



# Results from research of local experience in participating countries

## Deliverable 2.1

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| Deliverable Version: | D2.1, V1.5                                                                                                                                                                                                                                                           |
| Dissemination Level: | PU                                                                                                                                                                                                                                                                   |
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## List of Acronyms

BMF – Business Model Framework

EE – Energy Efficiency

GA – Grant Agreement

KPIs – Key Performance Indicators

MOOC- Massive Open Online Course

LMS – Learning Management System

OSS – One-Stop-Shops

PV – Photovoltaics

RE – Renewable Energies

SME – Small and Medium Enterprise

VR – Virtual reality

ZEB – Zero Energy Building

# 1. Acknowledgements

This document has been developed in the framework of LIFE23-CET-BUSHROSSs GA 101167619, within WP2 Mapping of local experiences and identification of skill gaps and needs, T2.1 Research of local experience in the participating countries. It was prepared by SEC in collaboration with CISB and with the involvement of all partners who provided relevant information about their country's specific conditions and requirements for home renovation OSS.

## 2. Executive summary

The document has been prepared to present the outcomes of the performed desktop research regarding actions for home energy renovation One Stop Shops (OSSs) establishment and operation at EU, national and local level. The main aim of the research is to map the available experience and results that are deemed relevant to project objectives and can be used to build upon in various project activities. In addition, the research is focused on the specific conditions and requirements for home energy renovation OSSs in the participating countries in order to pinpoint the most appropriate stakeholders to address and involve, and to identify local skill gaps and needs to be addressed by project activities.

This report includes:

- 🏠 A description of the theoretical Business Model Framework (BMF) for creation and operation of OSS for home renovation which was developed within H2020 UP-STAIRS projects and will be used in the training modules after adaptation to the needs of BUSHROSSs participating countries. The main aim is to use BMF as a starting point for the preparation of the training module about organisational aspects of OSS for home renovation adapted to the local needs (Task 4.2).
- 🏠 An outline of the education curricula, training methods and certification schemes developed within LIFE+ NS4nZEBs project where innovative approaches and qualification and certification schemes for RES professionals were developed. It aims at building upon proven innovative training methodologies to be used in WP3 (all tasks) as well as in the preparation of the horizontal module on Soft Skills and Digital Tools (Task 4.2).
- 🏠 A summary of the BUILD UP Skills initiative and various actions undertaken in the participating countries, whose available materials and exploitable results can be used within BUSHROSSs project activities. The organisation of the research is by country which makes possible to ensure synergies with current suitable initiatives and make use of achievements of past actions in the participating countries. The main aim is to adapt this experience to the local needs of home renovation OSS based on identified skill gaps(Task 4.1), and to include it in the training modules (Task 4.2) such as Organisational module (under Practical implementation tips for OSS establishment and

operation), Technical module (under novel technical solutions), Financial module (under available financial schemes/funding options).

- 🏠 Summary information about European Construction Blueprint and conditions for participation in Pact for Skills in Construction. The main aim is to get acquainted with the achievements, use this platform for exchange of experience and contribute to its enrichment with the BUSHROSSs outcomes and results.
- 🏠 Summary information about EPALE- Electronic Platform for Adult Learning in Europe. The main aim is to get acquainted and use this platform for exchange of experience and contribute to its enrichment with the BUSHROSSs outcomes and results.
- 🏠 A review of the National Conditions and Requirements for Home Renovation OSS in Participating Countries. The approach of this activity is to summarize the local context in each participating country and use the outcomes for building up stakeholder database (Task 2.2) and identification of skill gaps and needs (Task 2.3), as well as for preparation of training modules (Task 4.2, in particular „Legal module” and „Financial module”). This activity also pays attention to case studies of home renovation OSSs in different countries to be taken into consideration in the preparation of ”Organisation module” (Task 4.2).

### **3. Background Knowledge from National and EU Initiatives**

The following chapters present the experience and results gained under some of related initiatives at national and EU level, considered of importance to streamline processes in BUSHROSSs work programme. More specifically, this background knowledge will be used .

#### **3.1 Business Model Framework (BMF) from H2020 UP-STAIRS project**

The main aim of the H2020 funded UP-STAIRS project is to enable local authorities and citizens to work together through a common structure embodied in a one stop-shop (OSS). This common structure includes business models and decision support for energy assessment of a community's energy potential. UP-STAIRS provides a theoretical BMF focused on the range of services to be offered by the OSS and the internal procedures to be followed, including possible engagement strategies of clients. In order to ensure that all business and technical decisions for implementation comply with minimum operating standards, the skills of the staff delivering the services were identified in order to shape the team needs.

The following chapters present the theoretical BMF for OSS establishment and operation developed in the framework of UP-STAIRS project which will be used to build upon and adapt to the needs of BUSHROSSs activities.

#### **Theoretical BMF of OSS for home renovation**

##### **Identification of OSS for home renovation:**

-  Geographical location and scope:
-  Nature of provided services: whether physical or virtual, or hybrid structure;
-  Envisaged staffing: e.g. public servants, volunteers, energy agencies/NGO staff members, others

##### **Scope of services to be provided and respective need for staff upskilling**

##### **Organisational support**

- 🏠 Support for connecting citizens / neighbours
- 🏠 Support for setting up a legal entity
- 🏠 Aggregation of individual projects for economies of scale
- 🏠 Interlocution with providers
- 🏠 Take on the process of getting the permits/licences needed?
- 🏠 Others

If this service is foreseen, the **staff needed can be of any of the four profiles** (economic, legal technical, or social) and **upskilling in organisational aspects and in practical implementation of OSSs** will be needed

#### Legal advice

- Offered through own legal services or through external services
- Kind of support offered (e.g. contract templates, templates for permits, answering questions, etc.)

If this service is foreseen, the **staff needed should be from legal profile** and **upskilling in legal aspects** of OSSs and of home renovation services (e.g. relevant regulatory framework for OSS, for home renovation services, energy communities' establishment and their role in private building refurbishment) will be needed.

#### Financial advice:

- 🏠 Finance institutions planned to network to define specific conditions for the provision of finance to the projects supported and advised by the OSS.
- 🏠 Due diligence that the OSS would cover for the collective project, in order to establish a framework agreement with the financial institution to ease up the process of accessing the finance. E.g. the OSS will:
  - 👁️ Elaborate or certify the technical project.
  - 👁️ Elaborate or certify the economic analysis of the project (payback, ROI, etc..).
  - 👁️ Certify or use only technical providers that comply with certain technical guarantees.

- 🌱 Provide other types of guarantees to the financial institution to back-up the financing for certain profiles. (e.g. vulnerable, etc.)
  - 🌱 Provide information and assistance in complying with the requirements of the local funding vehicles, and with the local banks' requirements.
- 🏠 Implementation method used: separate contracting of several providers or EPC/integrated. If EPC, which model (including financial services by the ESCO or not)?
- 🏠 Detail the tax incentives available in the pilot area that can be blended with other financial instruments.
- 🏠 Detail the grants available at local, regional and national level that can be blended with other financial instruments.
- 🏠 Detail if other financial instruments are available in your country that can be used/combined with end-users' own funding or private financing (e.g. state-backed loans for sustainability projects with less interest or longer payback periods, etc.)
- 🏠 Detail the level of ambition in targeted savings (35 %, 50 %, 75 % or carbon neutral), according also to the financing schemes available/feasible. For example, 35% saving can be achieved within contracts of 10 years, 50% saving would need 15-25 years, and 75% would need more than 25 years), respectively.
- 🏠 In case that the OSS provide advice on RE production, different financing models to be presented:
  - 🌱 Citizen cooperatives
  - 🌱 Equity models based on issuing shares
  - 🌱 Online crowdfunding/ Crowdlending /Equity crowdfunding
  - 🌱 Others

If this service is foreseen, the **staff needed should be of economic/financial profile** (economists, financiers), thus **upskilling in economic/financial aspects of home renovation** will be needed

### Information and technical advice

- Provision of unbiased and comparative information.
- 🏠 Support of the process of getting the necessary licenses.
- 🏠 Support with the administrative documentation.
- 🏠 Developing templates for the elaboration of technical projects.
- 🏠 Certification of providers that follow high quality standards.
- 🏠 Elaboration of the technical project.

If this service is foreseen, the **staff needed should be of technical profile** (engineers, architects) and **upskilling in technical aspects of home renovation** will be needed

#### **Accompaniment / Support/Arbitration**

- 🏠 Support to collective projects, promote/support the creation of a legal body to represent them
- 🏠 Will they just provide counselling and leave it to the group to organize itself?
- 🏠 Process used for the support (e.g. organization of periodic “mentoring” sessions with the group, appointing a representative of the group that will deal directly with the OSS on demand, organizing “working groups” within the group with distributed responsibilities, like a Working group for dealing with providers, another for seeking finance, another for looking for more participants to reach the needed targets of the group, etc.)

If this service is foreseen, the **staff needed should be of social profile** (sociologist, psychologist, social worker) and **upskilling in social aspects is recommended** like social justice and inclusiveness by targeting women and vulnerable groups (women in their 50s, disabled people, etc..) will be needed

**All staff** foreseen in OSS establishment and operations **should be upskilled in the two horizontal modules: Soft Skills Module** (mediation, arbitration and conflict management) and **Digital Skills Module** (work with LMS and MOOC, etc.)

#### **OSSs local context**

- 🏠 Relevant local and national policies.

- 🏠 Services available in the region that can complement/create synergies with the UPSTAIRS OSS
- 🏠 Incentives/barriers
- 🏠 Other important things that can have a (positive or negative) impact on the UPSTAIRS implementation

## **Engagement Strategies**

### **Target groups (segmented)**

Identification of target groups through development of the main prototypical profiles (3 or 4) that are represented in the OSS area, following the structure:

#### **PROFILE TYPE X**

- a) Demographic profile (age range, gender, interests, neighbourhood profile, socioeconomic status etc.).
- b) Behaviours (does him/her already have some sustainable behaviour (e.g. purchasing eco-products, use of bike, etc.).
- c) Attitudes (how does he/she relates with others: Social networks, local shops, participation in local initiatives, etc.).
- d) Needs or challenges related to Energy Efficiency or Renewable Energy
- e) Goals or motivation factors.
- f) Potential OSS help to pursue these goals.

### **Key messages per target group – detailed description of the key messages**

For each of the identified profiles described above, details of the key messages that will be conveyed to engage them in using the OSS services.

### **Communication channels used for each target**

Communication channels to be used for each of the profiles identified, e.g. social media announcements, e-communication through websites, and emails, paper communication, communication in person in OSS premises or through meetings and workshops.

### **Dissemination materials to be produced per target group**

Dissemination materials to be needed for each of the profiles described above: e.g. posts in social media, e-materials (electronic newsletters, email announcements), paper leaflets and promotional brochures.

#### **Stakeholders identification:**

- 🏠 Key stakeholders to access each of the target groups.
- 🏠 Multipliers that can be used for dissemination of the OSS services.
- 🏠 Enablers (stakeholders that can help accessing/reaching the targets).

#### **Ways to gather feedback from the end-users**

- 🏠 Making a post-service survey on-line or by phone or through paper questionnaire in OSS premises.
- 🏠 Monitoring social networks to gather feedback.
- 🏠 Doing a focus group at the end to collect information and improve the service.

#### **Key activities to perform to reach and engage target groups**

- 🏠 Key events to present OSS in the area to reach the target groups – special info days, during local fairs, etc.
- 🏠 Key aspects to consider keeping the target groups engaged along the project, e.g. provide real value to customers, help them in establishing collective actions, assist them during the whole process of home renovation from funding to building works, check their satisfaction of the OSS service and the results of energy saving measures.
- 🏠 Gantt or schedule of the key activities, events and communication/dissemination actions for the engagement of target groups.

## 3.2 Education Curricula, Training Methods and Certification Schemes of LIFE+ NS4nZEBs

The following chapters present the education curricula, certification schemes and training methods developed in the framework of LIFE+ NS4nZEBs Project. The main aim is to build upon the already achieved results and adapt them to the needs of BUSHROSSs activities.

### 3.2.1 Overview

The main objective of the project NS4nZEBs is to increase the number of skilled building professionals in the fields of PVs, smart electrical systems, heat pumps and energy storage including small-scale applications for production of hydrogen in buildings at all levels of the building design, operation and maintenance value chain.

This will be achieved by addressing the following focus areas:

- 🏠 Skills for new and existing nearly Zero Energy Buildings (nZEBs) and bridging the gap towards Zero Emission Buildings (ZEBs).
- 🏠 Skills for integration of renewable energy and efficient heating and cooling technologies, including in particular heat pumps roll-out; skills for installers to deliver heating and cooling upgrades as part of renovation projects.
- 🏠 Digital skills supporting greater energy performance of buildings, in particular through an enhanced use of Building Information Modelling.
- 🏠 Skills for upgrading the smartness of buildings for greater energy performance (based on the Smart Readiness Indicator), looking in particular at sensors, building controls and building management systems. Energy efficiency management.

The first task was to review, assess and identify the gaps in the skills of installers of RES technologies in buildings. This was achieved through round tables and surveys with stakeholders.

The next step was to develop respective professional qualification profiles, focusing on what has to be improved and/or upskilled in order to tackle the skills mismatch identified in the surveys. The assessment of the needs of new skills of specialists in RES technologies in buildings show that the trainings should be adapted to the different levels of expertise of the trainees, as some of them need new skills, while other need only an up-skilling.

Qualification profiles were developed for two levels of qualification: EQF level 3-5 and EQF level 6-7.

Nine qualification profiles are developed as follows:

- 🏠 Architects – EQF level 6-7
- 🏠 Electrical engineers – EQF level 6-7
  - New skills
  - Up-skills
- 🏠 HVAC engineers – EQF level 6-7
  - New skills
  - Up-skills
- 🏠 Electrical technicians – EQF level 3-5
  - New skills
  - Up-skills
- 🏠 HVAC technicians – EQF level 3-5
  - New skills
  - Up-skills
- 🏠 The development of 9 curricula aligned with the agreed professional qualifications, including specifications of learning structures, contents, basic timing, and other requirements. ECVET and micro-credentials approach will be applied in its design in concurrency with other curricular components (professional qualifications and certificates).
- 🏠 The definition of 9 certification schemes for the assessment and accreditation of acquired competences during the training delivered, which is the main way for students and professionals to reach the agreed professional qualifications. They will be defined in compliance with the standard ISO 17024 (personnel competency certification) and a micro-credentials approach allowing for partial and cumulative accreditation.

### 3.2.2 Curricula

The best teaching practices of innovative teaching methods in vocational training were investigated in order to be able to identify and select the best ones, and the obtained conclusions meet the needs, dynamics and strategies of learning that may be supported by new technologies and pedagogical methodologies. The selected best practices are used as a model for the creation of the training under the current project.

Since the intent is to create training courses that are flexible, engaging and innovative, allowing trainees to learn at their own pace and to earn microcredentials certifying their learning outcomes, it was decided that a flexible hybrid method of teaching will be adopted for the Project NS4nZEBs using an e-learning platform, with integrated different digital technologies, such as videos, serious games, screencasts, interactive presentations and quizzes.

A template was designed to allow the following:

The definition of core skills and competences that a trainee should develop (based on the needs analysis);

- 🏠 The definition of corresponding sub-competences;
- 🏠 The weighing of those competences into 3 categories:
  - 🌿 Basic;
  - 🌿 Important;
  - 🌿 Essential.

Corresponding “teaching time” for each competence, and sub-competence respectively, was allocated.

Corresponding ECVET-equivalent points are allocated, according to the previous weighing of competences, giving a coefficient of 0.5 for basic competences, 1 for important competences, and 2 for essential competences. We have used the term ECVET-equivalent.

The duration of the whole training is determined and planned.

The training materials are divided in modules. This makes them more flexible, easy to adapt and the trainees will be able to choose the modules applicable and relevant to them.

### 3.2.3 Certification

On 16 June 2022, the EU Council adopted **Recommendation on a European approach to micro-credentials for lifelong learning and employability**.

The Recommendation seeks to support the development, implementation and recognition of micro-credentials across institutions, businesses, sectors and borders.

An effective culture of lifelong learning is key to ensuring that everyone has the knowledge, skills and competences they need to thrive in their personal and professional lives.

Micro-credentials certify the learning outcomes of short-term learning experiences, for example a short course or training. They offer a flexible, targeted way to help people develop the knowledge, skills and competences they need for their personal and professional development.

Shorter forms of learning opportunities than traditional qualifications, such as micro-credentials, are being developed rapidly across Europe and around the world. These opportunities are made available by a wide variety of public and private providers in response to the demand for more flexible, learner-centred forms of education and training. They also have the potential to offer education and training opportunities to a wider range of learners, including disadvantaged and vulnerable groups.

The Commission will support the implementation of the Recommendation by exploring how **the Europass platform** could support the technical implementation of the Recommendation.

Upon the successful completion of a module and the respective module test, the candidate receives a **Digital Certificate** (Microcredential) for the respective module.

All participants who have successfully completed the examination receive a **Europass Certificate Supplement** detailing the acquired knowledge and skills. The certified professional commits to the Code of Ethics of the Scheme.

### 3.2.4 Training methods

The main objective of the project NS4nZEBs is to increase the number of skilled building professionals in the fields of PVs, smart electrical systems, heat pumps and energy storage including small-scale applications for production of hydrogen in buildings at all levels of the building design, operation and maintenance value chain.

