



D4.5 EPCs as facilitators of one-stop shops

Task 4.4 EPCs and one-stop shops

WP4 Increasing the value of EPCs

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EXECUTIVE SUMMARY

This report is the result of work performed in Task 4.4 EPCs and one-stop shops. It examines how EPCs and related products (databases, energy audits, building logbooks, BRPs, and others) can be integrated into the current national and regional one-stop shops of crossCert partner countries to assist building owners with the process of building's energy rehabilitation.

The report contains detailed information about one-stop shops that are developed and operating in the crossCert participating countries, either now or in the near future. This has served as a starting point for research and analysis to ascertain how future EPCs might support presently running one-stop shops in the participating countries. The goal is to expedite the design and implementation of building upgrades in order to engage building owners and increase the rate at which existing buildings are renovated.

Based on the initial analysis of the existing one-stop shops in crossCert partner countries, together with analysis of the existing EPC scheme, recommendations and guidelines are provided for a seamless integration.

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1 Introduction

One-Stop Shops (OSS) for renovation, also known as Integrated Home Renovation Services (IHRS), are vital players in increasing energy efficiency and sustainable renovations. They simplify information access, remove obstacles, and offer essential assistance for carrying out energy and sustainable renovations.

The goal of connecting next-generation Energy Performance Certificates (EPCs) to one-stop shops is to improve building energy management in a variety of ways. The main objective is to develop a dynamic and all-encompassing system that surpasses the typical EPCs' traditional static assessment.

Energy Performance of the Building Directive (EPBD)

The establishment and operation of technical support facilities, including one-stop shops, is mandated by the EPBD for Member States. When it makes sense, private parties can participate in the establishment of one-stop shops. Guidelines for the establishment of one-stop shops will be provided by the Commission in partnership with the EED in order to "encourage cooperation among public bodies, energy agencies, and community-led initiatives" and to "create a harmonised approach" within the EU. Member States are required to report within their National Building Renovation Plans (NBRP) on the measures implemented to establish one-stop shops. They may also report on the total number of one-stop shops.

A minimum of one one-stop shops should be located in each region and for every 80,000 people. In general, one-stop shops will focus on three types of audiences: 1) households owners and public players; 2) private actors; and 3) private enterprises; these include financial and economic organisations, including Small and Medium Size Enterprises (SMEs). Through targeted services, vulnerable and low-income households as well as those impacted by energy poverty should receive special attention.

At every stage of renovation projects, technical assistance facilities should offer comprehensive support, impartial advice, and streamlined information regarding the energy performance of buildings. This support should cover both technical and financial solutions, with an emphasis on the buildings that perform the worst and take into account various housing typologies. Additional potential objectives are as follows: (1) supporting "integrated district renovation programmes" and (2) offering incentives and funding to support training and education, with a focus on SMEs.

One-stop shops are given increased prominence in the EPBD as important information and advising resources for renovations with the introduction of a specific article on them. It also establishes connections between one-stop shops and other resources like renovation passports and EPCs, acknowledging the critical role they play in assisting the implementation of other regulations like Minimum Energy Performance Standards (MEPS). One-stop shop usage should increase as a result of these discovered synergies. The website links of relevant one-stop shops are an obligatory component of both renovation passports and EPCs. Building owners will be welcomed to a one-stop shop where they can obtain renovation guidance if their issued EPC is lower than class "C."

2 One-stop shops in general

2.1 Description of a one-stop shop

One-stop shops (OSS) are consulting facilities who cover all or most of the renovation value chain. They can be connected to the industry-developed and run by private companies or chambers, developed and run by the government, or both. Their specific offering may vary, but some of the elements are as follows:

- raising general awareness,
- evaluating energy performance,
- organising the renovation project,
- providing technical assistance or even implementation,
- structuring and supplying financial support (typically from a third party) and
- tracking savings (post-work monitoring).

Working with OSSs has several advantages, primary among them being the removal of numerous obstacles in the way of renovating residential buildings. One way that the OSS serves homeowners is by serving as a facilitator, consolidating the disparate offers from renovation suppliers – such as designers, installers, and financiers – into a single offer. Simultaneously, an OSS supports the supply side of building renovation by mediating with prospective clients through methods including structuring offer packages, pooling projects, organising the project, and so forth. The execution of locally created initiatives and solid and reliable collaborations between homeowners, local players (such as SMEs, financial institutions, energy agencies, and even local governments) can be facilitated by OSSs.

OSSs occasionally provide final users with a variety of financing options as one of their offerings. Additionally, a large number of them formed alliances with banks, particularly neighbourhood banks. According to a recent Joint Research Center survey, 15 out of 60 OSS include funding as a feature of their services. This implies that they evaluate the house's technical viability and renovation options, and they provide recommendations for the sources that will be most cost-effectively employed to pay for the work. An overview of the funding sources and their combinations that are relevant locally can be found on the OSS.

OSSs play a crucial role because of their capacity to provide complete solutions, assisting homeowners with every step of the renovation process and getting appropriate financing options. While all energy efficiency projects have potential, OSSs are especially well-suited to address the supply and demand sides of the market fragmentation barrier by providing comprehensive, whole-value-chain renovation solutions for residential buildings, especially single-family homes.

OSSs provide advantages that extend beyond encouraging building upgrades. Because OSSs are usually locally rooted, they can also help create a healthy community culture by supporting neighbourhood-wide projects, assisting present building tenants in bettering their living conditions, and addressing energy poverty.

As a conclusion, one-stop shops for home renovation:

- are locally entrenched, knowledgeable about the local market, local clientele, and local conditions,
- have a communicative relationship with the clients,
- can follow-up on finished projects, carry out stepwise renovation,
- accelerate building refurbishments by informing, motivating, as well as by assisting building owners to follow through energy efficiency investments, by providing support from the start to the end,

- facilitate interested, but not yet committed energy users/asset owners to actually implement an energy saving measures or other sustainable projects,
- facilitate access to financing and occasionally offer better interest rate,
- potentially improve the average renovation depth in terms of energy performance through the holistic approach,
- (some) reach out to vulnerable populations, such as tenants of social houses,
- can aggregate projects.

2.2 The main benefits of connecting one-stop shops with next-generation EPCs

The following are the main benefits of connecting one-stop shops with next-generation Energy Performance Certificates (EPCs):

- Enhanced user experience: One-stop shops offer building owners a centralised platform where they can obtain all the information and services they need to make improvements to their energy performance. As a result, the procedure is more effective and user-friendly.
- Better contact: By enabling more effective contact between specialists and building owners, these platforms guarantee that the guidance and services offered are customised to meet the unique requirements of each building.
- Increased uptake of recommendations: One-stop shops encourage more building owners to implement energy efficiency improvements by streamlining the process and offering specific, doable recommendations.
- Quality control: By combining one-stop shops with next-generation EPCs, it is possible to guarantee the accuracy and dependability of the information offered, which raises public confidence in EPCs.
- Data integration: By integrating these platforms with additional digital tools like smart readiness indicators and building logbooks, a building's energy performance and possible changes may be seen in their entirety.
- Policy support: By offering useful information and insights into the efficacy of energy performance metrics, one-stop shops can assist policymakers in creating future laws and regulations.
- OSS can facilitate or even issue the EPCs.

Together, these objectives seek to increase the effectiveness, dependability, and accessibility of energy performance improvements for all parties concerned.

2.3 The main challenges in linking EPCs with one-stop shops

There are various obstacles when attempting to connect Energy Performance Certificates (EPCs) with one-stop shops offering renovation services:

- Data security and privacy: Sensitive data, such as energy usage and building owners' personal information, are linked and exchanged throughout integration. It is imperative to guarantee adherence to data protection standards and to establish safe procedures for both data transfer and storage.

- **Data integration:** It can be technically challenging to guarantee the correct and seamless integration of EPC data into one-stop shop platforms. Strong IT infrastructure and data management procedures are needed for this.
- **Timeliness of data:** Real-time updates are necessary for data to have meaningful benefits. It is imperative to make sure that data, especially on EPCs and financing mechanisms, is consistently entered and updated.
- **Knowledge and trust:** A lot of companies and homeowners might not know about the advantages of Energy Performance Certificates (EPCs) or they might not trust the data they get. Establishing awareness and trust is essential to one-stop shop success.
- **Regulatory obstacles:** The laws governing energy-efficient measures and EPCs differ throughout countries. Regulatory landscape navigation can be difficult for one-stop shops that operate in several different regions.
- **Financial restrictions:** Property owners may be discouraged from using one-stop shop services by the high upfront costs associated with energy efficiency upgrades. It's critical to locate efficient financing options.
- **Technical expertise:** It takes a high degree of technical expertise to give precise and thorough guidance. One-stop shops must make sure their employees are qualified to provide trustworthy advice.
- **Industry fragmentation:** There are numerous small businesses providing a variety of services in the energy efficiency industry, which is frequently fragmented. It can be challenging to coordinate these services under one-stop shops.
- **Legality conflicts:** EPCs are not taking into account legal issues and may have differences when are integrated with services that require all legal issues solved.

Governments, corporate sector players, and the communities they serve must work together to address these issues.

3 One-stop shops in partner countries

Investigating current one-stop shops is necessary before evaluating how ready next-generation EPC systems are to be connected to them, particularly in terms of digital availability and database interoperability. A survey was conducted among the crossCert partner countries for this objective. The following overview highlights the diversity of approaches across the partner countries.

3.1 Overview of one-stop shops in crossCert partner countries

This section gives an overview of one-stop shops in the crossCert partner countries.

Table 1: The overview of one-stop shops for each of the crossCert partner countries

	Name	Link to digital OSS	Coverage
Austria	Hauskunft	https://www.hauskunft-wien.at/	Vienna, Austria
	Klimaaktiv	https://www.salzburg.gv.at/themen/energie/energieberatung	Salzburg, Austria
	SUNShINE platform	https://staging-sunshine.stageai.tech https://sunshine.stageai.tech	Austria
Bulgaria	Rhodoshop Programme Development Unit	No link	11 member municipalities from Rhodope region (Smolyan, Kardzhali, Banite, Borino, Bratsigovo, Chepelare, Devin, Dospat, Madan, Nedelino, and Rodopi), located in four administrative districts of Bulgaria
	ASEN OSS	No link	Asenovgrad, Bulgaria
	PadovaFIT Expanded	No link	Smolyan and Vidin, Bulgaria

	Name	Link to digital OSS	Coverage
	SHEERenov & SHEERenov+	No link yet	Sofia, Plovdiv, Gabrovo, Stara Zagora, Burgas and Ruse, Bulgaria
	REVERTER OSS	https://reverter-brezovo.bg/	Brezovo, Bulgaria
	SUNShINE platform	https://staging-sunshine.stageai.tech https://sunshine.stageai.tech	Bulgaria
Croatia	crOss renoHome	No link yet	Zagreb and Križevci, Croatia
Denmark	Frederikshavn OSS	No link	Frederikshavn Municipality
	CLEAN Green Business Growth	No link	4 cities
	BedreBolig (BB) (Better Homes) initiative	https://sparenergi.dk/privat/velkommen-til-bedrebolig	Denmark
	ProjektLavenergi	No link	South Demark, mainly Kolding
	ProjectZero/ Zerohome Program	https://projectzero.dk/en/	Sonderborg city
	SparEnergi	https://old.sparenergi.dk/forbruger/spar-energi-i-dit-hus	Denmark
Greece	Energy Hub for All	https://www.energyhubforall.eu/	Greece
	REVERTER OSS	https://energeiakistegi.gr/	Athens Urban Area, Greece
Poland	EEFFRB	No link	Poland
	SUNShINE platform	https://staging-sunshine.stageai.tech https://sunshine.stageai.tech	Poland
Slovenia	ENSVET	No link	Slovenia
Spain	Opengela	https://opengela.eus/en	Otxarkoaga (Bilbao) and Txonta (Eibar), Spain

