowdfunding, which are presented through the planning phase, design phase and construction phase, connecting different experts and stakeholders.



TARGET-CE



Main needs of transferability :

As the existing guide is prepared for partners countries in eCentral project, the information should be upgraded from project TARGET-CE partners countries.

4. Conclusions

The EPC tool is quite complex and would acquire additional programming and technical demands connected to nZEB standard in TARGET-CE implementing countries. The input data needed for using nZEB tool are quite complex and will require substantial effort from implementing partners. The output of the nZEB calculation would fit perfectly in a One-Place platform where, besides the presentation of the buildings data and energy consumption, the estimated investment and potential savings can be presented and thus platform even more useful.

Step by step guide for the renovation of public buildings is finished product with a clear pathway for energy renovation through different modes of financing. Partner countries can only add their requirements of nZEB regulations.