This will be achieved by addressing the following focus areas:

- 🏠 Skills for new and existing nearly Zero Energy Buildings (nZEB) and bridging the gap towards Zero Emission Buildings (ZEBs).
- 🏠 Skills for integration of renewable energy and efficient heating and cooling technologies, including in particular heat pumps roll-out; skills for installers to deliver heating and cooling upgrades as part of renovation projects.
- 🏠 Digital skills supporting greater energy performance of buildings, in particular through an enhanced use of Building Information Modelling.
- 🏠 Skills for upgrading the smartness of buildings for greater energy performance (based on the Smart Readiness Indicator), looking in particular at sensors, building controls and building management systems. Energy efficiency management.

The first task was to review, assess and identify the gaps in the skills of all specialists involved in nZEBs. This was achieved through round tables and surveys with stakeholders.

The next step was to develop respective professional qualification profiles, focusing on what has to be improved and/or upskilled in order to tackle the skills mismatch identified in the surveys. The assessment of the needs of new skills of specialists in RES technologies in buildings show that the trainings should be adapted to the different levels of expertise of the trainees, as some of them need new skills, while other need only an up-skilling.

On the basis of the identified needs gap and the developed professional qualification profiles, the most appropriate teaching methods will have to be selected so that efficient curricula and training materials are developed.

In order to be able to select the best and most appropriate ones, following sub-task were carried out in the initial phase of the project:

#### **Identification of criteria**

What training is needed for this purpose:

- 🏠 Flexible training, tailored to the specific learning and daily life of working people.
- 🏠 Divided into micro-modules.
- 🏠 Meeting the identified needs of all professionals, from the installer to the architect.
- 🏠 Enabling the award of recognised micro-qualifications.
- 🏠 Training that can be constantly updated.

From a purely methodological point of view, the training also has to meet the following criteria:

- 🏠 If it is a **validated or promising education practice**.
- 🏠 **Innovation:** whether it includes methodologies as blended, experimental learning, online environment, ubiquitous learning.
- 🏠 **Impact on education:** if the practice modifies the existing programs by doing different activities such as internships, practicum, if it promotes learning communities or new learning technologies are used (mobile learning, virtual learning environments...).
- 🏠 **Partnerships:** collaborations and relationships between universities, companies, public bodies, NGO.
- 🏠 **Quality of design and viable plan:** this criterion is for identifying the practices that identify goals and describes a plan for success, support and sustainability over time.
- 🏠 **Certification of the VET:** to comply with the requirements for a life-long learning, short-term training course.

### Materials and methods chosen

With these criteria in mind, we were able to carry out research – both desktop and based on case studies provided by partners. Eight best practices from Bulgaria, Belgium, Spain, Germany, UK, Slovenia, Romania and Italy were examined thoroughly.

Having analysed all cases specified above, it was decided that **an enriched type of ubiquitous blended learning**, incorporating various educational strategies, should be employed for the training under the project.

Ubiquitous learning is the ability to learn at anytime, anywhere, thanks to access to information and educational resources through technological devices. It is an educational approach that harnesses digital technologies to provide opportunities for continuous and personalized learning; it refers to the constant opportunity for learning experiences and media transfer/communication that our constant computing connectivity provides. Any situation can provide an opportunity for learning, with or without computers; the increased pervasiveness of computer technology and especially the internet means any situation can become a purposeful instructional experience; not only can people learn at any time, but they can receive media that is explicitly learning-focused.

With the ubiquitous blended learning method, teachers and students gradually adapt to the advancement of educational technology but are still supported by the usual method of doing face-to-face (though online, but in real time).

Learning that combines asynchronous and synchronous classes will be able to build interactions, create projects, be able to access materials in the form of online teaching materials such as percentages, videos, interactive multimedia, and others.

In conclusion, the training model developed under the NS4nZEBs meets all the criteria set in advance:

- 👤 It is flexible, tailored to the specific learning and daily life of working people.
- 👤 It is divided into micro-modules.
- 👤 It meets the identified needs of all professionals.
- 👤 It enables the awarding of recognized microcredentials.
- 👤 It can be constantly updated.

The enriched virtual model of NS4nZEBs:

- 🏠 Is implemented on a digital platform, which is an LMS with full functionalities.
- 🏠 Allows work when and where the learner has the opportunity as it is also accessible via a mobile device.
- 🏠 Allows sharing of case studies, experiences, problems and ideas via forums and discussions via Zoom or a similar platform.
- 🏠 Allows trainers to use a whole range of learning strategies: social learning, crossover learning, adaptive learning, flipped classroom, micro-learning, Gamification, case studies and quizzes, etc.

### **3.3. BUILD UP Skills Initiative, actions, available materials and exploitable results**

#### **3.3.1 BUILD UP Skills Initiative in a nutshell <sup>1</sup>**

The BUILD UP Skills initiative started in 2011 with actions implemented in 30 European countries, cofounded by the Intelligent Energy Europe Programme of the European Union. As a result, National Qualification Roadmaps for the construction sector were developed in the participating countries. Pilar II was launched in 2013-2014, focused on education and training programmes in Energy Efficiency (EE) and Renewable Energies (RE) in buildings. The activities were continued through “Construction Skills” within H2020 Programme, and the second phase started in 2022 within LIFE+ Programme of the European Union.

#### **3.3.2. Selected BUILD UP Skills actions relevant to BUSHROSSs activities**

A number of actions have been and are being currently implemented around Europe in the field of up-skilling and reskilling of professional related to sustainable energy transition and nearly-zero energy buildings, including those applicable to OSSs. Following is a brief description, objectives and results (expected or already achieved) of the BUILD UP Skills related actions with which synergies will be sought and whose results will be used as a starting point within BUSHROSSs project implementation.

##### **3.3.2.1 Bulgaria**

##### **NS4nZEBs - New Skills for Nearly Zero Energy Buildings<sup>2</sup>**

The use of renewable energy and digital technologies in the building sector is heavily emphasised in the relevant EU Directives and Regulations. These technologies have an important role to play to help meet the greenhouse gas emission reduction targets, to achieve a fully decarbonised building stock by 2050, as well as to address the energy crisis in Europe. Given that background, the NS4nZEBs project aims to tackle existing mismatches between the

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<sup>1</sup> Source: [Homepage](#) | BUILD UP

<sup>2</sup> More information: [LIFE 3.0 - LIFE22-CET-NS4nZEBs/101120960](#); Project webpage: <https://www.ns4nzebs.com/>

skills currently characterising the energy performance and the ones increasingly in demand and indispensable in the future, to increase the number of skilled building professionals in the fields of PVs, smart electrical systems, heat pumps and hydrogen technologies in buildings at all levels of the building design, operation and maintenance. This will lead to an increased application of new energy efficient and renewable energy technologies for the successful uptake of (nearly) Zero Energy Buildings, the upscaling of ambitious renovation interventions, the roll-out of efficient renewable-based heating and cooling, in particular heat pumps, thus contributing to phasing out EU dependence on fossil fuels imports.

This objective will be reached through the development of new and upgrading existing training methods and curricula, and qualifications courses for all types of professionals involved in the building value chain ('blue collars' and 'white collars'). All relevant stakeholders – authorities, employers, end-users as well VET providers are involved to work on feedback mechanisms ensuring that training programmes and curricula are labour market-relevant and proactively integrate emerging skills. In addition, the number of people who will benefit from the regularly updated training developed under the project will be constantly increasing in the long term.

The consortium is a partnership of excellence, with experts (installers, engineers, architects, experts in IT, automation, education and communications) from 6 countries, namely Belgium, Bulgaria, Greece, Italy, Spain, and Ukraine.

Programme: LIFE CET

Project date range: 01 September 2023 - 31 August 2026

### **SHEERenov+ project - Seamless Services for Housing Energy Efficiency Renovation<sup>3</sup>**

In the context of the European transition to a green economy and to achieve the European Commission's (EC) proposed target of reducing emissions by at least 55% by 2030, the EU must reduce greenhouse gas emissions from buildings by 60%, the consumption of energy by 14%, and heating and cooling costs by 18%. Market assessment shows that 93 percent of the residential buildings in Bulgaria are not energy efficient, with a total of 66 865 multi-family buildings are in need for renovation, according to the developed Bulgarian Long-Term Strategy, adopted by the Council of Ministers with Protocol No. 8 of 27.01.2021) and pursuant to Directive (EU) 2018/844 of the European Parliament and of the Council.

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<sup>3</sup> More information: [LIFE 3.0 - LIFE22-CET-SHEERenovPlus/101120740](#); Project webpage: <https://sheerenovplus.eu/>

So far, the renovation model in Bulgaria provides for 100% financial and administrative support. The result is less than 3,000 buildings renovated with public resources from the national budget and European funding. Calculations show that keeping this rate will take 200 years to refurbish all the buildings in need.

The model transformation is required to speed up the EE renovation processes. The policy change in this regard is initiated with the National Recovery and Resilience Plan (NRRP) and calls for “transition from the existing multifamily buildings energy efficiency retrofitting model, which is based on 100% public finance, to a market-oriented model with the participation of owners, business and public authorities”. The most needed reforms - one-stop shop service, definition of energy poverty, legislative changes in the Condominium Management Act (CMA) are foreseen in the Plan, and the investment component envisages a gradual increase in the financial and organizational participation of the owners.

An innovative (for Bulgaria) model for the provision of integrated residential renovation services was developed and tested on the territory of Sofia, adapting workable solutions from European best practices, namely Estonia and Hungary. The LIFE 2022 SHEERenov+ is proposed as an extension of the H2020 SHEERenov project. The general project objective is to replicate the model for Seamless Home Energy Efficiency Renovation service provision in Bulgaria. Building on the sustainable results of the H2020 SHEERenov project, the LIFE 2022 SHEERenov+ project aims to trigger a significant upscale of the energy renovation in the Bulgarian residential sector, through developing a network of business model OSSs, positioned on municipal level and offering services through the entire value chain.

Besides the capital Sofia, the project activities will take place in 5 more major cities: Plovdiv, Gabrovo, Stara Zagora, Burgas, and Ruse, ensuring the delivery of the integrated home renovation service (One-Stop-Shops) throughout the whole country.

SHEERenov+ activities are focused on creation of a network of OSSs for building refurbishment, and consequent training and capacity building for integrated home renovation services, on the following themes:

- Energy Efficient Renovation of residential buildings.
- Energy Management.
- Renewable Energy Sources in Households.

- Nearly Zero Energy Buildings (nZEB).
- Working with the Digital Platform.

Programme: LIFE+

Project date range: 01 October 2023 – 30 September 2026

**BUILDUPSkillsBG - Rebooting the Bulgarian BUILD UP Skills Platform for Dialogue and Qualification Roadmap (LIFE21-CET-BUILDSKILLS-BUILDUPSkillsBG)<sup>4</sup>**

The project aimed to provide the necessary update to the work done under the “Pillar I” project of BUILD UP Skills (2011-2013), during which a first analysis of the construction and education sectors was carried out, and a strategy to address workforce and skills shortages by 2020 was designed.

Specifically, the project aimed to revitalise the national qualification platform (gathering key national stakeholders), to update the national status quo analysis (overview of workforce and skills gaps) and to update the national roadmap with measures to 2030.

Reaching of the 2030 energy and climate change objectives represents a major challenge to the Bulgarian construction sector, which needs to be ready to deliver ambitious deep energy retrofitting projects, and, as stipulated by the 2021 EPBD recast, new zero-emission buildings. This goal requires a major effort to increase the number of adequately qualified specialists and workers, which is directly related to the quality of the educational programmes and the integration of training on sustainable energy solutions at all qualification levels across the national qualification framework. With the general objective to influence the supply and demand of qualified construction services by providing a national qualification roadmap with an action plan, to support the development of the institutional framework, and to establish a pro-active stakeholders’ network to drive forward the green energy transition and promote innovation and growth in the construction sector, the project is designed to:

- Analyse the achievements under the National Roadmap published in 2013 under BUILD UP Skills – Pillar I.
- Relaunch the activities of the National Platform for Dialogue.

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<sup>4</sup> More information: [LIFE 3.0 - LIFE21-CET-BUILDSKILLS-BUILD UPSkillsBG/101076217](#); Project webpage: <http://www.BUILDUPSkillsbg.eu/>

- Perform a status quo analysis of the national education system, political and legislative framework and market demand for skilled workers and build a common basis for informed discussions within the National Platform.
- Develop a Roadmap for Education and Trainings on Sustainable Energy Solutions in Buildings, paving the way to overcome the identified barriers and gaps to meet the 2030 targets in the building sector.
- Undertake a targeted endorsement campaign involving the relevant state authorities, educational institutions, professional associations, market players and social partners, and providing a basis for integration of the National Roadmap in the national strategic framework, market uptake of the proposed solutions and sustainable continuation of project's activities.

Programme: LIFE+

Project date range: 01 October 2022 - 30 June 2024

**DiVIRTUE - Development of Training Schemes with Application of Virtual Reality towards Implementation of Decarbonized New and Existing Buildings (LIFE23-CET-DiVIRTUE)<sup>5</sup>**

Reaching the national and EU 2030 energy and climate objectives requires a major transformation of the skills and knowledge along the whole value chain of the construction industry, which needs to be ready to deliver quality deep energy renovations and zero-emission buildings. As evidenced by the recent BUILD UP Skills Status Quo analyses, insufficient capacity of the construction industry is a significant bottleneck on the way to decarbonize the building stock in time. To tackle this challenge, the DiVirtue project aims at creating new construction sector capacities in 5 countries via digitalization of existing and new training schemes for students and construction professionals. This will be achieved through the development of innovative construction skills training materials with application of virtual and augmented reality (VR/AR) technologies. The training schemes will be created in English and the 5 national languages for at least 8 selected topics based on the training needs related to the specific targeted professions, targeting gaps and deficiencies identified in the national BUILD UP Skills qualification roadmaps. To simulate future uptake and capacities in VR upskilling, the project will provide training and consultations for acting teachers and educational establishments, as well as pilot training of at least 600 building professionals in

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<sup>5</sup> More information: [LIFE 3.0 - LIFE23-CET-DiVIRTUE/101167587](https://lifer30.eu/LIFE23-CET-DiVIRTUE/101167587)

40 individual courses. The newly developed VR training environment and materials will be freely accessible for any interested educational or training institution, targeting full integration in the national educational frameworks and broad endorsement at institutional level. The project is based on the extensive experience of project partners in the BUILD UP Skills initiative, as it will fully utilise the active networks in the national qualification platforms, already attracting the support of nearly 60 external organisations - among them ministries, universities, energy agencies and multiple product manufacturers.

Programme: LIFE+

Project date range: 01 August 2024 - 31 July 2027

#### **Fit-to-NZEB - Innovative training schemes for retrofitting to nZEB-levels<sup>6</sup>**

The project aimed at increasing the nearly zero-energy building retrofitting competence of building professionals, the Fit-to-nZEB project developed a range of educational programmes, training facilities and train-the-trainer opportunities. If Europe is to achieve its 2020 and 2030 energy and climate objectives, the construction sector must deliver high-energy performing renovations and nearly zero-energy buildings (NZEB). But doing so requires having qualified NZEB specialists – something the sector currently lacks due to a scarcity of quality training on energy-efficient solutions for building renovations.

To increase the NZEB retrofitting competence of building professionals in Austria, Bulgaria, the Czech Republic, Greece, Ireland and Italy, the EU-funded Fit-to-nZEB (Innovative training schemes for retrofitting to nZEB-levels) project developed a range of educational programmes, training facilities and train-the-trainer opportunities. “Our goal was to set up a full range of innovative qualification and training schemes for deep energy building retrofitting supported by renewable energy sources,” explains Dragomir Tzanev, executive director of the Centre for Energy Efficiency – EnEffect and Fit-to-nZEB project coordinator. “To do so, we developed the materials and facilities needed to provide world-class practical training on building renovations aimed at NZEB levels.

Based on a thorough review of existing training programmes and an analysis of the training gaps in the involved countries, researchers developed a compendium covering the knowledge,

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<sup>6</sup> More information: <https://cordis.europa.eu/article/id/411697-innovative-training-on-energy-efficient-building-renovations>

skills and competences required for deep energy retrofit. Using this compendium, researchers identified the key topics of relevance to the NZEB retrofit process and based on these, developed a set of 17 high-quality practical training programmes to address them. “These programmes, which include notes, exercises, test questions and references, are [freely available](#) to any interested vocational education provider,” explains Tzanev. “By encouraging open cooperation in the sector and by providing a shared knowledge base, the project paves the way towards mutual recognition of NZEB-related skills and competences among an increasing number of countries.” The project also established fully equipped training facilities in each of the involved countries. Here, building professionals can get hands-on experience with many of the skills and theories taught during the training programme.

In total, the project has trained over 180 educators, who are now delivering the Fit-to-nZEB training programmes at the project’s training facilities. Furthermore, over 20 pilot courses have been conducted at universities, professional high schools and vocational training centres; and more than 10 Memoranda of Understanding have been signed with education and training providers to use the project’s training materials. To date, this has resulted in 350 workers, 100 university students and 120 school students being trained.

Programme: Horizon 2020

Project date range: 01 June 2017 - 01 June 2019

### 3.3.2.2 Greece

#### **BUS-REGRoUP– REbooting the GRreek national platform and UPdating the national roadmap<sup>7</sup>**

The project aimed to provide the necessary update to the work done under the “Pillar I” project of BUILD UP Skills (2011-2013), during which a first analysis of the construction and education sectors was carried out, and a strategy to address workforce and skills shortages by 2020 was designed.