	Name	Link to digital OSS	Coverage
	SiRE	https://reformenerr.com/	Madrid, Spain
	OSIR/OSS-Ex	No link	Badajoz, (Extremadura), Spain
	GiDomus	No link	Girona, Spain
	ENERHAT	http://enersi.es/en/enerhat	Catalonia, Spain
	Solutions4Renovation	https://www.solutions4renovation.eu/es	Spain
	RenovEU	https://renoveu.five.es/#/Welcome	Valencia, Spain
	HORIS	No link yet	Spain
United Kingdom	Retrofit Works	https://retrofitworks.co.uk/	London – Ecofurb programme Sussex – Warmer Sussex programme
	Ecofurb	https://www.ecofurb.com/	London city
	ALLenergy's Affordable Warmth Service	No link	Argyll & Bute region, Scotland
	Tighean Innse Gall	https://tighean.co.uk/	Western Isles
	Renovation Underwriting	https://www.renovationunderwriting.com/	The UK
	Energiesprong UK	https://energiesprong.org/	The UK

3.1.1 One-stop shops in Austria

Hauskunft (RenoBooster project)

The [RenoBooster](#) project, led by the City of Vienna, aims to increase the overall renovation rate of private housing in Vienna in order to contribute to the achievement of climate targets. The main objective of the RenoBooster project is to create a central contact point for private property and flat owners as well as property managers in order to promote climate-friendly renovation of the private housing sector in Vienna. The main aim in Vienna was to bundle information and advisory services on legal aspects as well as on funding and financing options for the renovation of residential buildings.

Owners of single-family houses to large apartment buildings are to be accompanied and supported in all phases of housing refurbishment: from the initial consideration and advice to the structural implementation and quality assurance after completion of the refurbishment.

In October 2020, the central free advisory service "Hauskunft" was set up as part of RenoBooster for an initial test phase until March 2021 and commissioned to develop a concrete range of services. Since April 2021, the "Hauskunft" has been integrated into the [wohnfonds_wien](#), the central institution for the promotion of social housing, property management and urban renewal. In addition, a "quality platform" with the name "[Qualitätsplattform Sanierungspartner Wien](#)" was launched at the beginning of 2022. The quality platform supports house and flat owners free of charge in their search for qualified contractors and planners, for example for the replacement of gas and oil heating systems and thermal renovations. For this purpose, the quality platform lists competent companies from various sectors that can realise high-quality projects.

Special attention was paid to the challenges of the existing legal framework with regard to achieving the climate goals. The goal of the stability of the entire housing sector and thus of society on the one hand has to be balanced with the motivation of the private sector to increase the quality of renovation and climate protection on the other hand.

The analysis of existing funding opportunities resulted in the development of a new funding scheme for the preparation of holistic renovation concepts, which was adopted by the municipal council in May 2021.

Careful market analysis and target group-specific communication support the development and testing of a range of new services. Communication activities take issues such as energy-efficient technologies, renewable energies and energy poverty into account. The two websites [Hauskunft](#) and [Qualitätsplattform Sanierungspartner](#) provide essential information in this regard¹. In addition, the newsletter of "Hauskunft" informs the target groups about current developments and offers.

The main characteristics of this service are the following ones:

- Focused on advisory and financing service for home renovation.
- Simplifies the renovation for the homeowners by bundling the various services and information in a central contact point.
- General energy efficiency/refurbishment advice, plus technical implementation of refurbishment.

Project website: <https://www.wien.gv.at/english/living-working/housing/renbooster/index.html>

Project duration: 2019 – 2022

Klimaaktiv initiative

Klimaaktiv climate protection initiative bridges the gaps between politics, business and society in the form of a modern governance approach. The primary objective of Klimaaktiv is to introduce and promote climate-friendly technologies and services.

Klimaaktiv was founded in 2004. Ever since, the Austrian Energy Agency has implemented Klimaaktiv operations and coordinated its target-group oriented actions in the fields of building and renovation, energy saving, renewable energies and mobility. Klimaaktiv applies leverage to the critical points by providing advice, information and qualification initiatives, with transparent standards, quality assurance measures and by activating and integrating the relevant players and stakeholders.

[Klimaaktiv Building and Refurbishment](#) stands for energy efficiency, ecological quality, comfort and quality of execution. In order to make the quality of a building measurable and comparable, the Klimaaktiv building standard was developed. Each building can be declared and evaluated online free of charge.

The Klimaaktiv building standard is defined in the Klimaaktiv criteria catalogues, available for residential buildings and service buildings. With the new edition of the Klimaaktiv criteria catalogues 2020 for all

¹https://proetro.eu/hauskunft_one-stop-shop_for_vienna, July 2024

building categories new construction and renovation, there is a sharpening and partial realignment of the entire set of criteria on the topics of CO₂ neutrality and climate change adaptation. The evaluation system has been expanded to include new topics and criteria, restructured and rescored accordingly. The Klimaaktiv building standard paves the way for proof of conformity, thus creating the basis for attractive investment opportunities and more favourable financing conditions.

The Klimaaktiv programmes Building and Refurbishment and Renewable Heat have been merged into the Klimaaktiv Buildings Programme, offering expertise for solutions for the heating transition and efficiency of the building sector. The programme is managed by the Austrian Society for Environment and Technology. The programme management is supported by regional and specialist partners in all federal states. The Klimaaktiv Buildings Programme Partnership can be entered into by various actors such as property developers, companies, planning offices or interest groups who apply and disseminate the Klimaaktiv quality standard for buildings in their own sphere of activity and thus support the idea of climate protection.

At the energy advice centres of the federal states, customers have access to the best tips on saving energy, energy-efficient construction, living and renovating. There are nine counselling centres (one in each federal state). The customer can find the energy advice contacts of the federal states, program partners, regional partners of the federal states, who offer subsidised advice and support (<https://www.klimaaktiv.at/service/beratung/energieberatungen.html>). Every regional partner has a slightly different advice program.

One of nine counselling centres is Energy Consulting Salzburg which is promoted as independent, product-neutral and free advice on energy renovation project. For 20 years now, all Salzburg residents have been able to benefit from the consulting team of Energy Consulting Salzburg, a cooperation between the state and Salzburg AG, in all energy issues free of charge, product-neutral and independently. The customer can arrange personal or online consultation appointment or log in to ZEUS customer portal. With this portal, the consultant can have access to the data of the customer. The customer can use the checklist to prepare the essential information for energy consultation.

The ZEUS Customer Portal - State of Salzburg is used to support renovation and new construction projects or to keep track of customers energy and heating costs. Customers can have access to their documents and online services in the energy sector from anywhere (e.g., energy certificates, meter data).

The benefits of the ZEUS customer portal are the following options for customer:

- Receiving documents such as energy consultation protocols and energy certificates, delivered directly to customer portal via e-mail. Access to all documents is granted at any time.
- Supplementing the collection of documents with their own files such as plans, heating bills or photos of their construction site.
- Giving to her/his partner, her/his energy consultant or other professionals access to her/his customer portal with her/his documents to enable a continuous flow of information.
- Sending links to individual documents to anyone (e.g., if installer needs access to energy certificate).
- Starting new services, such as follow-up advice or ordering an [energy certificate calculator](#), directly from ZEUS customer portal.
- Taking advantage of the opportunity for long-term, energy-related support from Energieberatung Salzburg and optimal results for renovation and new construction project.
- Controlling how successful your project was by comparing all relevant key figures.
- Regardless of device, storing data on ZEUS server in compliance with all data protection regulations.

The consultation is free of charge. Fee-based services provided by the companies commissioned (e.g. energy certificate, services provided by craftsmen/tradespeople) are not included in the free energy consulting offer.

Website: <https://www.klimaaktiv.at/bauen-sanieren.html>

Website – regional level: <https://www.klimaaktiv.at/bauen-sanieren/information-beratung.html>

Salzburg: <https://www.salzburg.gv.at/themen/energie/energieberatung>

Project start: 2004

SUNSHINE platform (FinEERGo-Dom project)

The FinEERGo-Dom project, a visionary initiative under the European Union’s Horizon 2020 programme, embarked on a transformative journey to revolutionise building renovations across Europe. The mission of the project was to adapt and implement the innovative Latvian Building Energy Efficiency Facility (LABEEF) model in five EU countries – Poland, Austria, Romania, Slovakia, and Bulgaria. The essence of the project was in its goal to facilitate comprehensive or “dEEp” renovations in the buildings sector by leveraging a performance contracting model that guaranteed savings and harnessed the capabilities of energy service companies (ESCOs).

At the heart of the FinEERGo-Dom project was an innovative financial model that fundamentally altered the renovation landscape. By adopting the energy performance contracting approach, the project eliminated the need for building owners to invest upfront capital. This model not only made renovation projects immediately financially viable, but also enhanced the liquidity of ESCOs, thus enabling them to invest more robustly in deep renovation projects. A notable feature of the project was the introduction of standardised forfaiting services, a strategic move to accelerate investments in the sector.

The project included the establishment of one-stop shops, or hubs, and energy advisory services modeled on Ēkubirojs concept based in Latvia. These hubs served as a comprehensive resource for residents and market operators by guiding them through the intricate journey of building renovations. Adding to the project’s innovative streak was the SUNSHINE platform, an online solution designed to foster transparency and collaboration among a diverse set of stakeholders, including ESCOs, investors, banks, and homeowners.

In Poland, the project team struggled through trust issues, complex processes and financing challenges to develop the priority program for energy efficiency in multi-family and public buildings.

Bulgaria focused on building capacity among homeowners and municipalities, which led to the establishment of a one-stop shop and the integration of the ESCO model into strategic support programs such as the Bulgarian Facility for Resilience and Reconstruction.

Austria's path was fraught with legal, regulatory and market-specific difficulties, but progress was made in adapting contracts and guidelines to local circumstances.

Slovakia stood out for its successful implementation of the LABEEF model with an official, Maastricht-compliant energy performance contract template for public buildings, setting an example of overcoming legal and financial obstacles.

Romania, although it has not implemented a pilot project, has made significant progress in the legal assessment and alignment of LABEEF contracts with Romanian legislation.

The SUNSHINE Platform was designed to support all phases of an energy performance contracting project. It involves a range of stakeholders in various project phases: Planning, executing the renovation, and maintaining and monitoring the renovated building. The platform serves as a collaborative space for such stakeholders.

The benefits of the platform include:

- Facilitating collaboration between registered organisations (building owners, ESCOs, banks, maintenance companies, auditors, etc.) for improved communication.

- Providing residents with a centralised access point to service providers.
- Collecting building and project data for relevant statistical analysis.
- Reducing administrative costs (especially for ESCOs) by centralising information and simplifying communication during projects.

Project website: <https://fineergodom.eu/>

Project duration: 2019 – 2023

3.1.2 One-stop shops in Bulgaria

Rhodoshop Programme Development Unit

In order to improve energy efficiency in the rural municipalities of the Rhodope mountains, the Rhodoshop project created in 2018 a one-stop shop dedicated to all energy efficiency initiatives in the region². This one-stop shop informs local public authorities of existing legislations in terms of energy efficiency in buildings and street lighting (which are the two main fields of action for municipalities in terms of energy efficiency) and of the possible financing solutions to apply these legislations at local level. The team of Rhodoshop's one-stop shop consists of local experts with experience in projects led by local and regional public authorities. These experts work in cooperation with the 11 municipalities to support them in planning investments and implementing projects for energy savings.

Their mission is to identify suitable funds to finance investments in energy efficiency in the region, such as engineering, procurement, and construction contracts, bank loans, national funding sources, resources from the European Energy Efficiency Fund, etc. In the framework of the project, a training in green public procurement was also organised to inform local authorities of these rules. The Rhodoshop's one-stop shop also encourages the exchange of project ideas to create a pool of potential projects in energy efficiency. This way, it helps to aggregate different projects, to find resources and to reduce some of the costs related to the preparation of projects.

The main characteristics of this service:

- Advise and consultation in energy efficiency and renewable energy for private residential buildings.
- Assist local governments by centrally procuring on behalf of local authorities to undertake energy retrofitting works in their buildings and street lighting systems.
- Connecting clients with banks and ESCOs if needed.

Project website: <https://rhodoshop.sec.bg/en/the-project/>

Project duration: 2017 - 2022

ASEN one-stop shop

The one-stop shop initiative in Asenovgrad was established by the municipality in 2020-2021 to address the need for enhancing energy efficiency in large multifamily residential buildings, particularly those with more than 36 dwellings owned by individual owners. The reason for this focus was that these constellations face a challenge in triggering collective actions for energy refurbishment of the entire building. The initial financing for the OSS was secured by the municipality by participating as a pilot in the H2020 UP-STAIRS project.

The OSS serves to provide advice and support to citizens on organisational, administrative, legal, technical and financial aspects of energy efficiency measures in combination with renewable energy (PV or biomass). The activities are targeted mainly to multi-family residential buildings with many individual homeowners, and aim to support the establishment of citizen energy communities for refurbishing the

²<https://rhodoshop.sec.bg/en/the-project/>, July 2024

whole building. Municipal employees deliver advice and consultations both online through the UP-STAIRS digital platform and in-person at physical office premises located in the administrative building of Asenovgrad Municipality.

The main characteristic of this service is the advice provided on energy refurbishment and the use of renewables in private households

Project website: <https://www.h2020-upstairs.eu/about>

Project duration: 2020 - 2023

PadovaFIT expanded

PadovaFIT Expanded aims at creating and piloting a one-stop shop dedicated to home renovation services in the city of Padova (Italy) and to expand the process to the city of Timișoara (Romania) and to the cities of Smolyan and Vidin (Bulgaria)³. The concept is based on existing experiences of similar one-stop shops motivating and supporting homeowners (demand side) as well as stimulating the supply sides, both technically and financially, to invest in energy efficiency.

The role of public authorities is key for channelling private finance into energy efficiency investments. One-stop shop solutions seem to have the highest potential to bring together all players involved in the renovation process, because of their holistic approach.

The project has been set up in order to give a response to the current state of play which shows, in fact, a fragmented demand and fragmented supply. Energy efficiency improvements do make sense economically and are already technically viable, but the main reason why homeowners do not invest at this moment ultimately lies in market failure. Demand-supply aggregation combined with attractive financial solutions is the main challenge the one-stop shop is about to face.

The Bulgarian Energy Agency of Plovdiv supports the metropolitan areas of Vidin and Smolyan to prepare the ground, for the functioning of sound OSS in Bulgaria with the aim of creating a viable action plan until the end of the project.

The main characteristics of this service are:

- OSS for home renovation services, designed to provide comprehensive support to homeowners, including technical, financial, and administrative assistance.
- The provision of a range of services, including energy audits, preparation of technical documentation, financial advice, and assistance with obtaining financing for energy efficiency projects.

Project website: <https://padovafit.eu/home.html>

Project duration: 2019 - 2022

Seamless services for Housing Energy Efficiency Renovation Plus (SHEERenov+)

SHEERenov project objective is to develop and test a model for the provision of integrated residential renovation services on the territory of Sofia in Bulgaria⁴. The implementation of this project will support the Bulgarian Government's intended transition from the current multifamily buildings energy efficiency renovation model, financed fully from public resources and administered entirely by public institutions, to a market oriented model. Based on analysis of barriers and identified needs, enabling conditions will be created to attract and facilitate participation of relevant market stakeholders and players in the process of energy efficiency renovation in the residential sector (i.e., homeowners, business and financial sector). The project will contribute to the achievement of multi-dimensional impacts in terms of creating a new

³https://www.padovafit.eu/fileadmin/inhalte/Documents/Newsletter_1_PadovaFIT_Expanded_20210301.pdf, July 2024

⁴https://cinea.ec.europa.eu/system/files/2023-11/2.1%20SHEERenov_final%20%2B%20EUPeers.pdf, July 2024

system to provide integrated home renovation services with highly standardised and optimised procedures:

- A “one-stop shop” assistance to homeowners, allocated at the private business and their alliances sustainably ensured for the future through regulations and capacity building activities.
- Three components sustainable financial mechanism to facilitate loans access, conditional subsidy receipt and targeted support to insolvents.
- Municipal policies regarding newly assigned roles in the process of residential buildings renovation.

The SHEERenov+ project offers practical implementation of the model for integrated home renovation services developed under the H2020 SHEERenov project, supporting the transformation of current renovation policies, based on excessive public grants, towards an innovative market-oriented model. Building on its results, the main objective of the SHEERenov+ project is to trigger significant upscale of the energy renovation in the Bulgarian residential sector through developing a network of market-oriented one-stop shops (OSSs) positioned at local/regional level and offering services through the entire value chain, supporting the reforms projected under the national Long Term Renovation Strategies (LTRS) and the Recovery and Resilience Plan. Besides 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 throughout the whole country. The selected OSSs operators possess both the necessary background to successfully manage an OSS, and unique expertise in different aspects of energy efficiency improvement – energy audits, nearly Zero-Energy Building (nZEB) design and construction, renewable energy sources (RES), etc., providing excellent cooperation opportunities. The key project outputs include:

- Transfer and adaptation of SHEERenov main outputs, incl. toolkits and training programmes, to OSSs countrywide.
- Development of an on-line platform as a cost-effective solution for the OSSs’ operation.
- Piloting the OSSs models in 6 major cities supporting at least 100 investment projects.
- Comparative assessment of the business models to provide experience-based policy recommendations.
- Replication of SHEERenov+ model in least 6 additional OSSs within the duration of the project.

The proposal has attracted strong institutional support with more than 30 Letters of Support (LoS) received, including from all 3 relevant ministries, state agencies, professional associations and multiple municipalities interested to replicate the OSS model.

Project website: <https://sheerenovplus.eu/>

Project duration: 2023 - 2026

REVERTER project one-stop shop

The REVERTER project has officially commenced its field activities, establishing four one-stop shops (OSSs) across Europe to address energy poverty among vulnerable households⁵. Located in Brezovo (Bulgaria), the Athens Urban Area (Greece), Riga (Latvia), and Coimbra (Portugal), these OSSs were launched in April 2024 with the goal of facilitating energy-efficient home renovations and enhancing living conditions for those in need.

The REVERTER OSSs operate under a “Facilitation” business model, focusing on raising awareness about the benefits of energy renovation and providing tailored information on optimal renovation works. This approach takes into account the specific housing and household characteristics of the four diverse regions, guided by nine distinct REVERTER roadmaps. These roadmaps prioritise the renovation of the

⁵<https://reverterhub.eu/2024/06/10/reverter-project-launches-one-stop-shops/>, July 2024

worst-performing homes (the “worst first” principle) and address challenges such as split-incentive dilemmas and various market, information, and behavioural failures.

To establish a solid foundation for these activities, the project has also set up four digital one-stop shops in [Bulgaria](#), [Greece](#), [Latvia](#), and [Portugal](#). These platforms provide all residents of these regions with information on renovation. Consequently, the beneficiaries of information provided by the project consortium extend beyond the primary target audience – vulnerable households in specific areas.

The project is dedicated to addressing energy poverty and promoting energy efficiency among vulnerable households in Europe. By leveraging innovative approaches and community-driven initiatives, REVERTER aims to improve living conditions and contribute to a more sustainable future.

Project website: <https://reverterhub.eu/pilots-roadmaps/reverter-pilot-brezovo-bulgaria/>

Project duration: 2022 – 2025

SUNSHINE platform (FinEERGo-Dom project)

Please see description of the same service in Austria.

The following text provides more detail about OSS established in Bulgaria in the framework of FinEERGo-Dom project.

In Bulgaria, the OSS was conceived as an effective response to stimulated demand for deep renovation services based on the ESCO model, drawing from the activities conducted under the FinEERGo-Dom project. The Bulgarian team identified a key bottleneck: the lack of capacity among homeowners and municipalities to structure and procure ESCO projects under the Resilience and Recovery Facility (RRF) and upcoming national building renovation initiatives.

The main idea behind the OSS was to provide a portfolio of services to interested parties, e.g. municipalities and homeowners, which would lead them through their renovation journeys. As Ākubirojs’s experience demonstrates, there are a lot of steps that have to be completed from the expression of initial interest to generation of energy savings, leaving many opportunities for errors and failures. To address that challenge, the Bulgarian FinEERGo-Dom OSS services encompass a variety of activities that can be tuned depending on the project and stakeholder types.

The FinEERGo-Dom team in Bulgaria started a long-term cooperation with the Municipality of Burgas. As a first step, an application for ELENA technical assistance has been jointly prepared and submitted, paving the way for MFH renovations in the region after the end of the RRF. All contracts and tools that were adapted and developed for Bulgaria under the FinEERGo-Dom project have been utilised by the municipality and incorporated in its strategy.

3.1.3 One-stop shop in Croatia

Croatian One Stop Shop for Integrated Home Renovation (LIFE-2022-CET-crOssrenoHome)

The main goal of the crOss renoHome project is offering a complete energy renovation solution for house owners in one place (One stop shop – OSS), with the aim of unifying the renovation process, which will ultimately lead to the intensification of renovation projects for family houses and multi-apartment buildings in Croatia, making them more energy efficient and more independent of fossil fuels while maintaining the same (or even better) interior quality and comfort.

Specific goals of this project are:

- Establishment of a One Stop Shop in Zagreb based on the existing Center for Reducing Energy Poverty and upgrading of the existing One Stop Shop in Križevci.
- Providing a comprehensive and standardised service to citizens for in-depth energy renovation of family houses and multi-apartment buildings.

- Gathering technical, financial and legal experts on one platform to facilitate the distribution of information to interested target groups.

The pilot phase begins with the training of 7 energy consultants who will work in OSS, and it will continue with the creation of a business plan, standardised contracts, the opening of an exhibition space (showcase of innovative technologies) and will end with the establishment of a market. OSS will work in three operational models (packages of services). All these steps will be integrated as service packages in order to simplify the user's journey compared to existing approaches – in which citizens had to go through the entire process themselves – (searching for energy consultants, construction experts, suppliers and banks), but also citizens who would like to apply for public calls for subsidising energy renovation and installation of RES systems.

The main characteristics of this service are the following ones:

- Preparation of a standardised contract for the renovation of family houses and multi-apartment buildings.
- Formation of a business model for the establishment of OSS.
- Formation of a market through an online platform that connects and supports different stakeholders in the renovation process (home owners, business sector, financial sector).
- Creation of a communication strategy; creation of promotional and informative material; dissemination of project results through various communication channels.