Specifically, the project aimed to revitalise the national qualification platform (gathering key national stakeholders), to update the national status quo analysis (overview of workforce and skills gaps) and to update the national roadmap with measures to 2030.

Programme: LIFE CET

Project date range: 01 November 2022 - 30 April 2024

#### **BUILD UP Skills Greece - Pillar 1**

The project represented the first phase of the BUILD UP Skills initiative in Greece. The first objective was to gather the key national stakeholders from the energy, education & training and building sectors. Together they formed a National Qualification Platform. The platform mapped the existing workforce and qualification programs, identified future skills needs and analysed which gaps and barriers must be overcome in order to train the workforce and reach the 2020 EU energy targets. Results were bundled in a National Status Quo report. The platform then formulated a National Roadmap of measures to overcome skills gaps and barriers, which was endorsed by key stakeholders.

More information: [BUILD UP Skills Greece - Pillar 1 | BUILD UP](#)

Programme: IEE-Pillar 1

Project date range: 09 June 2012 - 08 December 2013

#### **BUILD UP Skills Greece - Pillar 2 (UPSWING)<sup>8</sup>**

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<sup>7</sup> More information: [LIFE 3.0 - LIFE21-CET-BUILDSKILLS-BUS-REGRoUP/101077520](#); Project webpage: [http://www.cres.gr/cres/pages/projects/projects\\_EU/life\\_4\\_uk.html](http://www.cres.gr/cres/pages/projects/projects_EU/life_4_uk.html)

<sup>8</sup> More information: [BUILD UP Skills Greece - Pillar 2 \(UPSWING\) | BUILD UP](#)

The project aimed to implement the national skills roadmap developed under the previous Pillar 1 project, through the development of training and qualification schemes for onsite workers and craftspeople.

Programme: IEE-Pillar 2

Project date range: 01 September 2014 - 31 August 2017

### **BIMEET - BIM-based EU -wide Standardized Qualification Framework for achieving Energy Efficiency Training<sup>9</sup>**

BIMEET develop tailored BIM training for construction professionals. The project brought together universities and technology institutes from five EU countries (Finland, France, Greece, Luxembourg and the United Kingdom) to provide the sector with a better understanding of market needs, along with innovative training schemes.

The consortium has developed a specific methodology to identify roles, skills and training needs in the field of BIM for energy efficiency. They used a repository of Twitter records to capture emerging skills and roles and developed a training portal that aggregates content from different BIM-related data sources. By using this tool, users can keep track of new trends and integrate them into future training content. The training portal effectively acts as a repository source for information on BIM and energy efficiency, as well as a database of available BIM training. The training portal also provides personalised training opportunity recommendations to construction professionals. Specific features are similarly being developed for training professionals, to help them fine-tune their content according to the characteristics of the market they focus on. E-learning is at the very core of the project. It is a means to enable more efficient training sessions while reaching professionals who are less likely to attend physical training sessions – such as blue-collar workers.

Programme: Horizon 2020

Project date range: 01 September 2017 - 01 February 2020

### **The nZEB Roadshow - On the road with energy-efficient buildings<sup>10</sup>**

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<sup>9</sup> More information: <https://cordis.europa.eu/article/id/411694-tailored-bim-training-for-construction-professionals>;  
Project webpage: <https://www.vtt.fi/sites/bimeet>

<sup>10</sup> More information: <https://cordis.europa.eu/article/id/443072-on-the-road-with-energy-efficient-buildings>; Project webpage: <https://www.nzebroadshow.eu/>

Raising awareness about the many benefits of green and sustainable buildings through informative, interactive and fun events and training opportunities.

With the goal of showcasing the benefits of green and sustainable buildings, the project took its message across Bulgaria, Croatia, Greece, Italy and Romania. The project organised a wide range of events, including conferences, product exhibitions, training for professionals and information sessions for homeowners. There were also press conferences, events with policymakers, events for kids and school visits.

The project even held energy efficiency festivals for the entire family. For example, in Croatia, the 'MUZA' demo truck has already visited 14 different cities, where it set up shop at popular locations. Families could go from tent to tent and participate in different hands-on activities, including games and contests, and learn about the benefits of energy efficiency – all while having fun.

Programme: Horizon 2020

Project date range: 01 June 2020 - 01 May 2023

### 3.3.2.3 Ireland

#### **BUSI2030 - Build Up Skills Ireland 2030<sup>11</sup>**

**Focused on Ireland's National Upskilling Roadmap'** for the Built Environment to 2030+, the project provided the necessary update to the work done under the "Pillar I" project of BUILD UP Skills (2011-2013), during which a first analysis of the construction and education sectors had been carried out, and a strategy to address workforce and skills shortages by 2020 was had been designed. The initiative was called BUSI2030' (Build Up Skills Ireland) and was co-funded by the EU Life programme.

Specifically, the project aimed to revitalise the national qualification platform (gathering key national stakeholders), to update the national status quo analysis (overview of workforce and skills gaps) and to update the national roadmap with measures to 2030.

A particular focus of the revitalised platform was placed on the financing and investment (public and private) required to deliver the education, training and skills required. BUSI2030 set a clear pathway for upskilling building professionals and workers in Ireland thus ensuring that the built environment sector would achieve Ireland 2030 energy and carbon ambitions (and was on a trajectory to carbon neutrality by 2050). BUSI2030 brought together, within an updated Status Quo report, the skills demand for both retrofit and new build in line with Ireland's Climate Action Plan and Housing for All Strategy. The work of BUSI2030 was directly aligned with the ambitions of the Construction Sector Group (CSG) and built on the achievements of the Construction Blueprint within the Irish Context. The Status Quo Report informed a new BUSI2030 Roadmap for Ireland which would be developed through consultation and engagement with industry stakeholders. The roadmap presented an action plan of measures, aligning with existing activities, while also identifying gaps and future synergies.

Programme: LIFE+

Project date range: 01 October 2022 - 31 March 2024

#### **BUILD UP Skills Ireland - Pillar 1<sup>12</sup>**

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<sup>11</sup> More information: [BUSI2030 | BUILD UP](https://www.igbc.ie/busi2030/); Project webpage: <https://www.igbc.ie/busi2030/>

<sup>12</sup> More information: <https://build-up.ec.europa.eu/en/skills/projects/build-skills-ireland-pillar-1>

The project represented the first phase of the BUILD UP Skills initiative in Ireland. The first objective was to gather the key national stakeholders from the energy, education & training and building sectors. Together they formed a National Qualification Platform. The platform mapped the existing workforce and qualification programs, identified future skills needs and analysed which gaps and barriers must be overcome in order to train the workforce and reach the 2020 EU energy targets. Results were bundled in a National Status Quo report. The platform then formulated a National Roadmap of measures to overcome skills gaps and barriers, which was endorsed by key stakeholders.

Programme: IEE-Pillar 1

Project date range: 01 November 2011 - 30 April 2013

### **BUILD UP Skills Ireland - Pillar 2 (QualiBuild)<sup>13</sup>**

The project aimed to implement the national skills roadmap developed under the previous Pillar 1 project, through the development of training and qualification schemes for onsite workers and craftspeople.

Programme: IEE-Pillar 2

Project date range: 01 November 2013 - 30 September 2016

### **ARISE - Inspiring demand for sustainable energy skills, by providing clear learning interactions, transparency of upskilling transactions and recognition of qualifications achieved<sup>14</sup>**

ARISE was developing an EU wide distinguishable recognition scheme of digital energy efficient BIM construction skills linked with a maturity-based digital ranking system for accounting CPD based learning transactions. The open competency-based qualification scheme based on maturity levels that empower micro-learning was the basis for making learning transactions count. The project team was gathering and linking BIM modules, tools and materials with the aim to establish a BIM resource and skills recognition pathway that all stakeholders could utilise, deliver and stimulate. This provided BIM Energy performance alliance (BIM-EP) partners and other stakeholders with an e-learning materials repository to

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<sup>13</sup> More information: <https://build-up.ec.europa.eu/en/skills/projects/build-skills-ireland-pillar-2-qualibuild>

<sup>14</sup> More information: <https://cordis.europa.eu/project/id/101033864>; Project webpage: <https://www.ariseproject.eu/>

contribute to, whilst also developing a CPD recognition pathway for the whole supply chain to access and utilise.

ARISE revolutionised the learning process by developing a crypto-skills exchange, monetizing the skills and learning interface with a system based on skills recognition rather than accreditation. The reward of acquiring a competence at a certain level would be CERTcoin the innovative currency of skills and learning of the construction sector embracing today's digital transformation benefits. This reward based on skills and time credits would be stored in an Individual learning Account and could be used as digital points accumulation in a skills barometer or for exchanging it into valid micro certificates. This would be an industry driven, easier accessible, less time consuming, highly competitive way to up-skill blue and white collars and increase vocational mobility.

ARISE complemented and integrated with other existing projects, instruments and initiatives to deliver increased levels of sustainable energy skills across the entire supply chain of the construction sector. ARISE collaborated with other key actors and target groups to improve synergies and drive workforce demand for diversification in skills recognition and certification.

Programme: Horizon 2020

Project date range: 01 September 2021 - 29 February 2024

**BIMcert – 1. Construction skills, 2. Energy efficiency, 3. Regulating supply chains, 4. Tackling climate change<sup>15</sup>**

Focused on new skills certification system for a BIM-savvy construction sector to help prepare the architecture, engineering and construction sector for the double challenge of energy efficiency and digitalisation, the BIMcert e-learning platform puts the spotlight on building information modelling as an enabling tool to support the decarbonisation of buildings across their whole life cycle.

The journey itself is quite different from usual training schemes. A key innovation lies in personalisation: the system automatically adapts to the experience of learning professionals to get them familiar with new BIM tools and related digital technologies. Comparisons between the various tools and technologies are also provided, emphasising their benefits at

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<sup>15</sup> More information: <https://cordis.europa.eu/article/id/411693-new-skills-certification-system-for-a-bim-savvy-construction-sector>; Project webpage: <https://www.energybimcert.eu/>

both individual and industry level. Different modules exist for different participants (owners, facility managers, etc..) and different construction activities (new or renovated buildings). The project team has also devised specific content for public administrators and investors.

At the end of the learning process, the platform establishes a student profile listing newly acquired skills. Users can compile their own digital CV (a BIM Skills Passport) and, thanks to the project's third-party certification, can easily have their skills acknowledged anywhere in Europe.

Programme: Horizon 2020

Project date range: 01 March 2018 - 01 November 2020

### 3.3.2.4 Poland

#### **BUPS Poland - BUILD UP Skills II Poland<sup>16</sup>**

The project goal was to develop a strategy for improving the skills of workers in the construction sector at all levels of education (4-8) in energy efficient building technologies, especially those undergoing deep renovation. In order to achieve the above, the project aimed to:

- rebuild the National Build-Up Skills Platform with the participation of key national stakeholders.
- evaluate the effectiveness of the implementation of the 2011 roadmap and update the roadmap considering actions up to 2030 and policy recommendations; and to adopt the roadmap for implementation by the stakeholders.
- develop a status quo analysis, identifying current and future skills development needs for building renovation.

aimed to provide the necessary update to the work done under the “Pilar I” project of BUILD UP Skills (2011-2013), during which a first analysis of the construction and education sectors was carried out, and a strategy to address workforce and skills shortages by 2020 was designed. Specifically, the project aimed to revitalise the national qualification platform (gathering key national stakeholders), to update the national status quo analysis (overview of workforce and skills gaps) and to update the national roadmap with measures to 2030.

Programme: LIFE CET

Project date range: 01 November 2021 - 01 April 2024

#### **BUILD UP Skills Poland - Pillar 1<sup>17</sup>**

The project represented the first phase of the BUILD UP Skills initiative in **Poland**. The first objective was to gather the key national stakeholders from the energy, education & training and building sectors. Together they formed a National Qualification Platform. The platform mapped the existing workforce and qualification programs, identified future skills needs and analysed which gaps and barriers must be overcome in order to train the workforce and reach

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<sup>16</sup> More information: [BUPS Poland | BUILD UP](#); Project webpage: <https://bups.kape.gov.pl/>

<sup>17</sup> More information: [BUILD UP Skills Poland - Pillar 1 | BUILD UP](#)

the 2020 EU energy targets. Results were bundled in a National Status Quo report. The platform then formulated a National Roadmap of measures to overcome skills gaps and barriers, which was endorsed by key stakeholders.

Programme: IEE-Pillar 1

Project date range: 03 November 2011 – 02 May 2013

### **NZEB Ready - Enhancing Market Readiness for nZEB Implementation<sup>18</sup>**

To promote improved energy performance of buildings, the EU's Energy Performance of Buildings Directive requires all new buildings to be nearly zero-energy buildings (nZEB). However, the large-scale uptake of nZEB construction of new buildings and renovation towards nZEB levels is a challenge. Many EU Member States have not yet fully embraced nZEB due to the high costs and the skills gaps in the building sector. The EU-funded nZEB Ready project will increase market readiness for an effective nZEB implementation. It will address the main barriers in Bulgaria, Croatia, Portugal, Poland and Romania and support skills enhancement with a mutual recognition training and certification scheme. The project will also raise awareness about nZEB benefits.

To respond to the challenge and use the emerging opportunities, the nZEB Ready project aims to act at market level in order to stimulate the demand for energy-related skills of construction workers and specialists in the involved countries and beyond and to increase the market readiness for an effective nZEB implementation: (1) by addressing the key identified barriers of nZEB implementation in focused markets, (2) by supporting the enhancement of skills framework by new market driven mutual recognition training and certification scheme for nZEB deployment that will facilitate the necessary legislative changes and (3) through development and communication of toolboxes, tailored guidance and practical support to engage home owners and public authorities to reach the nZEB benefits.

The project will address A challenges in Bulgaria, Croatia, Portugal, Poland and Romania in order to exploit synergies related to common climatic zones, traditions and opportunities to use the benefit of a larger and easily accessible regional market.

Programme: Horizon 2020

Project date range: 01 September 2021 - 31 August 2024

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<sup>18</sup> More information: <https://cordis.europa.eu/project/id/101033733>; Project webpage: <https://nzebready.eu/>

### 3.3.2.5 Slovenia

#### **BUILD UP Skills Slovenia - Pillar 1<sup>19</sup>**

The project represented the first phase of the BUILD UP Skills initiative in **Slovenia**. The first objective was to gather the key national stakeholders from the energy, education & training and building sectors. Together they formed a National Qualification Platform. The platform mapped the existing workforce and qualification programs, identified future skills needs and analysed which gaps and barriers must be overcome in order to train the workforce and reach the 2020 EU energy targets. Results were bundled in a National Status Quo report. The platform then formulated a National Roadmap of measures to overcome skills gaps and barriers, which was endorsed by key stakeholders.

Programme: IEE-Pillar 1

Data range: 08 November 2011 - 07 May 2013

#### **SeetheSkills: Sustainable EnERgy Skills in construction: Visible, Validated, Valuable<sup>20</sup>**

SEetheSkills project collect best practices from five countries (North Macedonia, Slovakia, Slovenia, Spain and the Netherlands) in meeting needs for energy efficiency in the building sector. Specifically, the project promotes the visibility of sustainable energy skills in the construction of new and renovation of existing buildings stocks by creating an online repository. It will also enable the validation of energy skills to raise their value.

The project stands in front of the challenge for energy efficient construction of new and renovation of existing building stocks and to act at market level in order to stimulate the demand for previously developed and new or upgraded energy skills. It is based on the idea to build upon the good foundations of previous BUS experiences in five countries: North Macedonia, Spain, Slovenia, Slovakia and the Netherlands. It gathers best practices from projects upon whose lessons learnt is built-on, in order to level up the achievements far above only national levels (mainly on the stage where they are now) on higher and, which is more important, wider interregional level. In order to facilitate broader visibility and accessibility of energy skills and to enable their mutual recognition across partner countries, through their cross validation based on learning outcomes, the project will act through novel 3V approach

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<sup>19</sup> More information: [BUILD UP Skills Slovenia - Pillar 1 | BUILD UP](#)

<sup>20</sup> More information: <https://cordis.europa.eu/project/id/101033743>; Project webpage: <https://seetheskills.eu/>

to tackle direct stimulation of demand of energy skills in construction. The 3V approach refers to: VISIBILITY of skills by creation of on-line repository i.e. Integrated SEetheSkills area to make the skills visible, accessible and available on interregional level, between project partners and beyond; then enabling interregional cross VALIDATION of energy skills by making them comparable within SEetheSkills area for management of knowledge & skills and through transferring and replication of training schemes between project partners; which as a final result will raise the VALUE of the skills and tackle their market demand, initiated by expressing the benefits of using energy skills in achieving sustainability of construction.

Programme: Horizon 2020

Project date range: 01 June 2021 - 31 May 2024

**BUSLeague - Dedicated to stimulate demand for sustainable energy skills in the construction sector<sup>21</sup>**

BUSLeague has advanced the pan-European recognition of cross-craft energy skills in the construction sector. New and improved training programmes are helping to deliver more sustainable buildings. As a key sector of the European economy, construction is increasingly feeling the impact of the drive for more sustainable energy use. Success in meeting these green objectives lies in the hands of a suitably skilled and experienced workforce. Despite past efforts to harmonise sustainable energy training and qualifications across the EU, curricula and content differ between countries, leading to variable levels of competence and expertise. BUSLeague has developed an upskilling training and qualification framework to deliver the sustainable energy solutions needed for the built environment. Focusing on four key areas – mutual recognition of skills, awareness raising, capacity building and legislative changes – BUSLeague implemented a range of solutions in Austria, Bulgaria, France, Ireland, the Netherlands and Spain.