Project website: <https://crossreno.door.hr/en/>

Project duration: 2023 – 2027

3.1.4 One-stop shops in Denmark

Frederikshavn one-stop shop

OSS is established to help homeowners of single private residential homes, to participate to dialogue meetings and create engagement and responsiveness. Free advice is financed from the Public Service Obligations (PSO) scheme (utilities' free of charge advisory scheme in Denmark). It is a fee that homeowners pay through their electricity bills. It is foreseen assistance in all stages.

The budget of the Horizon project Innovate covers the costs for promoting and launching of the OSS services. For the renovation projects, homeowner's credit (mortgage, personal loan, etc.) is used.

The services provided are:

- Engagement process
- Energy renovation and financial plan
- Coordination of the renovation process
- Guaranteed results & post-work monitoring

The one-stop shop is running comprehensive information campaigns targeting private homeowners and condominium co-owners using all available local media, municipal website, Facebook as well as face-to-face meetings. The one-stop shop municipal project manager is responsible for engaging with the target groups and creating sufficient energy renovation volumes. Its priority is to build the credibility of the offered services and gain the trust of homeowners.

The one-stop shop lead partner, Energihuset energy consulting company, prepares the energy renovation and financial plan free of charge and together with the homeowner. The plan highlights the priority measures with the highest energy saving potential.

The homeowner signs a single contract with the one-stop shop. The latter coordinates all the different construction companies and craftsmen.

The one-stop shop does not provide its own financial product. However, Frederikshavn municipality has negotiated with local banks. They offer attractive energy renovation loans at favourable conditions for all households including low-income ones which cannot always access a bank loan to finance the renovation works.

The municipal project manager guarantees the quality of the completed renovation works. In case the quality of works or energy savings do not correspond to the initial expectations, the one-stop shop lead partner (Energihuset) has the duty to inspect and the involved suppliers to correct their work.

Website: <https://energy-cities.eu/best-practice/34623/>

Project start: 2017

BedreBolig (Better Home) initiative

BetterHome is an innovative business model which aims to develop cooperation between homeowners and financial institutions, enabling financial advisers to better advise their customers on the financing of energy improvement projects⁶.

Based on the products of the four founders, BetterHome offers organised renovation to improve energy performance and indoor climate, using 3 standardised packages: Energy Package, Comfort Package and Modernisation Package. The scheme of BetterHome entails a comprehensive digital one-stop shop with guidance, training, support and clear deadlines for the homeowners. After they enter details about their homes and energy consumption, they will receive a report and some recommendations on renovation measures and offers from local suppliers.

The aim is to simplify and structure the renovation process for the installer, through supportive and innovative digital tools. There is also a training phase for the installers from the first contact to the finalisation of the process to help them interact with the homeowners. A single installer is responsible for the whole renovation process and coordinates with the other installers involved in the renovation of the same property. This specific organisation allows for better planning, but also ensures that trust is built between those actors. A specific digital platform has been created in the framework of the project, where the installers can share relevant information on the renovation project.

BetterHome relies on a simple but innovative financial model. There are no payments between *BetterHome* and the installers or the building owners. *BetterHome* receives its whole budget from the companies at the origin of the project (Danfoss, Grundfos, ROCKWOOL and VELUX Groups). In return, those companies retrieve indirect sale revenues. While *BetterHome* and its owners have an incentive to increase the sale revenues of their products, the installers are not obliged to exclusively sell these brands. In the end, the renovation contract is only between the building owner and the installer. There is also an important role for the banks in making the renovation project a reality. The homeowner and its usual bank discuss the renovation plan together, and the bank screens together with them their financial capabilities. They then refer them to *BetterHome*, since they trust the quality and process of the model. The bank continues to follow the journey of the clients to assist them with additional financial guidance and support.

In connection with the establishment of the *BetterHome* scheme (making it easier for homeowners to renovate their homes by offering comprehensive expert advice throughout the energy renovation process) a calculation programme and a report format has been developed. It provides the financial institutions with a solid basis on which to assess the potential savings that could be made in a building and to facilitate the dialogue between home owner and bank.

The *BetterHome* one-stop shop relies on an expertise network covering manufacturers, installers, project management, financing and training.

⁶https://managenergy.ec.europa.eu/managenergy-discover/news/betterhome-one-stop-shop-energy-renovation-supported-digital-tools-2023-04-21_en, July 2024

In connection with the scheme, a training course for tradesmen has been set up. Tradesmen, engineers, architects, can train to provide professional advice from the start of a renovation project through to completion.

In Denmark, a network of 3500 installers has been created from 105 organisations, five banks and mortgage providers and four utilities. In the case of Betterhomes, a single installer is responsible for the whole renovation process and coordinates with the other installers involved in the renovation of the same property. The digital platform also plays an important part to share information and create a leaner process.

In order to achieve customer satisfaction, *BetterHomes'* key communication does not focus on energy renovation, but on comfort renovation, since energy efficiency in most cases will bring more comfort. There are regular follow-ups conducted with the end-users and this feedback is used to constantly enhance the model.

The project is also specific since, unlike in most OSS, the first inspection of the building is free of charge even if the project does not materialise. This enables a better first meeting, where the discussion can move beyond the focus on costs. By thoroughly explaining the building's inadequacies and highlighting the multiple benefits of a comprehensive renovation, the building owner is more likely to consider it a good investment.

The main characteristics of this service are the following ones:

- Provision of holistic counselling to homeowners by contractors (advisors, craftsmen, etc.), which prepare a Better Housing Plan for the homeowners and assists them to go through the renovation process.
- Focused on single private and condominium.
- The Danish Energy Agency provides access, but the contractors act as OSS (as full service providers).
- Provision of assistance in almost all early stages (advice, energy analysis, feasibility study), and on technical implementation.

Based on the products of the four founders, offers organised renovation to improve energy performance and indoor climate, using standardised packages. Three standardised packages and local contractors that have been trained and quality assured.

The customer discusses the renovation project with his/her usual bank, and the bank can use the BetterHome tool to refer to the details. The associated banks trust the BetterHome quality and financial characteristics.

Website: https://managenergy.ec.europa.eu/managenergy-discover/news/betterhome-one-stop-shop-energy-renovation-supported-digital-tools-2023-04-21_en

Project start: 2014

CLEAN Green Business Growth

The CLEAN Green Business Growth (CGBG) partnership comprises seven municipal authorities and 14 private partners involved in production, consultancy, entrepreneurship, finance and education. It trains craftsmen on energy efficiency in private, public and industrial buildings, as well as business development, networking and marketing.

The project has developed the 'master of energy' educational concept, which is aimed at enabling craftsmen to develop energy renovation businesses using the latest technical know-how. It consists of nine modules, lasting 40 hours, on energy saving opportunities, renovation, sales and business development.

In all, 225 people in eight municipalities have been trained. On completing the course, they can enhance their skills and business networks through participation at energy events, networking meetings on new technical solutions and further training.

Close cooperation between the partners and the craftsmen is one of the benchmarks for the project's success. Craftsmen are closely linked to the project, through which CGBG backs up the visibility of their new skills through campaigns and storytelling of craftsmen's B2C cases, events and exhibitions in which the craftsmen can participate for free or with considerable discounts, loan of materials and the chance to participate in development projects.

The partnership also organises energy events at which craftsmen meet homeowners to give them an overview of energy renovation and let them know about its benefits and how to get started. A total of 20 events have been held, attended by over 20,000 people. In addition, 300 courses and evening classes have given homeowners information on energy-saving opportunities in the home.

The main characteristics of this service are indicated next:

- It is provided to homeowners holistic planning and following implementation by contractors (advisors, craftsmen, etc.), which are trained by the Authorities.
- Contractors develop personalised plan. The Authority does not provide the full value chain services, only mediates and raises general awareness. Client has to select from a list of contractors, which might or might not offer an integrated home energy renovation (there is no certification).
- Assistance in almost all early stages, except financing plans and monitoring.

Website: https://ec.europa.eu/regional_policy/en/projects/denmark/clean-green-business-growth-energy-efficiency-for-businesses-and-home-owners

Project start: 2010

ProjektLavenergi

The concept "ProjektLavenergi" is a holistic energy renovation concept offered by Adsbøll, which is a well-known and trusted local contractor in southern Denmark. Its activity originates from being a partner of Green Business Growth, a private-public partnership for energy efficient buildings in the region of southern Denmark with the aim of creating growth in green building and renovation. Adsbøll works together with a network of pre-selected partners that are well known and/or trusted in the market. The craftsmen used can be trained in relevant courses arranged by the mentioned partnership to become "energy-craftsmen" with special knowledge of energy efficient renovation.

Customer pays for the renovation while the service provider takes charge of the salary of project manager, marketing, travel, administration and support. The main characteristics of this service are:

- One Stop Shop Model - contractor's cluster cooperation.
- Aimed at Private Single Family Houses (with particular focus of houses built between 1970-1980).
- Promotion and wider marketing of the product of the mother company. The holistic renovation is based on the concept of external air tightness and insulation of the house.
- Builds energy performance improvements on any kind of home renovation.
- Provides training and mentoring to local craftsmen.
- Full implementation with the mediation by local contractors.
- Assistance in financing.

Website: <https://renovation-hub.eu/wp-content/uploads/resources/Lavenergi.pdf>

Project start: 2018

ZEROhome (ZERObolig) - ProjectZero

Late 2010 ProjectZero launched its ZEROhome (ZERObolig) programme focused on engaging homeowners in energy retrofitting the target areas (app. 16,800 private owned houses). The programme is focused on the EU energy label and qualified ways to improve the individual houses current energy standards. More than half of the area's craftsmen have joined the training programme by mid 2011, compared to less than 10% average for whole Denmark.

The ZEROhome programme offers a free energy review/consultation that is carried out in their homes. During the consultation the energy consumption is reviewed, improvement opportunities and cost discussed, and a plan defined. Next step is to connect the house-owners with qualified craftsmen, to get the job done in a qualified way.

House-owners often need to finance the retrofit and ZEROhome therefore has worked with the local banks to secure a good understanding of the cash-flow in energy retrofit and competitive loans for the house-owners.

Project website: <https://projectzero.dk/en/>

Project start: 2010

SparEnergi platform

SparEnergi is an initiative by the Danish Energy Agency aimed at helping people in Denmark save energy, money, and reduce CO₂ emissions. The platform offers a variety of resources and advice on how to save electricity and heating in homes and workplaces. This includes the following categories:

- Save electricity and heat in everyday life
- Changing the heating mode
- Renovate the home
- Apply for grants for home improvements
- Apply for grants to save energy in the company

Advice is provided via Facebook, counselling (in person – phisically, by phone or via e-mail) and through SparEnergi website (platform). Based on publicly available building data (incl. EPC data), this platform offers a detailed estimate of the energy consumption, CO₂ and cost savings that renovations can entail. The only thing the user needs to do is to insert their address.

Website: <https://old.sparenergi.dk/forbruger/boligen/energimaerkning-boliger>

Project start: 2014

3.1.5 One-stop shops in Greece

Energy Hub for All

EnergyHUB for All⁷ (EH4A) is an online information and communications hub that is intended to provide a one-stop shop service to all stakeholders in the residential sector⁷. It aims to inform homeowners about the potential benefits of energy efficiency measures and increase their uptake, to connect homeowners with qualified tradespeople and service providers, and monitor EPC trends and the implementation of EPC recommendations to inform policymaking.

⁷https://single-market-economy.ec.europa.eu/system/files/2021-03/ecso_pfs_el_energyhub_for_all_2018_0.pdf, July 2024

It provides an online market and meeting place that connects supply and demand side actors, and it provides information, advice and assistance to inform consumers about the potential savings and benefits that energy saving building renovations can achieve.

The national energy hub for Greece – ‘EnergyHUB for All’ (EH4A) – was created as one of the ‘Request2Action’ pilot projects and was officially launched by CRES in December 2015.

Website: <https://www.energyhubforall.eu/>

Project start: 2015

REVERTER Project One-Stop Shop

Please see description of the same service in Bulgaria.

Project website: <https://reverterhub.eu/pilots-roadmaps/reverter-pilot-athens-greece/>

Project duration: 2022 – 2025

3.1.6 One-stop shops in Poland

Energy Efficiency Finance Facility for Residential Buildings (EEFFRB)

A commercial bank BNP Paribas is running the Energy Efficiency Finance Facility for Residential Buildings (EEFFRB) providing technical assistance to housing associations with support from the ELENA programme⁸. Currently, there are 72 projects in the pipeline and the goal is to reach 800 projects with an investment of 78 M€ (2019 – 2022).

EEFFRB is a significant initiative aimed at improving energy efficiency in residential buildings. The main goal is to support housing associations in Poland with energy efficiency investments. This includes providing technical assistance and financial support for various energy-saving measures. The programme focuses on substantial investments in energy efficiency refurbishment. Eligible investments include thermal insulation, replacement of windows and doors, reconstruction of heating and ventilation systems, installation of renewable energy sources, and more. The project is supported by the European Investment Bank (EIB) and the ELENA facility, with a total project development cost of EUR 3.5 million, of which EUR 3.15 million is co-financed by ELENA.

The programme is implemented by Paribas Bank Poland (BGŻ BNP), which provides loans and technical assistance to housing associations. The assistance includes energy audits, preparation of technical documentation, and specialised advice

This initiative is part of a broader effort to enhance energy efficiency and reduce energy consumption in Poland’s residential sector, contributing to environmental sustainability and cost savings for residents.

Website: <https://www.eib.org/attachments/documents/eeffrb-factsheet-en.pdf>

Project start: 2020

SUNSHINE platform (FinEERGo-Dom project)

Please see description of the same service in Austria.

⁸<https://www.eib.org/attachments/documents/eeffrb-factsheet-en.pdf>, July 2024

3.1.7 One-stop shop in Slovenia

The Energy Advisory Network for households (ENSVET)

The Energy Advisory Network for households (ENSVET) is part of a series of measures that were introduced as part of the National Energy Efficiency Action Plan 2014-2020, even though as a measure was initially established over 25 years ago⁹. The main goal of ENSVET remains the same – to increase interest and private investment in renewable energy sources (RES) and the rational use of energy (RUE) through a network of regional advisory offices.

The Ensvet network, a group of energy consultants, is well-positioned to lead the creation of an OSS in Slovenia. Initial measures include joint orders for energy renovation measures to decrease costs and increase efficiency. Local governments are keenly interested in learning about business models, performance indicators, and monitoring systems for setting up and sustaining these one-stop shops.

Intensive debates led to the conclusion that the [Ensvet network](#) – a network of energy consultants whose advice Slovenian citizens can access for free – is best placed to lead the establishment of a one-stop shop in Slovenia. Initial measures will include pushing for joint orders for energy renovation measures to decrease costs and increase efficiency. Local governments expressed considerable interest in the one-stop shop approach, with stakeholders particularly keen on learning more about business models to set up and sustain a one-stop shop, the definition of performance indicators, and design of monitoring systems.

ENSVET provides the public with free counselling and is engaged in a wide range of awareness raising activities across the country. Recently, ENSVET has also added a new scheme for low-income households called AERO, which is a service that is provided in cooperation with social work centres.

ENSVET provides information, advice and assistance to help households to invest in EE measures and make use of RES and develop applications to access financial support. Advice is tailored to each case based on the information provided by the owner or tenant and is offered free of charge to all citizens.

ENSVET is also engaged in educational activities in the field of rational use of energy (RUE) and renewable energy sources (RES), such as offering public lectures (local communities, schools, etc.), publishing articles and organising awareness raising activities in national and local broadcasting media.

ENSVET offices are deployed throughout Slovenia. The placement of these offices is designed to ensure that the average distance between the customer (households) and their closest ENSVET office does not exceed 20 kilometres. There are currently 52 offices in the Slovenian ENSVET network which employ 66 qualified energy advisers. The general objective is to raise public awareness and interest in energy efficiency in households and to help to meet national energy efficiency targets.

To counter the rise of energy poverty, especially among low-income households, AERO (the Assistance for Energy Poverty in Households) was launched in 2014 as a cooperative pilot project between ENSVET and Slovenia's Social Work Centres, which serve as a contact point. AERO is a result of the EU project 'Achieve2' at national level which focussed on low-income households. The aim is to help socially deprived groups to improve energy efficiency at home. Households that receive regular welfare (social/financial) support, through Social Work Centres are encouraged to apply for assistance from ENSVET. ENSVET provides free of charge home visits by its energy advisors (to take necessary measurements and make calculations) and a free package of equipment for soft measures (switch divider, protective wrapping, sealants, etc.), reducing the use of energy and water.

Website: <https://www.ekosklad.si/prebivalstvo/ensvet>

Project start: 2000 – significant updates in 2014

⁹https://single-market-economy.ec.europa.eu/system/files/2021-03/ecso_pfs_sl_energy_advisory_network_ensvet_to3_4_0.pdf, July 2024

3.1.8 One-stop shops in Spain

Opengela

Opengela is a project which looks to spread urban regeneration in the Basque Country using a novel new instrument: the creation of neighbourhood offices, which will act as one-stop shops to provide advice and support to the neighbourhood community.

The office in each neighbourhood (Opengela) centralises all the procedures and administration related to the process of integrated renovation of the apartment buildings, from administrative paperwork to dealing with energy services contractors or the provision of financial aid.

This project, financed by the Horizon 2020 programme of the European Commission, has started with a pilot test in two neighbourhoods: Otxarkoaga (Bilbao) and Txonta (Eibar).

The programme is for individuals and communities of homeowners who want to renovate their apartment buildings, it also looks to turn them into active participants in the whole renovation process and to accompany them from the start.

The idea is to obtain neighbourhoods with a better quality of life for their communities, with better energy efficiency, with universal accessibility (e.g., elevators) and the incorporation of basic systems of protection and safety against fires. Always putting the residents first, making them part of the process.

The main characteristics of this service are the following ones:

- Programme to raise citizen engagement, and to provide innovative financing for vulnerable households.
- Bringing together public administration with private players and investors.
- A Social Guarantee Fund will be created for vulnerable people who face the housing renovation and need a de-risking solution for the financing.
- Assistance in all stages, including implementation.
- The source of financing of the renovation projects are public budget, loans provided by GNE financing (Social Guarantee Fund), market-based loans and tax relief.

Project website: <https://opengela.eus/en>

Project duration: 2019 - 2023

Servicio de Información de Rehabilitación Eficiente (SiRE)

SiRE is a physical information one-stop shop for all information related to energy renovation, exploited by ANERR in Spain and complemented by an online service (ReformANERR <https://reformanerr.com/>).

ANERR's SiRE Office, Efficient Rehabilitation Information Service, whose opening was possible thanks to the collaboration with the Empresa Municipal de la Vivienda y Suelo (EMVS) of Madrid, the municipal housing company of Madrid, was inaugurated in April 2016, with the aim of advising and informing citizens about the benefits of efficient rehabilitation and reform.

Located in the Madrid neighbourhood of Lavapiés, at Calle Zurita 25, near the Reina Sofía Museum, it aims to be the meeting point for all the agents involved in rehabilitation: the Administration, technicians, property managers, rehabilitation companies and of course, citizens, an essential piece in the promotion of efficient rehabilitation.

Open from Monday to Friday, citizens can find information at street level on the different solutions for their efficient rehabilitation or reform, as well as on the aid available to carry them out.

The office is staffed by technical staff to advise on energy efficiency queries in homes and homeowners' associations, solutions to be implemented, among others. Another important activity of the office is the organisation of information and training sessions on the solutions and systems to be implemented in a

building or home to improve its energy efficiency, such as façade insulation, windows, low-temperature air conditioning systems, solutions for avoiding thermal bridges, etc.

The SiRE is also designed as a showroom by the participating companies that have applied their products in the refurbishment of the premises. In this way, the citizen goes to the office to find out about the existing rehabilitation solutions, being able to interact with those applied in it.

In short, it is a complete tool that allows citizens in Madrid to resolve all the doubts they may have about an action in their building or home, as well as to be informed of everything that happens within the rehabilitation and renovation sector, to know the most avant-garde solutions and to see them applied and in operation.

Website: <https://www.proarquitectura.es/sire-anerr-una-herramienta-al-servicio-del-ciudadano-madrid/>

Project start: 2016

Oficina de Servicios Integrales para la Rehabilitación (OSIR)

This one-stop shop provides the following services for single family houses and condominiums:

- Engagement process
- Energy renovation and financial plan
- Coordination of the renovation process
- Long-term and affordable financing
- Guaranteed results & post-work monitoring

In collaboration with the Regional Association of Buildings Property Managers, the one-stop shop OSIR implements a communication and marketing strategy. This also includes campaigning through mail targeting pre-identified buildings. Building property managers play a key role in the engagement process as they carry out feasibility studies for the condominiums they manage and organise information meetings with homeowners.

In the framework of a first pre-contract signed between OSIR and the building property manager (or homeowners if they directly contact OSIR), the one-stop shop conducts a feasibility study for deep energy renovation of the building. Homeowners can select one or several energy renovation measures from a catalogue developed by the one-stop shop. The catalogue consists of two parts:

- a) Improvement of the building envelope (e.g., roof and/or façade insulation, windows or a system preventing overheating of the building, among others).
- b) Improvement of the building facilities, such as replacement of HVAC systems, heating systems, sanitary hot water systems, improvement of lighting system, elevators or the integration of renewable energy systems (mainly PV).

The feasibility study includes the 'best energy saving potential' scenario, which defines a roadmap to a global renovation. OSIR always recommends this scenario, even though the final decision is taken by homeowners, considering their financial situation.

If the homeowner opts for the 'best energy saving potential' plan, a new contract is signed between OSIR and the building property manager or directly the homeowner. At this stage, OSIR will help the homeowner with the private procurement to select the architect/engineering company that will prepare a more detailed energy renovation plan and that will carry out the renovation works. The contract includes all legally binding services provided by the company: renovation measures, achieved energy savings, operations and maintenance services. The contract duration is approximately 1 year, the time needed to implement the works and monitor the results (incl. energy savings).

One of the OSIR key features is the regional guarantee fund that will allow commercial banks to offer more advantageous loans to homeowners willing to carry out renovation works: interest rates below current levels offered by commercial banks and a loan maturity over 12-15 years. The fund was set up by the

Extremadura Regional Government with the support of AGENEX and other regional and national organisations using the regional and the European funds (the European Regional Development Fund). Once the guarantee fund is operational, the bank loans will be compatible with the existing national or regional grants.