Programme: Horizon 2020

Project date range: 01 September 2020 - 01 February 2023

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<sup>21</sup> More information: <https://cordis.europa.eu/article/id/443070-tailored-energy-sector-upskilling-trialled-in-six-countries>;  
Project webpage: <https://busleague.eu/>

### 3.3.2.6 Ukraine

#### **SUN4Ukraine Project - Sustainable Urban Net Zero Network for Ukraine<sup>22</sup>**

Beginning in May 2024, the Horizon Europe SUN4Ukraine project aims to assist Ukrainian cities in aligning their reconstruction plans with ambitious climate neutrality objectives. With Ukraine's commitment to climate action demonstrated by the signing of its Environmental Security and Climate Change Adaptation Strategy in 2022, alongside its aspirations for EU membership and a strong resolve to integrate reconstruction efforts with reforms aimed at its EU integration, SUN4Ukraine emerges as the platform to advance the climate neutrality ambitions of Ukrainian cities.

SUN4Ukraine aims to bring together Ukrainian cities with the EU 100 Climate Neutral and **Smart Cities** Mission, through capacity building, technical expertise, twinning, multi-level governance and policy to support them in adopting climate neutrality targets and incorporating climate neutrality into **reconstruction plans**.

SUN4Ukraine will select and work closely with 10 Ukrainian frontrunner cities who will receive technical support and participate in a capacity building programme to develop Climate Neutrality Plans, aiming for climate neutrality by 2050. A Capacity Building programme structured around three tracks – Foundation, Twinning, and Replication – will kickstart the journey towards climate neutrality for these ten Ukrainian frontrunner cities.

Through workshops, twinning with EU Mission Cities, and mentoring sessions, cities will gain vital insights and support. The programme, designed by the multidisciplinary SUN4Ukraine consortium, will use a variety of learning formats and leverage collective expertise from organisations across the EU and Ukraine. It aims to reinforce city capacities in climate-neutral urban planning, citizen engagement, and governance models while facilitating knowledge exchange with EU counterparts.

Programme: Horizon 2020

Project date range: May 2024 - May 2028

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<sup>22</sup> More information at project webpage: [SUN4Ukraine](#)

## 3.4 European Construction Blueprint and Pact for Skills in Construction.

### 3.4.1 What is Pact for Skills?

Pact for Skills is one of the flagship actions (Action 1) of the European Skills Agenda. The Pact aims to support public and private organisations with **upskilling and reskilling**, so they can thrive through the green and digital transitions. Members of the Pact have access to knowledge on **upskilling and reskilling** needs, **advice on relevant funding instruments** to boost the skills of adults in their regions and countries, and **partnership opportunities** within our growing community.

### 3.4.2 Who can join the Pact?

National, regional and local authorities; companies; social partners; cross-industry and sectoral organisations; chambers of commerce; education and training providers; employment services – they can all become members of the Pact for Skills. All members of the Pact sign up to the Charter and agree to uphold its four key principles:

- 🏠 promoting a culture of lifelong learning for all
- 🏠 building strong skill partnerships
- 🏠 monitoring skill supply/demand and anticipating skill needs
- 🏠 working against discrimination and for gender equality and equal opportunities.

### 2.3 What does the Pact for Skills offer?

All members of the Pact can benefit from **three dedicated services**. The first service is the **Networking Hub**, where members can find partners and relevant EU tools (like Europass, Skills Panorama, EURES and the European Network of Public Employment Services). They can also promote their activities. Another service is the **Knowledge Hub** which organises webinars, seminars and peer learning activities for members. It also provides updates on EU policies and instruments, as well as information on projects, tools, and best practices. There is also the **Guidance Hub**, where members can find information about EU and national funding opportunities, and guidance to partnering with national and regional authorities.

### **3.5 EPALE – Electronic Platform for Adult Learning in Europe**

EPALE is a European, multilingual, open membership community of adult learning professionals, including adult educators and trainers, guidance and support staff, researchers and academics, and policymakers. It is funded by the Erasmus+ programme, while it is part of the European Union's strategy to promote more and better learning opportunities for all adults.

EPALE does this by supporting and strengthening the adult learning professions. It enables members to connect with and learn from colleagues across Europe, through its blog posts, forums, the Partner Search tool, complemented with physical gatherings.

This platform provides a wealth of high-quality, accurate information relevant for adult learning practitioners. Over time, more and more of this content should be provided by members themselves.

Furthermore, EPALE has a strong editorial policy that also centres on the adult learning community, where all of EPALE users feel welcome on the site, and to trust the information that is presented on this platform.

On a day-to-day basis, EPALE is managed by a Central Support Team with the help of 37 National Support Teams across Europe, while it is committed to involving all interested parties throughout the development of EPALE so that it meets their expectations and offer what they need to stay up to date with developments in adult learning across Europe.

## **4. National Conditions and Requirements for Home Renovation OSS in Participating Countries**

### **4.1 Bulgaria**

#### **4.1.1 Legal framework for home renovation OSSs**

##### **Integrated Energy and Climate Plan of the Republic of Bulgaria 2021-2030**

##### **Alternative measure 2: National Programme for Energy Efficiency of Multi-Family Residential Buildings**

In 2015, Bulgaria adopted a National Programme for Energy Efficiency of Multi-Family Residential Buildings aimed at the renovation of multi-family residential buildings by implementing energy efficiency (EE) measures. The main goal of the Programme is to improve the living conditions for citizens living in multi-family residential buildings, improve temperature comfort and improve the quality of the living environment through the implementation of EE measures. The programme provides financial and organisational support to associations of owners in multi-family residential buildings registered in accordance with the procedure laid down in the Condominium Ownership Management Act to improve energy efficiency in the buildings in which they live. Support and assistance are provided to associations of owners whose buildings meet a set of eligibility criteria determined in advance. The associations of owners apply for financial assistance to the respective municipalities. According to the selection criteria all eligible associations of owners receive a grant that covers 100 % of the costs and organisational arrangements necessary for renovation works to be undertaken until depletion of the funds available under the programme. Municipalities accept applications and documents relating to the assessment, approval and monitoring of the implementation of energy efficiency measures for the buildings. The mayor of each municipality is responsible for the implementation of the overall process of renovation of residential buildings and for the selection of contractors for the 119 implementations of the activities on the buildings in accordance with the procedure laid down

in the Public Procurement Act (ZOP). All 265 municipalities in Bulgaria are eligible to participate in the Programme. To date, actions have been implemented in 143 municipalities. The Programme was implemented with national funds and had a budget of BGN 2 billion, partially in the form of State-guaranteed loans from the Bulgarian Development Bank (BBR). Its extension is contingent on additional funds becoming available.

### **Long Term National Strategy to Support the Renovation of the National Building Stock of Residential and Non-Residential Buildings**

Strategic objective 3: Support for building administrative and professional capacity at the level of central government institutions and local authorities and the actors in the investment process.

Description of obstacles/challenges: Underdeveloped culture of renovating buildings: Practice shows that, to the extent possible, users tend to choose the least efficient solutions on account of the lower upfront cost of the investment. The benefits of implementing measures are underestimated whereas the time, cost and effort involved are overestimated.

Type of obstacle: Information and capacity related

Policies and measure to address the obstacle: Service delivery in line with the one stop-shop principle, including the provision of tailored advice to building owners and investors on all stages of the process of renovation to ensure that comprehensive information is available, provide assurance that the measures proposed, including the monitoring and supervision mechanisms, do indeed guarantee results and benefits.

Responsible bodies: Municipalities, Agency for Sustainable Energy Development (AUER), Ministry of Regional Development and Public Works (MRRB)

### **National Recovery and Resilience Plan of the Republic of Bulgaria**

#### **Component 4 “Low Carbon Economy”**

Objective: The main objective of this component is to decrease the carbon footprint and energy intensity of the economy and to contribute to the green transition through implementation of measures to increase the energy efficiency of residential, industrial and public buildings and promotion of electricity generation from RES.

A series of reforms to support the just energy transition and low carbon economy in Bulgaria, as follows:

C4.R1 Establish a National Decarbonization Fund.

C4.R2 Facilitating and increasing the efficiency of investments in the energy efficiency of multifamily residential buildings.

C4.R3 Establish a definition and criteria for “energy poverty” for households in the Energy Efficiency Act for the purposes of market liberalization and financing energy efficiency projects.

C4.R4 Mechanism to finance energy efficiency and RES projects together with electricity bills.

C4.R5: One-stop-shop for poverty consumers in order to facilitate the implementation of projects for energy renovation in buildings.

C4.R6 A new regional approach directly involving local communities in the management of resources from European funds and instruments.

The energy efficiency in buildings program is expected to contribute to the renovation of residential buildings with total floor area of over 3.6 million m<sup>2</sup> by 2026. The program will raise the awareness of consumers and owners about the effect of energy efficiency improvement and the wider benefits and will increase the demand for energy-efficiency services. With the implementation of the reform, the “one-stop-shop” model will ensure strong demand for energy-efficient services by raising the awareness about the benefits and the trust and motivation of building owners, and by providing a structured mechanism for obtaining all relevant information.

#### 4.1.2 Organisational and practical aspects of home renovation OSSs establishment and operation

So far, the main role in OSS establishment and operation in Bulgaria has been undertaken by the municipalities who have been the principal partners of homeowners under the National Programme for Energy Efficiency of Multi-Family Residential Buildings (see 3.1.1 above) during all stages of the implementation of the Programme. In addition, some municipalities have been piloting OSSs for other services such as advice and facilitation of citizens’ RE communities, advice to single family houses on PV applications, etc. Thus, the municipalities have emerged as the main stakeholders in Bulgaria, interested in home renovation OSSs establishment and operation. In their efforts to provide homeowners with complex advice on sustainable energy renovations, the municipalities have been in close contact and collaboration with regional/local energy agencies and consultancy centres who contribute

with their accumulated knowledge and experience and therefore are identified as major stakeholders to address and involve in BUSHROSSs activities.

Another body relevant to home energy renovation process in Bulgaria, is the Bulgarian national Sustainable Energy Development Agency (SEEA). It maintains the register of energy auditing companies and is the focal point for information dissemination and promotion of initiatives related to energy refurbishment of Bulgarian homes.

The Ministry of Regional Development and Public Works (MRDPW) have been the main principal of the administration and allocation of the funds under the National Programme for Energy Efficiency of Multi-Family Residential Buildings (application process, requirements, procedures, evaluation and approval of applications, allocation of funding). The Ministry have worked in collaboration with the municipalities who have been the intermediary between the Programme administration and the homeowners (represented by Association of Owners). As such, MRDPW is considered among the stakeholders relevant for the BUSHROSSs activities.

In addition, Component 4. Reform 5 (C4.R5) from the National Recovery and Resilience Plan of the Republic of Bulgaria (as of end of 2023) provides for the establishment of One-stop-shops (OSSs) for home renovation services. For this purpose, 6 territorial units are to be piloted, providing services on the "one-stop shop" principle, and in a 24-month horizon the activity will be rolled out in all 28 districts of the country. With a Decision of Council of ministers № 623 from 14 September 2023, the 28 District Information Points (DIP) created based on Article 2 from the Law for Governing of European Funds are appointed to act as OSSs to fulfil C4.R5 from National Recovery and Resilience Plan of the Republic of Bulgaria. However, no practical actions have been taken to implement the Decision, as its enforcement is hampered by the lack of knowledge, capacity and recourses in DIPs. As a result, the staff of DIPs have been identified as potential BUSHROSSs stakeholders.

#### 4.1.3 Stakeholders responsible for home renovation OSSs establishment and operation

As a result of the analysis of organisational and practical aspects of OSSs for home renovation services in Bulgaria (see 3.1.2), the following main stakeholders have been identified:

- 🏠 Municipalities/local authorities;

- 🏠 Local energy agencies and centres who have implemented pilot actions for OSS establishment and operation and have accumulated practical knowledge and expertise;
- 🏠 Agency for Sustainable Energy Development (SEEA/AUER);
- 🏠 Ministry of Regional Development and Public Works (MRDPB/MRRB);
- 🏠 District Information Points at the 28 districts' (oblasti) administrations;
- 🏠 Associations of owners of multifamily residential buildings.

#### 4.1.4 Good practices for home renovation OSSs

##### ❖ Rhodoshop OSS<sup>23</sup>

Rhodoshop OSS is created by Rhodope municipalities - members of Association of Rhodope Municipalities (ARM) to support energy efficiency renovation of buildings. The initiative has two stages.

- 🌱 During the 1<sup>st</sup> stage a pilot action was performed to facilitate investment in energy efficiency in public buildings through the creation of Rhodoshop One-Stop-Shop in Rhodope Region of Bulgaria. It was a joint undertaking of six pioneering municipalities – Smolyan, Banite, Chepelare, Devin, Nedelino and Zlatograd. The Association of Rhodope Municipalities (ARM) was the Rhodoshop host organization, and Sofia Energy Centre provided management and coordination support to Rhodoshop. The structure was created following the example of GRE-Liege (Belgium) who provided capacity building and on-going support during Rhodoshop operation phase. The **total investment triggered** by Rhodoshop amounts to **€10,1M** in 46 municipal buildings (community centres, schools, nurseries, kindergartens, cultural buildings, etc..) and in 40 street lighting systems. The action was funded by the European Union programme Horizon 2020 through Project Development Assistance (PDA) and ran from 1 September 2017 till 31 August 2022.
- 🌱 During the 2<sup>nd</sup> stage<sup>24</sup> services for advice on home energy efficiency renovation were added to Rhodoshop's scope of advice. It was done under European Union Programme

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<sup>23</sup> More information: <https://rhodoshop.sec.bg/>

<sup>24</sup> More information: <https://www.h2020-upstairs.eu/>

Horizon 2020, UP-STAIRS Project where Rhodoshop acted a pilot region. The services provided were legal and organisational advice, advice on funding opportunities and application for funding, as well as advice on technical measures. During the 2<sup>nd</sup> phase more than 3000 people living in 64 buildings (both single-family and multi-family building) were advised on energy renovations of their homes resulting in more than €6M expected investments in energy efficiency measures. The action run from 1 September 2020 till 30 November 2023.

#### ❖ ASEN OSS

Another example of OSS for home renovation in Bulgaria is ASEN OSS established by Asenovgrad Municipality under the European Union Programme Horizon 2020, UP-STAIRS project where ASEN OSS acted as a pilot region. ASEN OSS provided legal and organisational advice, advice on funding opportunities and application for funding, advice on technical measures, support in energy auditor selection and selection of contractor for construction works as well as mediation and conflict solving services.

During the action more than 7000 people living in 69 multi-family buildings were advised on energy renovations of their homes resulting in more than €13.5M expected investments in energy efficiency measures. The action run from 1 September 2020 till 30 November 2023, but Asenovgrad Municipality have committed to provide ASEN OSS services for its citizens after the project end.

#### ❖ BACC – One-Stop-Shop for Integrated Services for Residential Buildings Energy Refurbishment in Sofia<sup>25</sup>

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<sup>25</sup> More information: [One stop shop - BACC | BULGARIAN-AUSTRIAN CONSULTING COMPANY](#)

### Integrated services for residential buildings energy efficiency renovation



Services offered: Consultations and services from start to completion: from support for taking an informed decision for building renovation to monitoring and reporting the energy savings results upon the renovation of the building.

- 🏠 Resolving issues of organisational and legal matter,
- 🏠 Expertise and recommendations,
- 🏠 Preliminary cost estimates,
- 🏠 Preparatory technical activities,
- 🏠 Consultations on access to credit and proposing measures to address the problem of socially vulnerable households,
- 🏠 Preparation and submission of an application for funding,
- 🏠 Consultations for selection of Construction Contractor, Construction Supervision / Consultant ,
- 🏠 Execution of construction and installation works for energy renovation.

### ❖ OSS at the Energy Agency of Plovdiv<sup>26</sup>

<sup>26</sup> More information: <https://www.eib.org/files/documents/169-project-factsheet-plovdiv-building-renovation.pdf>

Energy Agency Plovdiv (EAP) signed a contract with EIB ELENA facility to act as OSS for energy efficiency in residential and non-residential buildings. The planned Investment Programme aims to deliver deep energy efficiency retrofits in 25 public non-residential building and in 21 residential multi-family buildings. Energy efficiency measures will include the building envelope (insulation, window, and door replacement), building heating and hot water services (boilers, radiators, controls, meters) and where appropriate renewable energy systems (solar, heat pumps). EAP will provide one-stop-shop (OSS) services to municipalities and home-owner associations. This will include applying for government grants and securing additional finance from other sources. Public tenders for works will be launched as most of the investment will come from public funds. The action runs from December 2023 till November 2026 and expected investments as a result of the action are €38.5M.

## 4.2 Greece

### 4.2.1 Legal framework for home renovation OSSs

At a European level, the "Renovation Wave" strategy (October 2020) sets out a series of measures aiming to double the rate of energy renovations by 2030. The revision of the Directive on the Energy Performance of Buildings (EPBD) is a fundamental element of this strategy. It upgrades the existing regulatory framework to take into account higher ambitions and more urgent needs concerning climate and social action, while, in parallel, provides the necessary flexibility for Member States to consider the differences in the building stock throughout Europe.

In Greece (national level), the topic of the residencies / home energy renovation is addressed by the "National energy policy and strategy to meet the 2030 targets" (with the envisaged contribution of the building sector), as this has been incorporated in the "National Energy and Climate Plan" (NECP), which constitutes for the Greek Government the central Strategic Plan on Climate and Energy issues, while it also includes a detailed roadmap for achieving specific energy and climate targets by the year 2030. NECP takes into account the requirements of the EU plan for the green transition, i.e., the "Fit for 55" package, as well as those of the REPowerEU plan, which aims at making Europe independent of the fossil fuels inserted from Russia, well before the year 2030.

More specifically, the NECP highlights Greece's priorities and growth potential on the energy issues and the tackling of climate change, while the Greek government intends to use the NECP as the key tool for developing its national Energy and Climate policy for the following decade, taking into account the Commission's recommendations and the UN Sustainable Development Goals.

Making a special reference to buildings, the "Long-term Strategy for renovating the stock of public and private buildings and transforming it into a decarbonized and highly energy efficient stock of buildings by 2050, facilitating the cost-effective transformation of existing buildings into nearly zero energy buildings " (Article 2A of Law 4122/2013) foresees a specific set of policy measures for the improvement of the energy performance of both public and private buildings. This strategy was completed in March 2020, in accordance with the requirements of Directive 2018/844/EU. The purpose of this strategy is the techno-economic analysis and

the emergence of efficiently optimal measures to meet the high renovation rate of the building stock as this has been set. The financing programmes addressing the renovation of buildings in both the residential and tertiary sectors under the new programming period will be implemented by adapting and improving the existing financing model, aiming at increasing existing leverage levels by beneficiaries. In the case of public buildings, the redesign of the financing model for energy upgrade actions has been completed, while in the case of other buildings in the tertiary sector, emphasis will be placed on the adoption of new-smart technologies and focus will be given both on the achievement of an optimal cost-effectiveness and on the protection of equal access for interested parties. At the same time, alternative financing mechanisms would be adopted, such as Energy Performance Contracting (EPC).

The "Long-term Renovation Strategy for the Building Stock" was revised in line with the provisions of Directive (EU) 2024/1275 of the European Parliament and of the Council of 24 April 2024 on the energy performance of buildings, taking into account the increased building stock renovation target set with a view to the complete decarbonisation of buildings by the year 2050.

The policy measures included in the Strategy are appropriately designed to incorporate the provisions of Directive (EU) 2024/1275, such as, but not limited to, the obligation that all new residential and non-residential buildings must have zero on-site emissions from fossil fuels, from 1 January 2028 for public buildings and from 1 January 2030 for all other new buildings, with the possibility of specific exemptions. In addition, the imposition of minimum energy efficiency standards, the phasing out of fossil fuel boilers, the increase of energy from RES in buildings and the availability of infrastructure in buildings for the reception of RES are foreseen.

In the same context, One-Stop Shops can facilitate the implementation of energy efficiency improvement interventions in the building sector. Targeted actions will be launched to set up One-Stop Shops in each region providing support in all phases needed to decarbonize the building stock.

In the Table below the measures that led to building renovations with the corresponding resulting energy benefit, according to the Annual Report on the Achievement of National Energy Efficiency Targets dated 01.06.2020 (reference year 2018) are listed.

| Policy measures to save energy from building renovation     | Achieved final energy savings (ktoe) for the years 2014-2018 |
|-------------------------------------------------------------|--------------------------------------------------------------|
| Program "Saving at Home"                                    | 37                                                           |
| Program «Saving» for Local Government Organizations         | 6.75                                                         |
| Program «Saving II» for Local Government Organizations      | 0.69                                                         |
| Energy upgrading of residential buildings                   | 9.71                                                         |
| Issuance of EPC as a supporting measure                     | 25.27                                                        |
| Offsetting of arbitrary fines with energy works             | 9.88                                                         |
| Energy managers in public and wider public sector buildings | 4.81                                                         |

One of the key priorities of the NECP is the energy upgrade of 12-15% of buildings and/or building units in the decade 2021-2030 through targeted policy measures in the time horizon until year 2030. In this long-term time horizon and on the basis of the long-term strategy for the renovation of the public and private building stock, the development of a specific mechanism is foreseen to monitor, measure and evaluate the extent to which the objective has been achieved as well as the expected economic and social benefits for all policy actions in the field of energy efficiency.

In order to achieve the goal of renovating the building stock, both the maintenance of the measures that have been successfully implemented in the past, as well as the implementation of new ones deemed necessary, will be applied.

The most important regulatory and financial measures in this direction are the following:

- 🏠 **EPBR (Energy Performance of Building Regulation) revision:** the new minimum requirements are incorporated with the aim of increasing the number of Zero Energy Buildings (NZEBs).
- 🏠 **Upgrading the role of the Energy Manager of Public Buildings:** The electronic platform for monitoring the energy performance of buildings.

- 🏠 Implementation of an **energy management system** according to ISO 50001 in public buildings.
- 🏠 **“Electra” Program**: This program, which concerns the financing of energy efficiency interventions in buildings of General Government and Legal Entities of Public Law (NPDD), with the participation in the implementation of interventions of Energy Service Companies (ESCOs) through Energy Performance Contracts (EPCs), enhances the energy upgrade of public buildings by financing part of the investments through investment loans, which will be repaid by the program.
- 🏠 **Competitive procedures for energy saving**: provides financial support to technical interventions for energy saving in sectors with high potential, such as the industrial and tertiary sectors.

Moreover, the “National Recovery and Resilience Plan Greece 2.0”, approved by ECOFIN on 13 July 2021 and revised on 8 December 2023, includes a comprehensive and coherent set of reforms and investments structured in four (4) Packages of proposals that make up eighteen (18) individual Axes. In "Axis 1.2 - Energy upgrade of the country's building stock and spatial reform" of the "Green Transition" Package, a series of investments and reforms are described and analysed, including an extensive program of energy upgrading of homes, business buildings and public buildings and infrastructure.

Axis 1.2 includes reforms and investments that promote both the renovation and energy upgrading of buildings, the implementation of urban planning and the realization of strategic "green" regeneration. More specifically, by targeting buildings, the Axis includes investments aimed at renovating the existing building stock, including residential, commercial, industrial and public buildings, as well as social infrastructure, while promoting the new plan to tackle energy poverty. In particular, the "Exoikonomo" program, which is included in the Axis, will contribute to the achievement of up to 15% of the relevant target for the energy upgrade of homes (NECP). This Axis also includes the Action entitled "I save in the public sector", with a total budget of €200,000,000, which concerns the renovation and energy upgrade of infrastructure and buildings of the public and local government and the energy upgrade of street lighting, with the partnership of the private sector.

Also, within the framework of the "Exoikonomo-Aytonomo" Program, it is planned to strengthen the process of renovations in residences but also with the very significant expansion in apartment buildings, residential complexes and urban complexes.

In August 2024, a new revised version of the Greek National Energy and Climate Plan (NECP) was developed and, according to it, it is estimated that the annual renovation rate of residential buildings in the period 2025-2030 will reach the 68,000 renovations. Accordingly, in the period 2031-2040 the annual renovation rate will be reduced to 64,000 renovations, while a significant increase is expected to be achieved during the time period 2041-2050 reaching the 83,000 with the aim of achieving the decarbonization of the domestic sector.

A series of policy measures addressing the topic of the energy efficiency improvement, as these are included in the revised latest version of the Greek NCEP, are briefly described below:

-  **M4:** Financing programmes for the renovation of residential buildings, correlated to the Policy Priorities PP4.2, PP4.5, PP4.9 and PP4.11 and covering the target of the following Articles of Directive 2023/1791/EU: Article 4, Article 8, Article 5 and Article 6 (financing measure).
-  **M6:** Use of tax and urban planning incentives for the implementation of energy saving interventions in residential buildings and the tertiary sector (except for the public sector buildings), correlated to the Policy Priorities PP4.2 and PP4.9 and covering the target of the following Articles of Directive 2023/1791/EU: Article 4, Article 8, Article 5 and Article 6 (regulatory and financing measure).
-  **M8:** Replacement of old and energy-consuming electrical appliances with new, more energy efficient ones, correlated to the Policy Priorities PP4.5 and PP4.11 and covering the target of the following Articles of Directive 2023/1791/EU: Article 4 and Article 8 (financing measure).
-  **M15:** Development of an institutional framework for the repayment of energy saving investments through energy bills (on-bill financing), , correlated to the Policy Priorities PP4.3, PP4.5, PP4.9 and PP4.11, and covering the target of the following Articles of Directive 2023/1791/EU: Article 4, Article 8, Article 5 and Article 6 (regulatory measure).
-  **M26:** Establishment of One-Stop Shops (OSSs), correlated to the Policy Priorities PP4.2, PP4.5 and PP4.10, covering the target of the following Articles of Directive 2023/1791/EU: Article 4 and Article 8 (financing and information – awareness raising measure).

In the context of the key policy needs related to the development and implementation of NBRPs (National Building Renovation Plans), for the case of Greece, the main strengths and

innovative approaches include a detailed list of milestones for 2030, 2040 and 2050, supported by elaborated 2050 scenarios developed using the PRIMES Buildings Model (PRIMES-BuiMo).

A comprehensive set of policy measures is given, such as increasing the building coverage ratio in energy-efficient buildings and offsetting arbitrary fines for energy upgrades. Additionally, there is a new focus on financial measures, such as the National Energy Efficiency Fund, the Electra programme, and innovative financial models that blend different funding sources.

The tackling of energy poverty has also been planned. The Preparation of the **National Action Plan for the Alleviation of Energy Poverty** was decided through the Article 25 of the Law 4342/2015 (FEK A, 143/9.11.2015) and adopted and published in September 2021 through Ministerial Decision. The National Action plan deals with the Completion of Household Budget Survey, the Calculation of energy poor households in Greece, the determination of the characteristics of energy poor households and concludes with the design and implementation of policy measures. About 12% of Greek households were affected by energy poverty in 2020, while this percentage is expected to decrease to 7% in 2025 and to 3% in 2030 in accordance with NECP's target (approximately 420 thousand households).

The Monitoring mechanism designed to achieve this goal consists of 3 pillars of Policy Measures:

- 🏠 I. Protection of households
- 🏠 II. Development dimension - Financing measures for increasing the energy efficiency of the buildings and fostering the higher penetration of RES
- 🏠 III. Awareness and information measures

Nine detailed measures were developed under these 3 pillars, as shown in the following Table. According to the Action Plan, the "Save Energy at Home" program will be designed exclusively for energy vulnerable households starting from 2024 and on.

| Policy measures                                        | Number of energy poor households | Foreseen public aid |
|--------------------------------------------------------|----------------------------------|---------------------|
| M1. Improvement of the Social Tariff                   | 100,000                          | €40M annually       |
| M2. Provision of energy card to energy poor households | 100,000                          | €40M annually       |

|                                                                                                        |         |       |
|--------------------------------------------------------------------------------------------------------|---------|-------|
| M3. Regulatory measures for the protection of energy poor households                                   | 150,000 | €30M  |
| M4. Energy upgrade of the energy poor households' building including the installation of RES systems   | 120,000 | €1,8M |
| M5. Provision of incentives to energy poor households within the framework of the Just Transition Plan | 10,000  | €210M |
| M6. Provision of incentives to energy poor households within the framework of the EEOs                 | 100,000 | €70M  |
| M7. Provision of incentives to energy poor households within the framework of the Energy Communities   | 90,000  | €100M |
| M8. Conduction of measures within the framework of the EEOs                                            | 350,000 | -     |
| M9. Conduction of targeted measures centrally by the Ministry of Environment and Energy                | 100,000 | €10M  |

Furthermore, the **APOLLON program** (Law 5106/2024, Art. 103) involves Energy Communities in the battle against energy poverty. According to this programme, all the 13 Regional Authorities of Greece will establish a Citizens Energy Community (CEC), where the beneficiaries will participate as members. First, the study and dimensioning of the RES systems will be conducted in order to cover the energy needs of their members, then, the selection of RES systems to be installed will be done according to competitive procedures which will finally result to a contract between CEC and owners of RES systems. The APOLLON program aims at reducing the energy cost of municipalities and vulnerable households and will exploit the virtual net billing to cover the local energy needs.

Finally, the “**Observatory of Energy Poverty**” was created by the CRES in 2014 in order to inform both of the citizens and the decision-makers about the phenomenon of energy poverty in Greece. The objectives of this Observatory are:

- a) The Assessment of the energy poverty levels in Greece through the estimation of representative indicators and monitoring of its fluctuation over the years;
- b) The identification of the parameters, which affect and intensify the phenomenon of energy poverty;
- c) The Design and implementation of efficient policy measures for the alleviation of the energy poverty.

#### 4.2.2 Organisational and practical aspects of home renovation OSSs establishment and operation

In Greece the concept of the OSSs especially addressing the topic of the “home renovation” is not really established, i.e., in the form of a formal concept. Nevertheless, a pilot OSSs addressing the topic of the energy upgrade of residencies was established some years ago, as described analytically in the next section.

On the other hand, and according to the NECP, the policy measures suggested in the frame of the Action Plan for Combating Energy Poverty are categorized into three different dimensions, whereas a specific measure (M9) included in the “Information, training and coordination measures” (3<sup>rd</sup> Dimension) is addressing the topic of the ***One-Stop Shops establishment***.

This specific policy measure aims to establish One-Stop-Shops for the tackling of energy poverty more efficiently at local and regional level. In the implementation of this measure, the active participation of all parties involved and in particular local authorities will be sought both in the implementation of the services provided and in the identification of affected households.

The One-Stop Shops that will be established may provide indicatively in the first phase the following services:

- 🏠 Information and training to the affected households on the topic of energy poverty.
- 🏠 Support in understanding energy bills and advising on reducing energy bills and using energy more efficiently.

- 🏠 Raising awareness about the benefits of implementing energy efficiency improvement interventions and the use of RES.
- 🏠 Information on all the steps required for the implementation of energy efficiency improvement interventions and the use of RES.
- 🏠 Performing of a preliminary building analysis and quantification of the estimated renovation costs and expected impacts.
- 🏠 Information on available programmes for the tackling of energy poverty, as well support in the preparation of all necessary documents for the participation in existing projects.
- 🏠 Guidance for resolving disputes and asserting rights as consumers.
- 🏠 Conduction of collective orders and negotiations to achieve lower prices for the purchase of energy-efficient equipment.
- 🏠 Conclusion of voluntary agreements with associations of professional and productive bodies in order to centrally plan the required actions and maximize the benefit for affected households.

The ultimate goal of the One-Stop Shops will be to provide and implement integrated packages of interventions to improve energy efficiency in households affected by energy poverty with guaranteed funding and guaranteed financial and energy results.

#### 4.2.3 Stakeholders responsible for home renovation OSSs establishment and operation

In Greece, the organizations that seem to be the more competent in regard of the topic of the One Stop Shops are those of local (and regional) administration. As described in the previous sections, there is no solid prior experience in the country regarding the establishment and functioning of OSSs and especially these addressing the topic of home renovation.

Nevertheless, the persons working in the local (and regional) administration seem the most competent to staff the relevant OSSs. These persons are mainly the social workers who already possess an important experience in dealing with residents of houses and mainly with households affected by energy poverty, being in real need of proceeding with an energy efficient home renovation.

#### 4.2.4 Good practices for home renovation OSSs

As already mentioned above, an OSSs addressing the issue of home renovations was established in a pilot form, in the frame of the LIFE European project “REVERTER - Deep RENovation roadmaps to decrease households VulnERability To Energy poverty”. More specifically, a Digital One-stop-shop ([www.Energeiakistegi.gr](http://www.Energeiakistegi.gr)) was developed to ease access to information about the renovation of multi-apartment buildings in Athens, Greece. The platform “Energeiakistegi.gr” is operated by EKPIZO (Consumers’ Association “Quality of Life”). It allows residents of Athens to get comprehensive information about the renovation process, support schemes, and information campaigns.

The Digital Information Desk “energeiakistegi.gr” is a digital information office for the energy upgrade of homes in the Attica basin, which was created and operates under the REVERTER project which aims to help European Union citizens fight energy poverty and improve their quality of life and is co-funded by the European Union.

Within the framework of the REVERTER project, the scope of action of the Digital Information Office for the Energy Upgrade of Homes (“energeiakistegi.gr”) is the homes of vulnerable households in the Attica basin, however, EKPOIZO will provide advice to every resident of the area, who wants to upgrade their home energy.

## 4.3 Ireland

### 4.3.1 Legal framework for home renovation OSSs

Legal framework for home renovation OSSs –local laws and regulations governing the issue, like Energy Efficiency Law or other relevant legislation, the ways EU legislation was transposed, etc.

Irish Building Regulation sets the minimum standards for safety, health, and sustainability for all the building construction work including new built and renovation work. All the buildings and construction projects are legally bound to follow the regulation and penalties can be enforced in the event of non-compliance. The regulation is composed of 12 technical guides (From Part A to Part M). Each part concerns a specific section of construction and design standard of building for example - structure, fire safety, ventilation, energy efficiency, access to people with disability etc. The renovation work for example extensions, loft conversion, energy efficiency upgrades, structural alteration requires the work to be compliant with the regulation.