OSIR is not responsible for checking the implemented renovation works. In Spain, this role is assigned to the so-called “Works direction body” which is hired by the architect/engineering company. This company is also responsible for hiring the construction companies and suppliers. However, OSIR agrees with the company on the expected energy savings (performance measurement and verification protocol). The one-stop shop can retain a fee from the company if expected energy savings are not achieved. Homeowners can also directly hire the architect/engineering agency. In this case, OSIR plays the role of an external advisory body.

The duration of the services provided by OSIR is tied to the HOUSEENVEST project, which aims to promote comprehensive energy renovation of residential buildings and single-family homes in the Extremadura region.

Project website: <https://www.interregeurope.eu/good-practices/osir-oss-for-comprehensive-energy-renovation-of-housing>

Project duration: 2018 - 2022

GiDomus

GiDomus is a customer-oriented Integrated Home Renovation Programme to boost energy efficiency and renewal energy of the housing stock in the province of Girona, implemented and operated by the Catalanian Fundació EUROPACE¹⁰. It is basically centred on the concept of one-stop shops and started in early 2021 as the second phase of the previous project GarrotxaDomus. It is currently being institutionalised in cooperation with five municipalities in the Girona region, where one-stop shop offices are being set up. A total of 16 model municipalities in the region participated in the first phase of the project.

When homeowners turn to GiDomus for refurbishing their home, the building, its energy performance and need for refurbishment are assessed to start with. The GiDomus team observes the desires expressed by the homeowner regarding the focus of renovation and presents all refurbishment measures possible. Aspects like improving the quality of living, economic (e.g., energy bills) and health impacts (e.g. building climate) are pointed out and energy-related measures are recommended along with aesthetic ones. Homeowners are always given the choice to work with another institution after being presented the assessment and recommended measures. To work with GiDomus and use their service, though, homeowner associations (HOAs) must include at least one measure of energy upgrading. During the process of organising and implementing refurbishments, GiDomus offers all related services, provides comprehensive (technical, administrative, and financial) personal assistance, interacting with contractors, helping homeowners to select them, managing the administrative process as well as all concerns around grants/finance.

GiDomus is piloting an online platform for tender, manage and commission contracts. Through transparent information and process management provided online, it is easier for contractors and HOAs to decide on offers and cooperation.

Website: <https://www.gidomus.cat/>

Project start: 2021

Energy Housing Assessment Tool (ENERHAT)

ENERHAT provides neutral and easy to understand information on energy efficiency for non-experts to facilitate decisions and Integration of data from different administrations that helps decision-making. It is an application that enables tenants, owners and real estate agents to obtain information on energy labels

¹⁰https://www.green-home.org/wp-content/uploads/2022/06/12_GREEN-Home_GP-GiDomus-ES_EN.pdf, July 2024

and the state of conservation of residential buildings, to compare the energy efficiency of the dwellings with similar dwellings, to assess the investment needed to carry out improvements and, finally, to apply for subsidies to undertake the reform.

The application integrates the data obtained from the Energy Performance Certificates provided by the Catalan Institute of Energy (ICAEN), the cadastre and the census sections, together with geographic information. The rehabilitation measures are based on the ICAEN simulation tool and the “Long-term strategy for energy rehabilitation in the building sector in Spain” (ERESEE 2014).

Website: https://timepac.eu/wp-content/uploads/2022/01/TIMEPAC_Session_1_Madrazo_Mata.pdf

Solutions4Renovation platform (TURNKEY RETROFIT)

The TURNKEY RETROFIT project aimed to develop an integrated home renovation service, firstly operated in France, Ireland and Spain, accessible through a user-friendly digital platform www.solutions4renovation.eu. The service is developed as a homeowner-oriented renovation journey, aiming to transform the complex and fragmented renovation process into a simple, straightforward and attractive process for the homeowner¹¹. This service presents a one-stop shop, answering several problematics of renovation and helping the customer (homeowner or board of co-owners) at the different stages of the renovation journey.

To provide solutions and cover all the phases and tasks necessary to carry out the renovation process, Solutions4Renovation platform gathers several services developed independently named “bricks”. Each brick is tailored to respond to a specific stage of the renovation process and to a specific need of the user. Solutions4Renovation offers the following services to the user:

- Information and guides about energy performance renovation
- Tools for online diagnostics (Energy performance, thermal comfort, etc)
- Recommendation of renovation works
- Cost estimation of the renovation works
- Estimation of potential subsidies
- Tool for ordering the renovation works in time without construction disorder
- Contacts with professional advisors and contractors

Some bricks give information about the renovation, the comfort improvement due to renovation and financing options such as national subsidies. Other elements of the platform are interactive tools where the user provides information about their home or building to get renovation recommendations for their homes. The recommendations provide an estimate the renovations cause in terms of energy, carbon emission and cost savings. The service focuses on helping the customer to make the best decisions that will lead to an optimal renovation project. To achieve this, the main challenge is to have a clear understanding of customer needs in the local context. The structure of the platform by bricks allows it to have an “ad hoc” service allowing the service to be adapted to local needs, the bricks can be added or not in the platform after being adapted to the new context. All the services that have been developed within the TURNKEY RETROFIT project are accessible to any building or homeowner on the web platform, without any charges. At some point, a customer is asked to log in to save all the information about their renovation project, to potentially allow the platform to contact the user.

Project website: <https://www.turnkey-retrofit.eu/>

Project duration: 2019 – 2022

¹¹<https://www.turnkey-retrofit.eu/news/outcomes-and-lessons-learned-from-the-turnkey-retrofit-project/>, July 2024

RenovEU (Save the Homes)

The Save the Homes¹² project, included in the European Union's Horizon 2020 Framework Programme for Research and Innovation, was successfully concluded in February 2024. The project arises in the context of the need for decarbonisation of the residential building sector, and with the aim of accelerating the annual renovation rate of residential buildings.

One of the most significant achievements of the project is the creation of a [Network of Integrated Housing Rehabilitation Services Offices](#), under the one-stop shop mechanism to advise citizens throughout the process of energy rehabilitation of their homes. In a deeply fragmented renovation market, this approach facilitates citizens' access to rehabilitation services in a transparent and reliable manner. The offices provide initial advice, support in finding and contracting technical solutions and professional services, and possible funding. In addition, they accompany citizens during the construction and commissioning phase of the rehabilitated buildings, guaranteeing quality procedures and monitoring of the benefits obtained, so that the visualisation of these good practices serves as a lever for other buildings and homes. In the Valencian Community, a network of 23 offices or one-stop shops has been established, aimed at advising citizens on rehabilitation and its financing through the Next Generation funds.

The [RenovEU](#) online tool, developed within the framework of the project, has been crucial as a starting point for the rehabilitation process, promoting participation and facilitating the incorporation of citizens into the renovation process¹³. RenovEU offers an estimated energy diagnosis of homes, proposing a series of specific improvements to meet the necessary requirements for obtaining Next Generation aid. This tool allows user to calculate the approximate energy consumption of their building, offering nine improvement options for energy savings and increased comfort, complying with the necessary requirements to obtain [aid from the European Recovery Fund](#).

To support the future establishment of new one-stop shops, Save the Homes has developed a [Guide to the replicability of the OSS model for renovation](#) based on lessons learned from offices in the pilot cities (Valencia and Rotterdam) and follower cities (Sant Cugat and Ljubljana).

Finally, another noteworthy result of the project are the [monitoring campaigns](#) carried out in the pilot cities of Valencia and Rotterdam, which provide real data on the pre- and post-renovation indicators. These data include energy consumption, indoor conditions (temperature and humidity), as well as the subjective well-being and health of residents, underlining the multiple benefits associated with renovation, not only in energy efficiency and reduced environmental impact, but also in improving the comfort and health of the inhabitants.

Project website: <https://www.five.es/project/save-the-homes/>

Project duration: 2020 - 2023

HORIS

HORIS – Home Renovation Integrated Services, a project funded by the European LIFE programme, will update and advance an existing digital retrofitting platform called [Green Menu](#) (already [available](#) in Portugal by DGG and FCT NOVA)¹⁴. In addition, the HORIS project will build on the success of established tools like the '[Self Scan](#)' developed by De Groene Grachten or [Solutions4renovation](#) by the Turnkey Retrofit project.

HORIS will create a digital one-stop shop (OSS) with the aim of empowering homeowners (of several building types, including flats) during the home renovation process. The OSS/ Green Menu will:

- Focus on helping homeowners make decisions on improving energy efficiency; renewable energy solutions and identify support to reduce energy poverty.

¹²<https://www.five.es/save-the-homes-resultados/>, July 2024

¹³<https://renoveu.five.es/#/information>, July 2024

¹⁴<https://ieecp.org/projects/horis/>, July 2024

- Simplify the home renovation process by providing homeowners with relevant and credible information and helping them identify the best and most sustainable options.

By offering financial, legal and technical solutions, HORIS will facilitate a smooth customer journey, offering homeowners support on finding renovation professionals and guidance about financial schemes. HORIS will match financing, legal and regulatory, and technical solutions with specific building typologies and homeowners' needs to streamline action for home renovation, developing standardised contractual arrangements for home renovation.

The project will engage with small and medium sized stakeholders, including local and regional public authorities and non-profit organisations and establish a network of approved home renovation service providers.

Initially, the OSS will be set up in Italy, Spain and Portugal with the ambition of replicating in additional countries if needed.

HORIS will focus on three different types of homeowners:

- Single houses
- Condominium households
- Energy-poor households

HORIS will help overcome three main typical barriers blocking home renovation decision:

- Administrative, offering the management of work permits and report, assess, manage and process the bonuses and subsidies from which citizens can benefit from.
- Technical, advising homeowners on how they can improve their home and have access to lists/rankings/ratings of trusted and validated professionals to ensure a service of the highest quality on a given time.
- Financial, helping to find the right solutions available in the market and accompany the consumer in the management of subsidies and tax credits, also giving access to affordable financing.

Project website: <https://ieecp.org/projects/horis/>

Project duration: 2023 - 2026

3.1.9 One-stop shops in UK

Parity Projects & Retrofit Works

The services provided are the following ones:

- Engagement process
- Coordination of the renovation process
- Guaranteed results & post-work monitoring

The website is the first contact point. It allows homeowners to get in touch by phone or via the contact form. However, the key aim is to encourage customers to use a web application that Parity has developed, and which will provide advice about which measures are suitable for their home. The main reason for this is that most people do not know what is involved in a retrofit and are unaware of the scale of costs involved. This app provides this level of information very effectively and ensures that the homeowners who subsequently contact Retrofit Works are interested and realistic. This is key to their business model. Before publicly launching the one-stop shop, Parity made sure that their systems worked at scale. Initially, the main focus was the website and social media marketing allowing them to control the level of enquiries.

The next stage is contact with the homeowner. Simple measures such as upper ceiling insulation do not require a home visit, and the one-stop shop coordinator can get quotes from the installer network based on a phone conversation and aerial / street images. More complex projects involve a home survey and a homeowner interview by a Retrofit coordinator. The home survey contains information necessary for multiple installers to provide quotes without additional visits. Homeowners prepare the financial plan on their own.

All installations are coordinated by one of the cooperative's qualified Retrofit coordinators. On the one hand, homeowners sign one contract with Parity Projects who provides the one-stop shop services (incl. the coordination of the process); on the other hand, they sign the contracts directly with selected suppliers from Retrofit Works who implement the renovation works.

The one-stop shop does not provide its own financial product because it cannot provide a rate comparable with the market. Parity's research shows that their customers will be able to access finance easily if needed (as they do for extensions, etc.).

The installer-owned cooperative Retrofit Works ensures the quality of works that are overseen by a Retrofit coordinator. They have to comply with a specification that includes gateways where craftsmanship is evidenced by documentation or geotagged photos. The energy savings cannot yet be guaranteed.

The main characteristics of this service are the following ones:

- Acts as an intermediary between SME suppliers and customers.
- Ensures best service, transparency and value for money – quality assurance. Online audit.
- Assistance in all stages, but no implementation per se.
- Assistance in grant acquisition.

Project website: <https://retrofitworks.co.uk/>

Project start: 2013

Ecofurb

Ecofurb is delivered by Parity Projects and their partners with expertise in delivering surveys, advice, quality assured installations and relevant financial advice and services. They have a shared ambition to decarbonise the country's homes, and many of the team have completed low carbon renovations of their own home. Together they have advised over 2 million landlords and homeowners on energy efficiency and low carbon heating options, and quality assured works to ensure they deliver on their promises.

Ecofurb offers a seamless journey to transform your house into a cosy, energy-efficient home. With a four-year track record in London, leveraging Parity's Ashden [award-winning](#) service, Ecofurb has evolved into a comprehensive national offering through the Government's Green Home Finance Accelerator.

Key Features of Ecofurb are the following ones::

1. Support for lenders, local authorities and community groups: Gain access to an efficient, proven service with options including area opportunity analysis, integrating a Customer Relationship Management (CRM) system with Key Performance Indicator (KPI) reporting, quality assurance, installer links and branded advice site.
2. Free Online Advice: Explore and optimise your home's energy performance with this accessible platform, catering to all homeowners.
3. Expert Advice: Choose from core energy assessments and add-ons like architectural drawings, air-pressure testing, and 360° walkthroughs for a comprehensive retrofit plan.
4. Tailored Whole House Plans: Collaborate with the Ecofurb team to customise a plan for your home, addressing immediate needs or phasing improvements over time.

5. Support with Installation: Options include free independent financial advice, grant funding checks, and competitive quotes from trusted installer partners.
6. Quality Assurance: Connect with partner installers backed by a national team of retrofit coordinators to assure quality.
7. Verification: Options to verify the completion of work, providing reassurance tailored to your – or your lender’s – requirements.

The main characteristics of this service are the following ones:

- Give personalised advice, collecting informations and connecting homeowners and a large network of contractors.
- Target on single private residential homes.
- Based on an online tool.
- Assistance in most stages, including implementation.
- The service is paid by the homeowner’s own funds, as well the financing of the renovation projects. National grant is only available for renovation linked to heat pumps.

Website: <https://www.ecofurb.com/>

Project start: 2009

ALlenergy

Affordable Warmth Service aims to alleviate fuel poverty by providing help to vulnerable households throughout the whole of Argyll & Bute and Lochaber in the Highlands. Activities include free home visits and provision of advice, support and mentoring to low income households including young people, families, older people and single parents.

ALlenergy has a large team of diversely-located advisors who offer informal chats, presentations, and free training workshops to health and social care workers, carers, community groups and individuals/households. Their workshops are flexible and adapted to suit requirements (e.g., limited time availability). Our service also trains, supports and mentors “Energy Champion” volunteers who identify and refer clients to specialist affordable warmth advisors. The Affordable Warmth advisors are trained to tailor the advice and practical measures to meet individual client’s needs thereby providing a bespoke service, often in the client’s own home or environment.

The main characteristics of this service are the following ones:

- To provide advice to households.
- Single private residential homes or mixed multiapartment houses.
- Assistance mainly in early stages of advice and feasibility studies.
- The service is paid by the local energy agency. For the renovation projects are used local and public budget. National grant and EPC are used for the renovation per se.

Website: <https://www.alienergy.org.uk/affordable-warmth/advice-and-resources/>

Project start: 2011

Tighean Innse Gall

The Energy Advisory Service (TEAS) helps support Western Isles residents lower their household energy costs by providing a free, impartial, confidential and bespoke advice service.

Scottish House Condition from 2019 shows that 40% of the Western Isles households are in fuel poverty in comparison to the national average of 24%. Extreme fuel poverty in the Western Isles is 24% again in comparison to the Scottish National Average of 12%.

The team of experienced and bilingual energy advisors aim to help people live more sustainable, healthier and affordable lives by drawing on their wealth of knowledge and extensive access to resources. This includes:

- Advice on the best ways to use heating controls effectively
- Understanding energy bills and tariffs; switching suppliers
- Increasing the energy efficiency of homes by identifying eligibility for smaller measures
- Help to source the most energy efficient appliances
- Assistance applying for Warm Home Discount and Priority Assistance funds
- Hand-holding through fuel debt relief applications
- Encouraging householders to reduce carbon emissions through behavioural change

The main characteristics of this service are the following ones:

- Locally situated agency that assists local citizens and businesses in all stages of a renovation projects.
- Combination of large variety of programmes from information, advice, monitoring, etc.
- Assistance in financing and can add own resources.

Website: <https://tighean.co.uk/>

Project start:2014

Energiesprong UK

Independent Global Energiesprong Alliance market development teams work with regulators to tune policy and regulation, and with banks to create financial arrangements to make a viable path to scale. By creating these market contexts while simultaneously brokering initial pilot projects and, subsequently, large volume retrofit deals (1000's), the momentum needed for stakeholders to act simultaneously is created. This entices suppliers to invest in off-site manufacturing of the components needed for such house makeovers. Mass customisation and industrialisation are key in getting to a new quality and cost standard.

After an Energiesprong retrofit, a home is net zero energy, meaning it generates the total amount of energy required for its heating, hot water and electrical appliances. It also provides adequate indoor comfort. This can be achieved by using new technologies such as prefabricated façades, insulated roofs with solar panels, smart heating, and ventilation and cooling installations. A refurbishment comes with a long-year performance warranty on both the indoor climate and the energy performance for up to 40 years. A complete home makeover can be completed in less than 10 days. Some have been done in as little as a day.

In general, an Energiesprong renovation or new build is financed by future energy cost savings plus the budget for planned maintenance and repairs over the coming 30 years. This allows residents to keep the same cost of living. In the case of housing associations, tenants pay the housing association an energy service plan, which is the equivalent of their previous energy supplier bill. The housing association can use this new income stream to partly fund the renovation works. Typically, legislation needs to be amended to allow such a conversion of the monthly energy bill into a monthly energy service fee for the housing association.

Website: <https://www.energiesprong.uk>

Project start:2013

3.1.10 One-stop shops characteristics overview

The overview of all previously mentioned one-stop shops for each of the crossCert partner countries is shown in the following table, with an emphasis on verification, digitisation, interoperability, automation and vulnerable households coverage.

Colour code is defined as follows:

- Green for existing characteristics,
- Dark orange for non-existing characteristics.

Table 2: The characteristics of one-stop shops of the crossCert partner countries

	Verified by relevant authority (reliability, quality assurance)	Digital (virtual)	Holistic concept (legal/technical/financial aspect)	Interoperable with other databases (EPC, energy audit, BRP, building logbook, smart meters, other)	Automatic recommendations calculation (tool integrated/accompanied)	Focus on vulnerable households
Austria (Hauskunft)	X	X	X			X
Austria (Klimaaktiv)	X	X	X	X	X	
Austria (SUNShINE platform)	X	X	X	X		
Bulgaria (Rhodoshop/ASEN OSS/PadovaFIT Expanded)	X		X			
Bulgaria (SHEERenov+)	X	X	X		X	
Bulgaria (REVERTER OSS)	X	X	X	X		X
Bulgaria (SUNShINE platform)	X	X	X	X		
Croatia (crOss renoHome)		X	X			X
Denmark (Frederikshavn OSS)	X		X			
Denmark (CLEAN Green Business Growth/ProjektLaven ergi/ZeroBoli g (ZeroHome))			X			
Denmark (BedreBolig (Better Home))	X	X	X		X	
Denmark (SparEnergi)	X	X	X	X	X	
Greece (Energy Hub for All)	X	X	X	X		

	Verified by relevant authority (reliability, quality assurance)	Digital (virtual)	Holistic concept (legal/technical/financial aspect)	Interoperable with other databases (EPC, energy audit, BRP, building logbook, smart meters, other)	Automatic recommendations calculation (tool integrated/accompanied)	Focus on vulnerable households
Greece (REVERTER OSS)	X	X	X	X		X
Poland (EEFFRB)	X		X			
Poland (SUNSHINE platform)	X	X	X	X		
Slovenia (ENSJET (EkoSklad))	X		X			X
Spain (OPENGELA)	X		X			X
Spain (OSIR)	X		X			
Spain (SIRE)	X		X		X	
Spain (GiDomus)	X	X	X			
Spain (ENERHAT, Solutions4Renovation)	X	X	X	X	X	
Spain (HORIS)	X	X	X	X	X	X
United Kingdom (Parity Projects & Retrofit Works/Ecofurb)	X	X	X		X	
United Kingdom (Tighean Inne Gall/Energiesprong UK)	X	X	X			
United Kingdom (Allenergy)	X		X			X

As it can be interpreted from Table 2 and Figure 1, all analysed one-stop shops have holistic approach, while most of them are verified by relevant authority (88%). More than half of them is digital (62%), and one third of them are interoperable with other databases (35%) and accompanied with recommendation calculation tool (32%).

The overview of one-stop shops characteristics for each of the crossCert partner countries

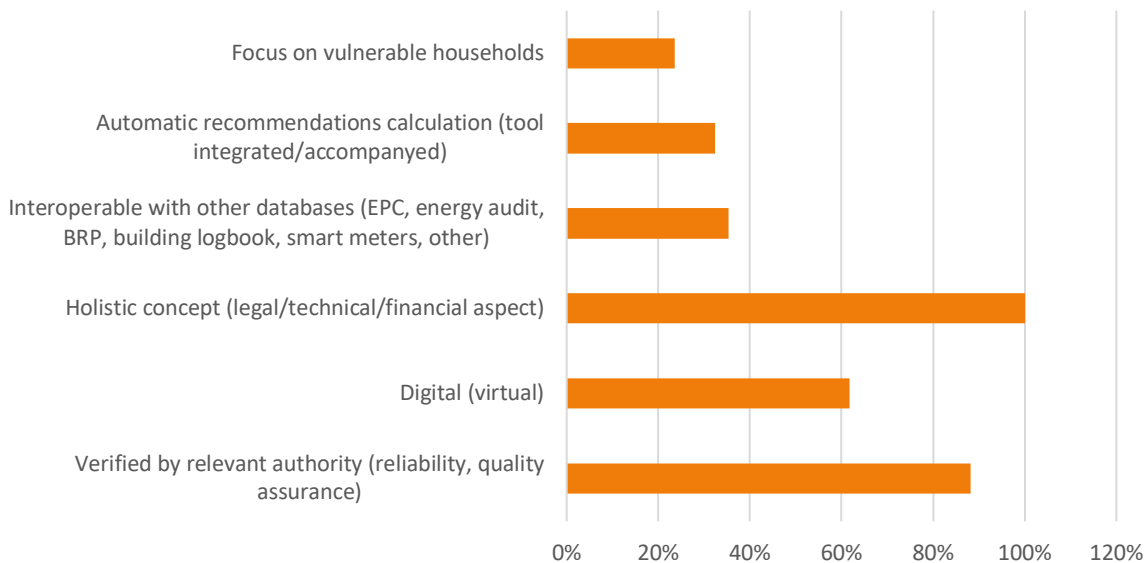


Figure 1: The overview of one-stop shops characteristics for each of the crossCert partner country

3.1.11 Digital availability and accessibility of data

If digital information is publicly available, there is a possibility for linking with other services such as one-stop shops. Table 3 shows the digital availability and accessibility of data in the partner countries to show the current technical potential of linking data with existing one-stop shops. Colour code is defined as follows:

- Green for optimal data characteristics
- Yellow for acceptable data characteristics
- Light orange for restricted data
- Dark orange for non-existing data
- Red border for data linked together

In Austria, specifically in the federal state of Salzburg, these databases are already linked together, enabling the building owners to see all relevant information about their building in one web application. The ZEUS database (building logbook – in a form of EPC database adapted to include other documents such as inspection protocols) shows the available EPCs of the building, the energy audit report (input via a short version of the EPC calculation program), the renovation passport, which includes measures (including U-values) to refurbish the building to a nZEB, and the measures implemented. Access to this data can be granted by the building owner to anyone.