Apart from following the Irish Building Regulation, one may need to obtain planning permission for certain types of renovation project which may include building an extension which is more than 40m<sup>2</sup> or change of land use for example building an office in the home or using the residential building for business purposes. Generally making minor changes doesn't need to obtain planning permission. Not obtaining planning permission in the case where it is required, results in heavy penalties.

### 4.3.2 Organisational and practical aspects of home renovation OSSs establishment and operation

#### One Stop Shop Operational and Quality Requirements Guide

1. When registering as an OSS the company demonstrates that they have a Quality Management System in place to manage their business. This will help to ensure and demonstrate that the OSS has the ability to implement works to standards required for the home energy upgrade.
2. The OSS shall provide SEAI with their policies and procedures, these documents provide assurance the OSS can meet the required standards.

3. The OSS is required to operate a documented internal review of completed works to the requirements and standards set in the Domestic Technical Standards and Specification.
4. The One Stop Shop shall operate a Quality Management System which ensures that the home energy upgrade works carried out meet the requirements and expected quality standards of the scheme. This document describes the SEAI approach and template to support OSS on their journey to compliance.
5. The works of their contractors and sub-contractors, and this is described through their Quality Plan. The Quality Plan provides a means of relating specific requirements of the process, product, service, project, or contract, to work methods and practices. This Quality Plan can also provide the framework for meeting the requirements of the scheme.

#### [One Stop Shop \(OSS\) Registration Guidelines 2022](#)

OSSs need to be registered with SEAI, so that they can offer all the available SEAI grant schemes (For example, National Home Energy Upgrade Scheme) through OSS to the homeowners. There are pre-defined minimum eligibility criteria for registering as an OSS, which applicants must fulfil. These eligibility criteria are related to following –

1. Financial Probity and Business Standing
2. Organisational Capability and Technical Competence
3. Governance and Legal Requirements
4. Business Systems and IT Capability
5. Market Engagement
6. Skilled Workforce (direct or partnerships)
7. Quality Assurance
8. Obligated Party if relevant
9. Commitment as a partner and key stakeholder in national retrofit

Fulfilling the pre-qualification is the first step and then comes the application and strategic plan for assessment and agreement to get registered as an OSSs. Strategic plan is a “minimum 2 year forward focused plan outlining the applicant’s approach to home energy upgrades and describe its development and growth plans and how it will address market engagement including an area-based approach to engagement and achieving economies of scale.” The application form needs to provide information about (i) Vision and mission of the organisation, (ii) SWOT analysis and ongoing risk management approach, (iii) Long term goal and capacity and growth plan, (iv) Approach to service delivery and project management approach, (v) Approach to Quality Management System (QMS) including technical quality, (vi) Resources and (vii) Data security, storage and disaster recovery.

Application will be assessed and scored against each above listed sections and SEAI have defined the minimum score for each section to qualify as successful application.

#### 4.3.3 Stakeholders responsible for home renovation OSSs establishment and operation

- a. SEAI – Sustainable Energy Authority of Ireland (SEAI) is Ireland’s national sustainable energy authority, which works with householders, businesses, communities and government to create a cleaner energy future. SEAI is the nodal agency who approves the set up the OSSs and provides grants to the homeowners through OSSs.
- b. SEAI registered OSS contractors - SEAI’s one stop shop grants are only available through SEAI registered OSS contractors. The list of registered OSS contractors can be found in SEAI website - <https://www.seai.ie/find-grants-and-contractors/find-contractors/registered-one-stop-shops> .

#### 4.3.4 Good practices for home renovation OSSs

To setup and successfully run OSS in Ireland, certain profile of customer segment could be more interested in availing the services from OSSs for example, single family customer, owning the home for longer duration. Homeowners without a mortgage with higher income level and higher education level could be more interested in availing services from OSS. However, the Irish OSSs should not be specifically designed with only focus on such customer but other

segment of customers should also be considered. Apart from customer segments, offering guarantee on the quality of work with clear cost structure and estimated energy savings attract more customers.<sup>27</sup>

There are some learnings and recommendations drawn for setting up the OSS in the EU funded H2020 INNOVATE project –

1. It might take long after the launch of OSS to attract interest of homeowners to avail services of OSS.
2. Make a small and slow start, once interests and services has been established, then plan to upscale and expand the OSSs.
3. Have a detailed and long discussion with local stakeholders and homeowners.
4. Consider the geographical location, size and attractiveness of territory for setting up the OSSs.
5. Local suppliers might not be able to meet your quality criteria.
6. Offer innovative services to the citizens and homeowners.
7. Set up an online platform to improve the services and customer experience.
8. Setting up physical OSS, where people can walk in, would attract more customers.
9. Engaging with communication and marketing agencies to promote OSS could be beneficial to increase the reach of OSS.
10. Considering an alternative revenue source for OSS apart from service fee being charged to homeowners would make OSS more sustainable.

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<sup>27</sup> <https://sword.cit.ie/cgi/viewcontent.cgi?article=1062&context=ceri>

## 4.4 Poland

### 4.4.1 Legal framework for home renovation OSSs<sup>28</sup>

#### General

For the purposes of building energy calculations, Poland has been divided into five zones, in which the external design temperature ranges from -16 to -24 °C<sup>29</sup>. According to the Long-Term Building Renovation Strategy, as many as 70% of residential and public buildings in Poland are energy inefficient. The renovation scenario recommended by the document assumes widespread shallow thermal modernization with gradual spread of comprehensive building renovations.

Poland has not yet fully developed the idea of one-stop shops for home renovation. Reports from previous years<sup>30,31</sup> have not identified any complex OSSs operating in the country, that address the needs for counselling, coordination and implementation of building renovation. However, various initiatives are being developed at the level of public administration, local governments, or independent associations<sup>7,32,33</sup>. As stated in Poland's Long-Term Building Renovation Strategy, OSS services in Poland are mainly provided by property managers for owners of multifamily buildings. Widely available solutions for comprehensive energy efficiency consultancy and models for the implementation of OSSs involving central and local government, private buildings, and the business community are still lacking.

#### Long-Term Building Renovation Strategy

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<sup>28</sup> This section is based on:

- Annex to Cabinet Resolution No 23/2022 of 9 February 2022, Long-Term Building Renovation Strategy Supporting renovation of the national building stock, Warsaw, February 2022
- Ministry of Climate and Environment, Krajowy Plan w dziedzinie Energii i Klimatu do 2030 r. (aktualizacja KPEiK z 2019 r.), Warsaw, October 2024
- Ministry of Climate and Environment, Energy Policy of Poland until 2040, Warsaw 2021
- Ministry of Development Funds and Regional Policy, Poland's Recovery and Resilience Plan, Warsaw 2022

<sup>29</sup> "Strefy klimatyczne Polski". Strefa Klimatyzacji, 18 Jul. 2014, <https://strefaklimatyzacji.pl/baza-wiedzy/artykuly/strefy-klimatyczne-polski/>. Accessed 5 Nov. 2024.

<sup>30</sup> European Commission. Joint Research Centre. One-Stop Shops for Residential Building Energy Renovation in the EU: Analysis & Policy Recommendations. Publications Office, 2021. <https://data.europa.eu/doi/10.2760/245015>.

<sup>31</sup> W. Klembowski, J. Glusman, A. Sokulska. *Rekomendacje dotyczące optymalnego systemu one-stop-shop dla Polski*. Fala Renowacji, 2023.

<sup>32</sup> „OSS krk HubRenowacji – Strona główna”. OSS krk HUBRenowacji – termomodernizacja budynków, <https://mojarenowacja.pl/>. Accessed 5 Nov. 2024.

<sup>33</sup> J. Glusman. *Kluczowe wyzwania związane z wdrażaniem OSS w Polsce*. Fala Renowacji, 29 Jun. 2023.

On February 9, 2022, the Polish government adopted the Long-Term Building Renovation Strategy. The document implements Article 2a of Directive 2010/31/EU of the European Parliament and of the Council of May 19, 2010 on the energy performance of buildings. The one-stop shop formula (in Polish nomenclature *Kompleksowa Obsługa Inwestora* [Comprehensive Investor Service] – KOI) is listed in the Long-Term Building Renovation Strategy as one of the recommended approaches helping investors to undertake and complete building renovations.

Long-Term Building Renovation Strategy stresses the importance of adequate promotion of OSS services so that the people and entities to whom the service is directed (municipal residents, investors, building owners, etc..) can easily access suitable information.

OSS services are to be implemented on behalf of public institutions by intermediaries for building owners. The OSS formula is expected to be most suitable for the implementation of renovation of single-family houses. Such enterprises should be coordinated by local governments and OSS entities (public, private and mixed, such as property managers, energy agencies, energy auditors, business environment institutions, energy service companies [ESCOs]). These entities could offer OSS services independently or in cooperation with other types of organizations. Coordination of larger-scale projects (for example, regional ones) could be taken over by Energy Advisors of the National Fund for Environmental Protection and Water Management (*Narodowy Fundusz Ochrony Środowiska i Gospodarki Wodnej* – NFOŚiGW). In the longer term, the Long-Term Building Renovation Strategy notes the possibility of obtaining support from the European Commission and the European Investment Bank to provide OSS services at the national, regional and local levels.

Long-Term Building Renovation Strategy recommends piloting the OSS formula at the regional level, for example in one of the voivodeships. OSS services would be implemented through a network of collaborating Integrators (banks, NFOŚiGW, external experts, suppliers, designers, etc..). Such a project would help with standardization of OSS services.

It is very important for investments aimed at achieving long-term effects to ensure the reliability of the projects carried out. As a special form of OSS (or an alternative), the Long-Term Building Renovation Strategy proposes performing investments under an energy performance contract (EPC). This tool is intended to allow the highest possible energy savings, since the reimbursement depends on the reduction in the cost of energy consumed (following the execution of the investment). The Long-Term Building Renovation Strategy lists ESCO

(Energy Service Company), PPP (public-private partnership) and a hybrid model (PPP with EU funding) among the tools for maximizing energy outcomes.

According to the new EPBD (which came into force in April 2024), Poland should prepare a draft national building renovation plan by the end of 2025, and by the end of 2026 a final version of this document (which will replace the Long-Term Building Renovation Strategy). It should be expected that the document will take into account the requirement to create a technical assistance infrastructure, including one-stop shops for citizens, in order to improve the energy efficiency of buildings.

### **National energy and climate plan**

In October 2024, the Ministry of Climate and Environment submitted a draft update of the National Energy and Climate Plan (NECP) for public consultation. The document describes the assumptions and goals of Poland's climate policy to achieve climate neutrality in 2050. The plan consists of two scenarios: WEM (with existing measures) and WAM (with additional measures). Importantly, the version of the updated NECP analysed here is subject to change after public consultation.

The Polish NECP did not analyse the possibilities, opportunities and potential difficulties associated with the introduction and spread of the OSSs. There is no direct mention of the one-stop shop idea either in the main document or in any of the two attached scenarios (WEM and WAM). The NECP takes into account the need to improve the energy condition of buildings and mentions the need to build the right competencies among suppliers. The authors of the plan also draw attention to the need to prioritize renovation of the most energy-intensive buildings, but also those that enable the greatest possible economic benefits. The study also includes the aspect of combating energy poverty. The draft updated NECP plans to develop energy audits and energy management systems and mentions the development of energy efficiency consulting. It also announces support for enterprises operating under the ESCO formula. The document does not mention the OSS formula as a possible tool in this regard.

In another context, however, the NECP proposes to launch a special website that will provide a manual on investment processes. The issue here, however, is not building renovation, but investments in renewable energy sources. The website, under the name of the National Renewable Energy Contact Point (Krajowy Punkt Kontaktowy ds. OZE), is also supposed to offer individual assistance via a contact form. The service is to be addressed to prosumers and

non-professional entities (e.g., energy communities). The tool is implemented in the Polish legislation by the 2023 novelization of Renewable Energy Sources Act.

### **Energy Policy of Poland until 2040 and National Recovery Plan**

Energy Policy of Poland until 2040 (EPP2040) is another strategic document that shapes the future of Polish energy system. EPP2040 does not mention OSSs but presses the need to promote energy efficiency in buildings, including energy consulting at the local level. Similarly, the National Recovery Plan – while it talks about the need for renovation of many buildings to minimize the sector's environmental impact and reduce energy poverty, it does not cite OSS as a tool to achieve this goal.

### **Summary**

The only document that mentions OSS for home renovation in Poland is Long-Term Building Renovation Strategy. It underlines OSSs role in helping investors to undertake and complete building renovations. It also mentions an energy performance contract, ESCO and PPP among the tools for maximizing energy outcomes. It does not, however, set a goal to develop OSSs.

Other strategic documents (draft updated NECP, EPP2040 and National Recovery Plan) do not explicitly specify the role of OSSs, although they acknowledge the need to perform wide-ranging building renovation, address the problem of energy poverty and recognize the requirement build the right competencies among suppliers and investors. Documents that will be created in the future will most likely address the topic of OSS, due to the requirements of the new EPBD.

### **4.4.2 Organisational and practical aspects of home renovation OSSs establishment and operation**

Due to the low popularity of the OSS formula in Poland, the organizational and practical aspects of setting up and operating OSS for home renovation are not well recognized.

In the past, there have been some attempts to create the concept of a universal OSS system, but these have not already been translated into the creation of official structures. These attempts enabled identification of problems that hinder the creation of a commonly available OSSs for home renovation:

- ❏ Lack of a central coordination for the building energy transformation program,
- ❏ Lack of coordination between different entities,

- ❏ Lack of a generally accepted standard/model of reference for the data system, inability to link different databases,
- ❏ Insufficient regulations (in terms of public-private partnerships, ESCOs, dedicated financing tools),
- ❏ Lack of a satisfactory business model,
- ❏ Lack of certification of services and contractors,
- ❏ Lack of monitoring and reporting system.

The following are indicated as important operational aspects of a potential OSS network:

- ❏ Diversity of institutions conducting OSS according to common standards (public, commercial, non-profit institutions),
- ❏ Wide range of services tailored to individual needs (from consulting, to assisting during implementation, acceptance and settlement of investments),
- ❏ Free services for the poverty-stricken,
- ❏ Co-financing from public, private, ESCO funds,
- ❏ Modern IT tools with integrated databases.

#### 4.4.3 Stakeholders responsible for home renovation OSSs establishment and operation

The establishment and operation of OSSs require many involved parties. These include, of course, property owners and citizens, but specific representatives of this group have not been identified. The possibility of using OSSs should therefore be properly advertised and publicized. In terms of the formation of a suitable regulatory and financial environment for the emergence of OSSs for home renovation, it is necessary to involve central authorities (such as the Ministry of Climate and Environment, or the Ministry of Development and Technology) and local authorities (at the level of voivodeships and municipalities), as well as state entities responsible for the implementation of subsidy programs for renovation and RES investments. Also, necessary is the participation of educational centres that can take on the task of raising awareness among investors and contractors, as well as educating future personnel and conducting scientific research. The emergence of OSSs is not possible without contractors – entrepreneurs involved in energy audits, construction, supply of necessary materials and

technologies (e.g., insulation or HVAC). Effective outreach to contractors can be provided by industry associations and chambers of commerce. Consulting agencies, social welfare centres and research institutes should also become involved in OSSs – providing consulting services, reaching out to those most in need and enabling the use of new solutions and technologies. Industry media may also be interested in the initiative, which can help raise awareness and reach out to new investors. NGOs, foundations and opinion-making bodies can serve a similar function – influencing individual citizens and legislators.

#### 4.4.4 Good practices for home renovation OSSs

| Name                              | Location                         | Funding             | Stakeholders                                 | Subject matter                                                                               |
|-----------------------------------|----------------------------------|---------------------|----------------------------------------------|----------------------------------------------------------------------------------------------|
| Citizen Café<br>„Warm To See You” | Włocławek,<br>„Śródmieście Café” |                     | The city of Włocławek,<br>Fundacja Ładowarka | Daily free hot drinks for visitors.                                                          |
|                                   |                                  |                     |                                              | Access to legal advice, psychological support, and consultation on renewable energy funding. |
|                                   |                                  |                     |                                              | Expert sessions on energy-efficient appliances and sustainable practices.                    |
|                                   |                                  |                     |                                              | Opportunities to learn about funding conditions for changing heating sources in homes.       |
| Krakow Energy Advisory Center     | Kraków,<br>Rynek Podgórski 2     | Krakow city council | City of Cracow                               | Informing About Grant Programs.                                                              |
|                                   |                                  |                     |                                              | Educating on Legal Regulations.                                                              |
|                                   |                                  |                     |                                              | Promoting Renewable Energy Sources.                                                          |
|                                   |                                  |                     |                                              | Assisting residents with energy modernization strategies.                                    |
|                                   |                                  |                     |                                              | Advising on Heating Systems.                                                                 |
| Urban Lab & Urban Café            | Rzeszów;<br>„Urban Café”         | European nad        | Instytut Rozwoju                             | Lectures and discussions promoting education and knowledge exchange.                         |

|                                    |                                         |                |                                                                                                                                                                                         |                                                                                                                                              |
|------------------------------------|-----------------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
|                                    |                                         | national funds | Miast i Regionów                                                                                                                                                                        | Supporting the expansion of Gdynia's open data repository, helping to enhance access to data and stimulate innovation.                       |
|                                    |                                         |                |                                                                                                                                                                                         | DECIDIM platform, a tool for social consultations and participation.                                                                         |
|                                    |                                         |                |                                                                                                                                                                                         | "Pomysł na Miasto" Initiative, supporting residents in implementing their ideas to improve the city.                                         |
| Operators in "Clean Air" Programme | Województwo małopolskie, świętokrzyskie | European Funds | NFOŚiGW, NDE Sp. z o.o., Stowarzyszenie EkoMonterzy, EnergiaPlus Sp. z o.o., Stargel Sp. z o.o., Fundacja Pozytywni CO2, 23 municipalities in małopolskie and świętokrzyskie voivodship | Identifying potential beneficiaries of "Clean Air" Programme.                                                                                |
|                                    |                                         |                |                                                                                                                                                                                         | Introducing them to gains related to renovation of the heating system                                                                        |
|                                    |                                         |                |                                                                                                                                                                                         | Guiding investors through the entire process from grant application, implementation of the project, to the complete settlement of the grant. |
| Energy Advisory Project            | Poland                                  | European Funds | NFOŚiGW, 16 WFOŚiGW                                                                                                                                                                     | Free consultations, training, verification of energy audits, investment support, assistance in finding financing for the planned project.    |
| OSS krk HubRrenowacji              | Kraków                                  | Interreg BSR   | SPCleantech, SGiPM                                                                                                                                                                      | Analyzing the condition of the building and proposing appropriate renovation solutions.                                                      |
|                                    |                                         |                |                                                                                                                                                                                         | Organizing renovation services in one place.                                                                                                 |
|                                    |                                         |                |                                                                                                                                                                                         | Negotiating more favorable prices with contractors.                                                                                          |

## 4.5 Slovenia

### 4.5.1 Legal framework for home renovation OSSs

EU legislation from the “Clean energy for all Europeans” package has been transposed into the national legislation, which is currently still in use. The Directive of Energy performance of building (EPBD) (EU/2010/31) amended in 2018 with Directive (EU/2018/844) has been transposed into Energy efficiency act<sup>34</sup> (ZURE).

#### Energy Efficiency Act

The Energy Efficiency Act (ZURE) from 2020 defined inter alia the mechanisms to promote energy efficiency and energy efficiency and allocated the roles to the state (education, information and public awareness programmes to be done through the national energy advisory service ENSVET, promotion of energy audits, drafting of regulations, financial incentives, demonstration projects and other support programmes), to the local communities and to the Eco Fund (Eko sklad in Slovenian), whose responsibilities are financial incentives and managing the national advisory service ENSVET.

In the chapter on the information, awareness-raising, training ZURE act defined the

- Functions of the Support Centre<sup>35</sup> (the organization sets up information, awareness-raising and training programmes for different target groups on the benefits and practicalities of developing and applying energy efficiency and renewable energy technologies and is publishing information on energy efficiency and renewable energy sources for different groups of people on the internet).
- ENSVET energy advice (Energy efficiency advice is organised through a national network ENSVET of advisory offices organized in cooperation with the local communities. The network is organized and managed by Eco Fund in cooperation with the interested local communities<sup>36</sup>).

#### Act on Promotion of RES

<sup>34</sup> Zakon o učinkoviti rabi energije (ZURE), Uradni list RS, št. [158/20](#)

<sup>35</sup> Web portal on sustainable energy: <https://www.trajnostnaenergija.si/>

<sup>36</sup> Energy advisory network ENSVET: <https://www.ekosklad.si/prebivalstvo/ensvet>

The Renewable energy Directive (RES) (2009/28/EC) revised in 2018 (EU/2018/2001) has been transposed with Act on the Promotion of the Use of Renewable Energy Sources (ZSROVE)<sup>37</sup>. The act has foreseen the establishment of the “RES contact point” for relevant information on support measures for renewables for various stakeholders (consumers, builders, installers, architects, suppliers of RES technologies)<sup>38</sup>.

In parallel the process of transposition of “Fit for 55” EU legislation has started early in 2024.

The Ministry of the Environment, Climate and Energy has submitted a proposal for a new Energy Efficiency Act (ZURE-1) for public consultation. The purpose of the draft law is to transpose the provisions of Directives (EU/2023/1791) (EED) and (EU/2024/1275) (EPBD) into the Slovenian legal order.

#### Draft Energy Efficiency Act (2024)

The draft Energy Efficiency Act (ZURE-1) (in public consultation in Oct. 2024) sets out measures to promote energy efficiency, measures to increase energy efficiency and measures to improve the energy efficiency of buildings. It also sets out the competences of the bodies performing tasks under the Act and the implementation of the State's energy efficiency policy.

Several topics with an impact on energy efficiency and the energy performance of buildings are included in the framework of the ZURE -1 proposal. In particular, the ZURE-1 proposal transposes the following requirements from the recent EED and EPBD into national legislation:

The draft ZURE-1 transposes the requirements of Directive (EU/2023/1791) for higher energy efficiency targets, the Energy Performance Obligation Scheme, introduces a new "energy efficiency first" principle, imposes additional requirements for public sector renovation, introduces additional content on green public procurement and on the eco-design of energy-related products. The Bill also increases the annual energy savings obligation, introduces different requirements for energy audits, introduces specific obligations for data centres and extends the content related to **consumer empowerment and the protection of vulnerable consumers and energy poverty alleviation**. In addition, different and stricter energy efficiency requirements for district energy systems are being introduced.

Based on the content of Directive (EU/2024/1275), zero-emission buildings are introduced, national building renovation plans replace long-term building renovation strategies,

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<sup>37</sup> Zakon o spodbujanju rabe obnovljivih virov energije (ZSROVE), Uradni list RS, št. [121/21](#), [189/21](#) in [121/22](#) – ZUOKPOE

<sup>38</sup> <https://borzen.si/sl-si/tocka-ove>

obligations for the progressive energy renovation of buildings are transferred, additional requirements for on-site charging infrastructure are introduced, new requirements for energy performance certificates are introduced, and voluntary declarations on building renovation are introduced.

With respect to **One stop shop (OSS)** for energy efficiency and energy performance of buildings the draft ZURE-1 defines that:

- 🏠 The **Eco Fund shall carry out the tasks of a one-stop shop** for energy efficiency and energy efficiency of buildings. It shall provide comprehensive support in terms of advice and information to all households, with a particular focus on energy-poor households and the least energy efficient buildings, as well as companies and other stakeholders providing services energy renovation services.
- 🏠 Within the framework of the **Ensvet Advisory Network (ENSVET)**, the **Eco Fund provides on-the-ground support across Slovenia**, by its services at least on a regional basis, where each part of the network covers no more than 80,000 inhabitants. The advisory network should also take stronger account of areas where the average age of the building stock is above the national average, or in the light of the incentive policy on energy efficiency measures or the needs of citizens. Moreover, the link has to be established between the building renovation passports and energy performance certificates (class C and worse) so that **the households from worst performing buildings are invited to OSSs service**, where they shall receive more information on the renovation path.

#### Energy Poverty Action Plan

In 2023 Slovenia accepted a three-year Energy Poverty Action Plan, outlining measures to alleviate energy poverty and the means to implement them, in order to meet the targets for reducing the number of energy-poor households. Namely, almost 10% of households in Slovenia are below the poverty line and unable to afford a properly heated home. Households in the lowest income fifth spend almost 17% of their disposable income on energy costs, with the share increasing in recent years. Compared to other EU Member States, Slovenia has an above-average share of energy expenditure in total household consumption (5.2% compared to 4.1%). At the same time, Slovenia ranks among the countries with the highest share of the population that is in arrears with housing costs and/or living in energy inefficient housing, where damp, mould, draughts, etc. are present. Therefore, the mitigation of energy poverty

has been integrated already in strategic documents accepted in 2021, such as National energy and climate plan (NECP) for Slovenia and Long Term Renovation Strategy (LTRS). The 2030 target in Slovenia is to reduce energy poverty to between 3,8% and 4,6% households and to implement 3.500 RUE and RES investments in homes affected by energy poverty (based on successful program ZERO500<sup>39</sup> done by Eco Fund and ENSVET network). Information and advice support needed and offered to tackle the energy poverty so far are close to more recent requirement on establishing OSSs in 2024 EPBD revision.

### NCEP and LTRS

The current versions of the National energy and climate plan (NECP)<sup>40, 41</sup> for Slovenia and Long-term renovation strategy (LTRS)<sup>42, 43</sup> have been accepted in 2020 and 2021, respectively. Both documents address the policies and measures for increasing energy efficiency in building sector, most of them have already received the legal background in the above listed Slovenian legal acts, either they were implemented or will be revised in 2024 update of NECP and LTRS.

The Slovenian national LTRS (2021) contains indicative targets for 2050 and intermediate targets for 2030 and 2040. In terms of content, it addresses the vision, framework, targets, indicators, an overview of the building stock by different sectors (residential, non-residential, public), barriers and opportunities for the renovation of public buildings, cost-effective approaches for the renovation of public buildings, policies and measures, and financing for the implementation of measures.

The Slovenian building stock comprises 87.3million m<sup>2</sup> floor areas, of which 76 % belong to buildings built before 1990. Buildings are distinguished by function between residential (73%) and service sector buildings (27%).

The housing sector is separated into single and multi-dwelling buildings, with a total floor area of 63.7 million m<sup>2</sup>. Service sector buildings account for 23.4 million m<sup>2</sup> and are differentiated according to the intended use and ownership of public buildings and the private service sector. Public buildings account for 41 % of all in the services sector and comprise buildings for specific

<sup>39</sup> <https://zero500.ekosklad.si/>

<sup>40</sup> <https://www.energetika-portal.si/dokumenti/strateski-razvojni-dokumenti/nacionalni-energetski-in-podnebni-nacrt/dokumenti/>

<sup>41</sup> [https://energy.ec.europa.eu/topics/energy-strategy/national-energy-and-climate-plans-necps\\_en](https://energy.ec.europa.eu/topics/energy-strategy/national-energy-and-climate-plans-necps_en)

<sup>42</sup> "Dolgoročna strategija energetske prenove stavb do leta 2050" (DSEPS 2050), <https://www.energetika-portal.si/dokumenti/strateski-razvojni-dokumenti/dolgorocna-strategija-za-spodbujanje-nalozb-energetske-prenove-stavb/>

<sup>43</sup> [https://energy.ec.europa.eu/archived-pages/long-term-renovation-strategies\\_en](https://energy.ec.europa.eu/archived-pages/long-term-renovation-strategies_en)

social groups, public administration, culture and entertainment, museums and libraries, education and scientific research, healthcare and sport. Public buildings consist of narrower and wider public sector buildings as well as municipal buildings or local communities. Private service sector buildings are hotels, catering buildings, other administrative and office buildings and shops.

The objective of national LTRS is that by 2050 74 % of single-dwelling buildings and 91 % of multi-apartment buildings are energy renovated. The adequate ambitious targets are set for public (in particular 3% annual renovation obligation on buildings of central government) and private tertiary sector buildings.

The renovation of buildings is a long-term task that will gradually cover the entire building stock over the coming years, while having a major impact on the quality of the indoor environment. More than 75% of today's buildings are expected to still be in use by 2050. Increased investment in the renovation of individual buildings can be expected as new insights are gained into the inadequacy of building resilience in relation to the risk to human life, potential damage due to ageing of materials or disasters (earthquake, flood, avalanches, etc.) and, under normal scenario conditions, only approximately every 30 years (e.g. change of ownership, change of use, obsolescence and obsolescence).

The vision set out in the national LTRS is to significantly improve energy efficiency and reduce GHG emissions while increasing the use of renewable energy sources (RES) in buildings. The move towards net zero emissions in the buildings sector by 2050 will be achieved by maintaining a high level of energy retrofitting of buildings and by targeting heating towards RES technologies and district heating systems with RES. Renovations and new buildings will be encouraged to achieve near-zero lifetime emissions, while taking into account other aspects of the renovation (e.g. seismic and fire safety, indoor environmental quality). This will also significantly reduce emissions of other harmful substances into the air. The strategy also aims to make Slovenia a leading player in the field of sustainable construction and renovation of buildings. The national LTRS sets out a roadmap with actions and nationally defined indicators to measure progress towards the long-term goal of reducing greenhouse gas emissions in the European Union by 80-95% by 2050 compared to 1990. The implementation of these measures will ensure a highly energy efficient and decarbonised national building stock.

The following measures in households have been foreseen in existing 2021 version of the national LTRS:

ACTION G-1 Support scheme for energy efficiency in households for vulnerable population groups.

The measure covers financial incentives and support activities: Implementing the ZERO500 programme and supporting 500 households facing energy poverty and spending cohesion funds for this purpose until 2023 and further continued implementation of the ZERO500 in the period 2021-2027.

ACTION G-2 Financial incentives for energy efficiency and RES use in residential buildings.

The measure planned drawing up a financial plan to promote measures in households, including the identification of sources of financing, incentive mechanisms and measures to remove key barriers, and organizing the promotion and **provision of one-stop-shop assistance**.

ACTION G-3 Financing instruments for renovation in multi-family buildings.

The aim of the measure is to examine the possibility of reforming the legislation defining the level of consent required for borrowing against the reserve fund, or to consider the possibility of creating a special fund to enable and encourage the implementation of comprehensive energy or renovation projects in the sNES. The aim is also to regulate the legal basis for the energy contracting and energy services.

ACTION G-4 Mandatory sharing and accounting of heat costs in multi-family buildings

The aim of the measure is the revision of regulation in the domain.

ACTION G-5 Energy advisory network for citizens – ENSVET.

The measure addressed strengthening expert support for building owners in the planning of energy renovations of multi-apartment buildings as independent expert assistance in decisions to increase the energy efficiency of the building, training of independent energy advisors, reinforcement of the ENSVET network, extension to new municipalities, expanding of advisory activities.

ACTION G-6 Repayable funding schemes for energy efficiency in households: Eco Fund loans and incentives from other providers of green loans for the housing sector.

The measure focuses new financial instruments and first loss schemes, to cover losses from green credit providers.

ACTION G-7 Sharing incentives between owners and tenants in multiapartment buildings.

The measure aims to identify opportunities to establish an appropriate model for energy suppliers to finance energy renovations and pilot project. Is planned.

ACTION G-8 Establishment of a guarantee scheme.

The measure facilitates the possibility of creating a guarantee facility that would provide individual guarantees to borrowers or reserve funds on borrowing from the reserve fund.

ACTION G-9 Study on precise knowledge of the wider renovation of residential and non-residential buildings in Slovenia.

A shall provide the information on seismic risks to the building stock in Slovenia and prepare the basis for a financial incentive scheme for building cards (identification of building condition) and wider renovations (energy, seismic, fire...) for further integration of wider renovation in the legislation.

ACTION G-10 Building card

The measure aims at setting legal obligations on co-owners of multi-apartment buildings to obtain a building card. The components of this are as follows: Part 1: Analysis of energy efficiency Part 2: Fire safety analysis Part 3: Seismic risk analysis Part 4: List of recommended and required measures for a gradual wider renewal Part 5: Assessment of the condition of the building.

ACTION G-11 Establishment of a project office for the preparation of energy renovation projects for multi-apartment buildings.

The Project Office shall comprise the provision of adequate staff and financial conditions for the implementation of the tasks of supporting the preparation of energy renovation projects for multi-apartment buildings. The operation of the Project Office focuses on the preparation of energy renovation projects for residential buildings and **operates on a one-stop-shop basis** and as a platform between investors (owners), managers, refurbishment contractors, eco-funds, energy suppliers, ESCO-companies.

ACTION G-12 Pilot projects

Three pilot projects to test the performance of new financial instruments and new financing models for energy renovation in multi-apartment buildings. The pilot projects shall adequately address dispersed ownership, incentive sharing, sNES and broader building renovation.

It has to be noted that the new, 2024 version of the National energy and climate plan (NECP) for Slovenia is very far in the acceptance process<sup>44</sup>. There the measure

M19.5 “Financial incentives for energy efficiency and RES use in residential buildings” covers also the **“organization of the promotion and provision of assistance on a one-stop shop basis”**. The instrument will be further developed in the already drafted new LTRS.

#### 4.5.2 Organisational and practical aspects of home renovation OSSs establishment and operation

In Slovenia the basis for home renovation OSSs is given in the draft Energy Efficiency Act (ZURE-1). The OSSs shall be carried out by Eco Fund and based on the existing national Energy Advisory Network ENSVET. The focus is on home renovation, on households, residential buildings, on worst performing buildings and on tackling energy poverty. The link between ENSVET network and the local energy agencies is established, as the staff of the later have already been involved in ENSVET network activities. As the energy advisory of ENSVET network operate in 59 municipal offices, it has to be emphasized that the offices (premises, IT equipment, accessories and coverage of operational costs) are provided by the municipalities, moreover, the energy advisors are usually originating from the area and are involved in local activities on energy and climate efforts.

Currently, there are 49 active energy advisory operating part-time in the network. Due to the lack of human resources new experts are being recruited and trained.

The comprehensive services as planned in OSS will require much more personnel with various knowledge and skills beyond technical and economic aspects of RUE and RES based renovation.

The key for successful operation of either ENSVET energy advisory office or the future OSS is a successful cooperation with the local community and its stakeholders. – such as craftsmen,

<sup>44</sup> <https://www.energetika-portal.si/dokumenti/strateski-razvojni-dokumenti/nacionalni-energetski-in-podnebni-nacr-2024/sodelovanje-z-javnostjo/razgrnitev-koncni-nepn-posvetovanje-javnost/#c1886>

contractors, installers, technology suppliers, utilities, designers – architects and engineers, supervisors of the ongoing works, experts on administrative procedures, experts on financing (financial mechanisms), economists, legal advisors, building managers, heritage protection experts, commissioning and retro-commissioning experts, soft skills experts, social workers and other relevant professionals.

For the long-term sustainability of OSSs operation financial, legal, managerial, IT support, promotion and infrastructure has to be considered as well as motivation of the actors in the value chain has to be studied and clarified. The role of the state and local level shall be defined as well as the involvement of the private sector, financial institutions and professional organizations (chambers, VET organizations, construction industry).

OSSs will need professional support of sectorial professionals on building energy renovation to govern their operation in line with the LTRS plan in order to achieve the national targets on renovation of the (mostly residential) building stock. The mission of the OSSs will be not only to meet the energy efficiency and RES targets at renovation but to consider also other aspects of building essential requirements (seismic safety, fire, flood, IEQ, circularity and building sustainability).

A strong link shall be created between OSSs operation and the implementation of new instruments from the Renovation wave and Fit for 55 regulation, such as renovation plan, energy performance certificate, building renovation passport (renovation packages, step by step renovation and financing of the renovation), energy poverty programs and others what finally includes also monitoring of energy and CO<sub>2</sub> savings and promoting of the achieved impacts and best practice.

#### 4.5.3 Stakeholders responsible for home renovation OSSs establishment and operation

As per the draft Energy Efficiency Act (ZURE-1), in Slovenia the development and the operation of the One stop Shops is entrusted to Eco Fund that shall build OSSs on the existing experiences of the national energy advisory network ENSVET.

It may be envisaged that the future staff directly involved in OSSs will have to provide not only the technical expertise on energy efficiency and RES in buildings and the information of the (financial) incentives, but also other technical, architectural and spatial expertise, various legal, economic, social and promotional, communications and organizational skills.

#### 4.5.4 Good practices for home renovation OSSs

##### **Energy advisory network ENSVET**

In Slovenia Energy advisory network ENSVET was established in early 90-ties. In the following years a number of experts were trained in 2-3 weeks trainings (lectures, case studies, exams), in average up to 80 energy advisors were active and the network of energy advisory offices at a local level was expanding. The ENSVET network was managed by Building and Civil Engineering institute ZRMK in the period 1991-2016 and financed by the state on the annual basis. From 2016 on the ENSVET network was taken over by Eco Fund and is currently subject of transformation to OSSs. Between 7.000 to 10.000 advice sessions per year were done, free of charge for the end users. The clients were citizens, households and homeowners, more recently the operation was expanded also to small companies and municipalities.

##### **History of ENSVET network**

The ENSVET programme started in 1991 with the background activities for establishing the Energy Advisory Network (ENSVET) with support of the bilateral Slovenian-Austrian (Styrian) initiative. In this initiative the Slovene partner was Building and Civil Engineering institute ZRMK (GI ZRMK) from Ljubljana, the Austrian partner was Joanneum Research Institute from Graz. The programme was financed by Slovenian Government (Ministry of Energy) and by the Styrian Energy Agency.

Within this initiative the general scheme of organisation of the Energy Advisory Network in Slovene (ENSVET) was developed and the first generation of energy advisers was educated. In 1993 the first group of 6 energy advisory offices have been established.

During the following nine years of the ENSVET project, 24 energy advisory offices and 9 subsidiaries have been established following the municipal initiative and support. The Energy Advisory Network is now uniformly dispersed all over Slovenia, with average distance from the customer to the office not exceeding 20 km. The energy advisor can be easily approached, during the opening time of the office after prior telephone announcement. The advice is free of charge for the customer.

Energy advisers have part-time engagement in the project. 114 energy advisers were educated in 4 courses (in 90-ties) and the greater part of them continue active work in the project. They offered advises to the households with the aim to raise EE awareness, to promote and

stimulate implementation of energy efficient measures and the use of renewable energy sources. Also, they took part in education of new advisers, contributed to promotion of the ENSVET and energy efficiency, improving their knowledge and transferring new approaches in operational scheme of the project.

Besides direct energy advising some other results were achieved. The level of interest in energy efficient measures in general increased through different activities of the advisers such as lectures, articles, TV and radio emissions about the EE problems.

The Energy Advisory Network (ENSVET) in Slovenia had a status of the project with objectives and scope targeted to match the goals of the governmental Energy Advisory programme. The annual programme of the activities within the project was prepared by the government in cooperation with GI ZRMK. The programme included basic activities such as advising, promoting energy efficiency, education and training of energy advisers and supporting activities in connection to other governmental projects on energy efficiency at that time (like control of Eco Fund subsidies, granting subsidies, awareness raising campaign).

One of the preferential tasks within the ENSVET project was introduction of licenses for energy advisers in order to increase energy advisers' personal responsibility and increase the quality of his service. The licenses regulate all commitments and obligations between energy adviser, management of the network and the governmental bodies and so it represented a legal foundation for action in the cases of ethics violation (commercial independence of given advice) and others. Licenses were based on ENSVET's internal regulation concerning the way of acquiring the title of energy adviser, working responsibilities, commitments, rewards, etc.

#### Recent status of ENSVET

From 2016 on ENSVET network is operating under Eko Fund but using the same principles for quality control and quality assurance. All new advisers have to pass the training of 90 hours (3 trainings were organized 2016-2024) and exam, and they begin working under the supervision of experienced advisors. Energy efficiency Act (ZURE) defined the conditions for the status of energy advisor (education, license for EPC, successfully passed internal ENSVET training).

All the advice session are documented by the ad-hoc minutes of the session and by a written report (for the client and submitted to the management of the network). The reports are used for evidence of the work and quality control.

Existing advisors meet on annual professional upskilling events to learn about the novelties in technologies, legislation and financial incentives. Nowadays the advice is offered not only in person, but also on the fairs, on-line and in rare cases on-site. A lot of their effort is dedicated to energy poverty cases (under ZERO500 program of the Eco Fund).

More information on the current operation of energy advisory network ENSVET; <https://ekosklad.si/prebivalstvo/ensvet>

### **Other good practice in Slovenia for home renovation OSSs**

Three Slovenian municipalities (Ljubljana, Kranj, Velenje) joined the EIT\_Climate KIC Horizon 2020 project NetZeroCities and were selected in Mission 100 zero carbon cities<sup>45</sup>. NetZeroCities supports Europe and in particular European cities to drastically cut down greenhouse gas emissions through climate action to achieve 'climate neutrality', one of the biggest challenges our societies face today. The cities established municipal pilot projects for decarbonization in the frame of the UP-SCALE<sup>46, 47, 48</sup> project. The UP-SCALE pilot projects in Kranj, Ljubljana and Velenje are paving the way for innovative approaches to urban decarbonization. One of the activities relevant for OSSs development was: Establishing one-stop shops for citizens in all three cities. In the Municipality of Kranj with the digital platform and the MaaS app, in the Municipality of Velenje with the Energy and Climate Office and in the Municipality of Ljubljana with the Innovation Hub - Info Point Ljubljana on the road to carbon neutrality.

The city of Ljubljana organized (under HORIZON 2020 Savethehomes<sup>49, 50</sup> project, 2020-2023) a municipal climate contact point<sup>51</sup>, linked it with ENSVET energy advisory service and thus enriched the current energy advisory offer along with the "renovation journey" .

Currently, the activities are on-going to link these offices with ENSVET offices into first OSSs in Slovenia as a part of LIFE Renov-AID<sup>52</sup> project (2024-2027). The project builds on previous

<sup>45</sup> <https://netzerocities.eu/2023/06/02/stronger-together-multi-city-pilot-cities-teaming-up/>

<sup>46</sup> <https://www.ljubljana.si/sl/moja-ljubljana/evropska-sredstva-za-ljubljano/projekt-up-scale/>

<sup>47</sup> <https://www.velenje.si/projects/up-scale/>

<sup>48</sup> <https://www.kranj.si/projekt-up-scale>

<sup>49</sup> <https://build-up.ec.europa.eu/en/resources-and-tools/links/save-homes-project>

<sup>50</sup> <https://savethehomes.info/>

<sup>51</sup> <https://www.ljubljana.si/sl/aktualno/informacijska-tocka-ljubljane-na-poti-do-ogljicne-nevtralnosti/>

<sup>52</sup> <https://webgate.ec.europa.eu/life/publicWebsite/project/LIFE23-CET-Renov-AID-101166917/renovation-enhancement-network-towards-optimized-vitality-and-adaptation-integration-in-dwellings>

experience of the ENSVET network and the above projects and on the expertise of the partners working on the good practice projects mentioned in this report.

## 4.6 Ukraine

### 4.6.1 Legal framework for home renovation OSSs

#### Main regulatory documents

- 🏠 Law of Ukraine "On Energy Efficiency"
- 🏠 Law of Ukraine "On Energy Efficiency of Buildings" (edition of 06/30/2024)
- 🏠 DBN V.2.6-31:2021 "Thermal Insulation and Energy Efficiency of Buildings"

#### Separate issues are regulated by the following documents

- 🏠 DSTU NB V.1.1-27:2010 Building climatology (Beginning and end of the heating period)
- 🏠 DSTU 9190:2022 "Energy efficiency of buildings" (Algorithm for calculating the energy efficiency class)
- 🏠 DSTU 8855:2019 Buildings and structures. Determination of the class of consequences (liability)
- 🏠 DBN V.2.5-67 "Heating, ventilation and air conditioning"
- 🏠 DBN V.2.6-33:2018 Construction of external walls with facade thermal insulation (Rules for facade insulation depending on the purpose of the building)
- 🏠 DSTU 9191:2022 "Methods for selecting thermal insulation material for building insulation" (Determination of heat transfer resistance Selection of insulation thickness Thermophysical characteristics of building materials)
- 🏠 DBN V.2.5-28:2018 Natural and artificial lighting

#### Special DBN

- 🏠 DBN V.2.2-4:2018 Buildings and structures. Preschool education institutions (with amendment No. 1)
- 🏠 DBN V.2.2-3:2018 Buildings and structures. Educational institutions (with amendment No. 1)
- 🏠 DBN V.2.2-10-2022. Buildings and structures. Healthcare institutions.
- 🏠 DBN V.2.2-15:2019 Buildings and structures. Residential buildings. Basic provisions (3rd edition dated 09/25/2023)

- 🏠 DBN V.2.2-9:2018 Public buildings and structures. Basic provisions (with amendment No. 1)

Documents harmonized with and EU standards

- 🏠 DSTU B EN ISO 10077-1:2022 Thermal properties of windows, doors and blinds.
- 🏠 Calculation of heat transfer coefficient. Part 1. General conditions (EN ISO 10077-1:2017)

#### 4.6.2 Organisational and practical aspects of home renovation OSSs establishment and operation

There is no experience with establishment and operation of OSSs for home energy renovation and BUSHROSSs activities are the first of its kind in Ukraine, which makes it of crucial importance for the future reconstruction of the country from the huge damages of the Russian aggression. The available expertise is limited to the energy efficiency measures and is related to the activities of the Energy Efficiency Fund of Ukraine, as follows:

- 1) **"Energodim"** — a program for energy modernization of apartment buildings.

Conducting an energy audit, updating internal heating and water systems helps to choose an individual set of energy efficiency measures for a particular building, and the Fund reimburses up to 70% of the costs of thermal modernization.

The "Energodim" program is financed by the State Budget of Ukraine, financial support from the EU and the German government. The International Finance Corporation (IFC) administers the funds of the Multi-Donor Trust Fund (MDTF). The German Society for International Cooperation — the German Development Agency (GIZ) provides expert advice and technical support to the Fund.

After the start of the full-scale Russian invasion of Ukraine, the "Energodim" program was adapted to wartime conditions and is now operating in a simplified version.

<https://eefund.org.ua/energodim/>

- 2) **"VidnovyDIM"** is a program aimed at financing construction work to restore residential buildings of associations of co-owners of apartment buildings (OSBB) damaged as a result of the military aggression of the Russian Federation against Ukraine. The program was launched in November 2022 and is implemented with the support of the EU in partnership with IFC.

Under the terms of this Program, the Fund provides Program participants with a grant on a free and non-refundable basis in the amount of 100% of the cost of materials and works. The grant funds are paid as follows:

- the first tranche of the grant — 70% of the cost of materials and works — the OSBB receives in advance, after joining the grant agreement.
- the second tranche — 30% is paid after the completion of the works.

Today, the Energy Efficiency Fund has about 700 projects under the "VidnovyDIM" Program, 570 projects have already been fully or partially completed.

<https://eefund.org.ua/recovery/>

3) **"GreenDIM"** program was initiated by the Fund to increase the share of renewable energy in domestic electricity and heat generation systems, as well as to implement measures to improve energy efficiency and energy security in the residential sector. The Program reimburses the installation of solar power plants and heat pumps and related equipment. The Fund does not provide financing for the costs associated with the performance of any types of work (services), but only for the purchase of necessary equipment and conducting an energy audit, which are defined as Eligible Measures under this Program.

<https://eefund.org.ua/greendim/>

#### 4.6.3 Stakeholders responsible for home renovation OSSs establishment and operation

As there is no experience in establishment and operation of OSSs for home energy renovation in Ukraine, there are no responsible stakeholders yet. In view of future OSSs initiatives, the potential stakeholders to be involved are as follows:

- 🏠 Municipalities and municipal associations;
- 🏠 National and local energy agencies/centres;
- 🏠 Responsible ministries;
- 🏠 Associations of co-owners of apartment buildings (HOA), established and operating in accordance with the Law of Ukraine "On Associations of Co-owners of Apartment Buildings" dated November 29, 2001 No. 2866-III
- 🏠 Housing and Construction Cooperatives (HCCs), established in accordance with the Law of Ukraine "On Cooperation" dated July 10, 2003 No. 1087-IV, which represent co-owners of apartment buildings in which they operate

#### 4.6.4 Good practices for home renovation OSSs

As there is no experience in establishment and operation of OSSs for home energy renovation in Ukraine, the only expertise available is related to the energy refurbishments of homes, as follows:

➤ ***under the “Energodim” program***

a) HOA “Vulyk-21” (Zhytomyr city)

Residents of a 6-entrance building, which is over 27 years old, successfully completed a comprehensive modernization under package B of the “Energodim” Program of the Energy Efficiency Fund.

As part of the modernization, the following measures were implemented:

- 🏠 Thermal insulation of pipelines of the internal heat supply system in unheated premises
- 🏠 Hydraulic balancing of the heating system
- 🏠 Facade insulation
- 🏠 Replacement of external doors and arrangement of external entrance vestibules
- 🏠 Replacement of windows and balcony doors in MZK
- 🏠 Replacement of windows and balcony doors in apartments

The result of the work carried out was the achievement of thermal energy savings of almost 50%.

b) HOA “ Blue House-43” (Lutsk town), which unites 144 families, has modernized its almost forty-year-old multi-storey building under the Energodim Program of the Energy Efficiency Fund.

As a result, the co-owners of this building have comfortable living conditions and save about 50% of energy resources, and accordingly significantly reduced the amount of utility bills. In particular, under the project within the framework of the Energodim Program, the following works were performed in this building:

- 🏠 installation of an individual heat point (ITP);
- 🏠 replacement and thermal insulation of pipelines of the internal heat supply system, hot water supply in unheated premises;

- hydraulic balancing of the heating system by installing automatic (balancing) valves;
- a set of works on thermal insulation and arrangement of external walls, heated and unheated attics (technical floors) and roofs;
- replacement of external doors and arrangement of external entrance vestibules;
- replacement of window and balcony door blocks in the premises (places) of common use of the building and in apartments, insulation and glazing of existing balconies and loggias;
- replacement and thermal insulation of heating system pipelines and water heating system devices in apartments
- installation of automatic air temperature regulators in rooms on heating devices of the water heating system in apartments and in premises (places) of common use of the building.

➤ ***under the "VidnovyDIM" program***

a. "Bucha-Kvartal", a co-owners' association of apartment buildings in Bucha, took advantage of the "VidnovyDIM" program and restored two of its buildings that were damaged as a result of Russia's military aggression against Ukraine. In particular, under the "VidnovyDIM" program, the HOA "Bucha-Kvartal" performed the following work in two buildings, which are home to 235 families:

- repair of damage to the building's facades (in addition to emergency work to restore the load-bearing capacity of wall structures);
- restoration of the destroyed engineering systems of the apartment building: heating, cold and hot water supply, sewage, gas supply, electrical networks.

b. HOA TERRA NOVA 5 (Irpin town) is one of over 70 associations in the Kyiv region that have fully completed the renovation of their houses under the VidnovyDIM Program. After the project was implemented, 47 households have the opportunity to live in their homes in comfortable conditions. Damage to the facades of the building was repaired in the TERRA NOVA 5, and damaged translucent enclosing structures (windows, balconies) and exterior doors were replaced.

➤ ***under the "GreenDIM" program***

a. The Odessa HOA “Zadiak” recently completed the installation of a solar power plant to provide general building needs: the operation of elevators, lighting, water and heat pumps, video surveillance systems and intercoms.

The co-owners of the 12-story building installed an inverter with a total capacity of 30 kW, solar panels that generate 25 kW of solar energy and batteries that accumulate over 30 kW.

Now residents can be sure that blackouts will no longer be able to stop the critical systems of their home.

<https://eefund.org.ua/category/istoriyi-uspihu/>