In Bulgaria, all data except the inspection report is available. At the moment, the data is not linked with other databases. Data from energy audits is already publicly available in the national energy audit database.

In Croatia, there are databases of digital energy certificates and digital energy audit reports for all buildings audited since 2017, but it is only available to professionals.

Table 3: Digital availability and accessibility of different data in crossCert partner countries

	Automatic quality check of EPC database	EPC data available in database or software	Energy audit data available in database or software	Building logbook	Renovation passport	Other
Austria	Independent quality check in some regions	ZEUS database – Restricted access, interactive				Energy metering
Bulgaria	Quality checked before being lodged	Digital database – Public access, interactive	Digital database – Public access			
Croatia	Independent random quality check	Digital database – Restricted access, interactive	Digital database – Restricted access			
Denmark	Automatic quality check. Automatically compared with other building data	The pilot project Hub – Public access, interactive				Energy consumption data, energy characteristics of buildings data (from The Central Register of Buildings and Dwellings), weather stations data
Greece	Automatic quality check	The RESTful web service – Restricted access, not interactive				Land registry (geolocation data), Tax department (EPC validation for rented buildings), Funding database (EPC calculation results)
Malta	Thorough quality check before being lodged	Digital database – Restricted access, not interactive				
Poland	Independent random quality check	Digital database – Partially public access, not interactive				
Slovenia	Automatic quality check	Digital database – Public access, interactive		Basis for set up prepared	Basis for set up prepared	Real estate records
Spain	Partially automatic quality check	Digital database – Public access, interactive			Building Book tool	Reports on the state of conservation, a Building Book
United Kingdom	In-built validation rules applied	Digital database – Public access, not interactive	Software program			

In Denmark, the pilot project Hub is a digital platform that provides access to data about buildings and their energy consumption. It collects and displays data on energy consumption in buildings, data on the energy characteristics of buildings from the Central Register of Buildings and Dwellings (BBR), the energy labelling database (EPC) and weather stations. When fully implemented, the hub would be an improved basis for an automatic generation of recommendations in EPCs that could be linked with the building stock targets in long-term renovation plans.

In Greece, there is a connection between the databases. The RESTful web service allows data to be gathered from the Land registry (geolocation data), while it also allows to provide data to:

- Funding database (EPC calculation results)
- Building logbook (EPC validation) and
- Tax department (EPC validation for rented buildings)

In Malta, EPCs are not yet publicly available. As for audits, there is no platform which aggregates all submitted data.

In Poland, there is the EPC database, but results of energy audits are not digitally available in a database or software program, so there is no connection.

In Slovenia, EPC data is digitally available in a database. These EPCs are in the database, while more detailed data is stored in the software input file and is not transferred into the registry. Regarding the information from energy audits, a connection as well as the authorisation to share data are still to be implemented. Regarding BRPs, knowledge is available, projects on this topic and the communication with the ministry have been established.

EU-funded e-Prostor project digitised real estate records and connection with EPCs is also established. Any further information regarding buildings, real estate and infrastructure will be linked to this government cloud data.

In Spain, audit reports are not digitally available and thus cannot be linked to other sources of information. It is noteworthy that there have been tools existing for the census and inspection of the state of conservation of buildings that are approaching the end of their estimated useful life. These tools make the inclusion of EECs (Energy Efficiency Certificates) in the reports on the state of conservation of buildings compulsory. Likewise, for new buildings a Building Book is compulsory, which contains, among other things, the manual for the use and maintenance of the building in order to plan the correct use and conservation of the installations and construction elements. In addition, this tool is planned to be interactive, so that it must be updated by the owners as interventions are carried out in the building, whether or not they derive from construction faults. As a new initiative, the Existing Building Book tool, which brings together all the tools described above, is the document, which in addition to a complete inspection of a building's construction and energy performance, adds a second chapter to be developed by the assessors: the potential for improving the building's performance and the action plan for its renovation.

In the United Kingdom, results from energy audits are entered to a software program. Linking to other sources of information has not yet been implemented.

4 Readiness of next-generation EPC schemes to be linked to one-stop shops

4.1 Results of the analysis of next-generation EPC schemes integration into existing one-stop shops

The content of this activity was to see the extent to which the proposals for the next-generation EPCs meet the requirements for linking them to the existing one-stop shops. The results are presented in Figure 2 below, providing the best practice examples which will be used for extracting recommendations and guidelines for the next generation EPCs to be linked with one-stop shops.

As the results of the analysis show, the best predefined conditions for integration of next generation EPCs with the existing one-stop shops have been found in following crossCert partner countries:

- Bulgaria - incorporation of the existing EPC scheme with REVERTER OSS as well as SHEERenov+ and SUNSHINE platform.
- Denmark - incorporation of the existing EPC scheme with SparEnergi and BetterHome.
- Slovenia - incorporation of the existing EPC scheme with ENSVET.
- Spain - incorporation of the existing EPC scheme with ENERHAT, Solutions4Renovation, RenovEU and HORIS.
- The UK - incorporation of the existing EPC scheme with Retrofit Works and Ecofurb.

EPC integration in OSS analysis results

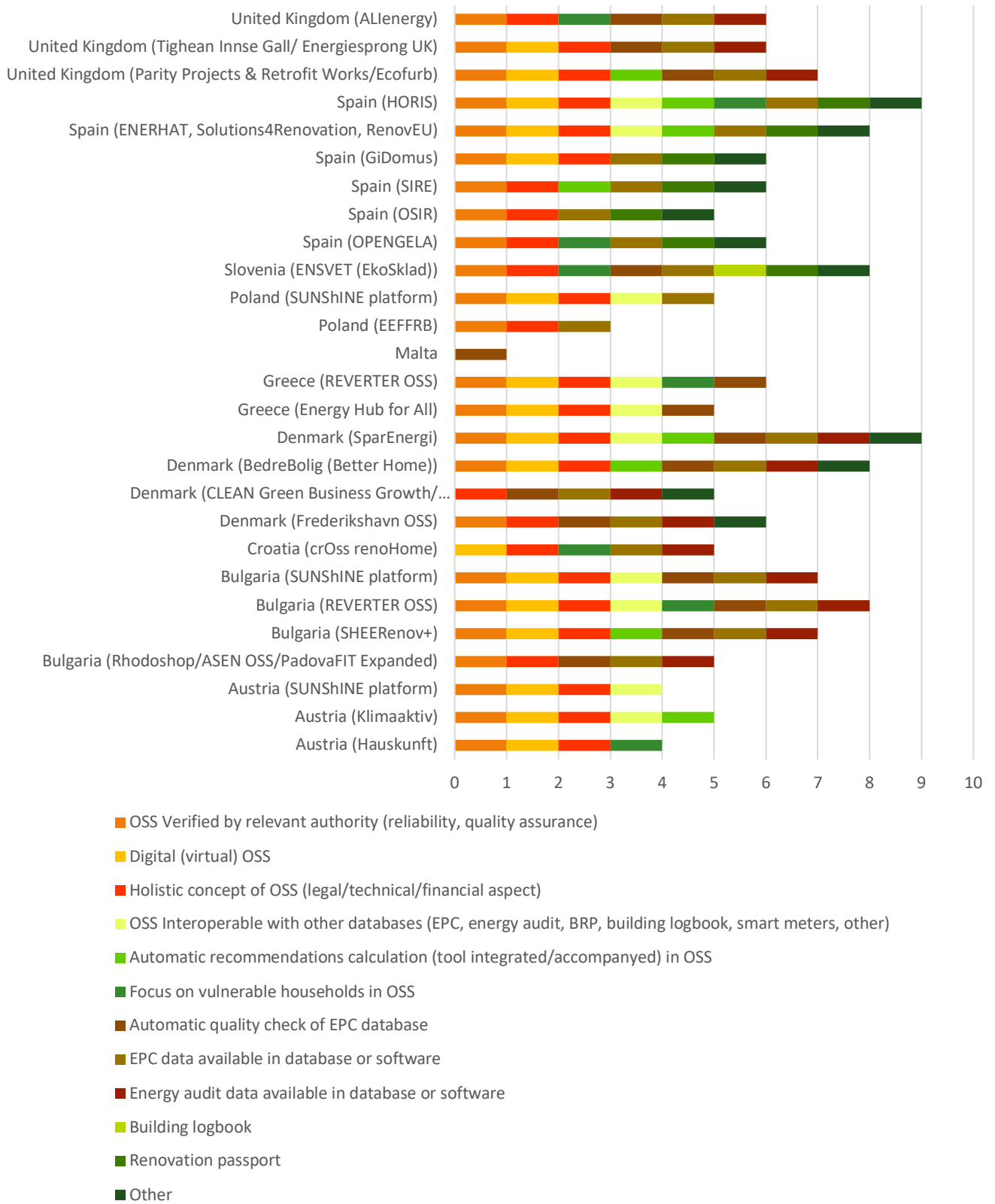


Figure 2 EPC integration in one-stop shops analysis results

4.2 Next-generation EPC schemes integration with one-stop shops of various crossCert sister projects

The following chapter explains the related projects, together with relevant outputs of specific tools of each project.

4.2.1 X-tendo

4.2.1.1 Project relevance

The X-tendo project described approaches for linking EPC data to one-stop shops (OSS) and demonstrating the applicability of these approaches for the different implementing countries (Denmark, Portugal, Romania and UK – Scotland), considering their existing EPC data, building stock renovation activities and needs. Furthermore, the project took the opportunity to look at existing OSS (whenever possible), propose improvement measures and test them, allowing the upgrade of existing OSS to future functionalities by taking advantage of the next generations EPCs.

The following tasks were performed to achieve the expected output:

- Identification of what types of data are collected in EPC databases
- Reviewing of the interoperability status among databases
- Identification of what types of information are available in EPCs
- Identification of what information is needed for OSS
- Detailing how the improvement measures are evaluated and documented, including which types of data are recorded and how they are integrated into OSS
- Identification of any additional information needs
- Evaluation of the existing types of OSS, including descriptions, functionalities, applicability and main target groups
- Assessment of the focus of these OSS and which areas/sectors are covered
- Evaluation of what types of information and criteria the OSS are based on and which types of data are used
- Mapping of the needs and barriers faced by stakeholders
- Analysis of the compatibility of EPC data
- Identification of existing best practices and flagship projects
- Evaluation of the potential business model and cost structure
- Identification of the recommendations on the use of EPCs and data in OSS

X-tendo analysed the integration into the EPCs of financial information to support the implementation of the recommendations indicated by EPCs. The goal of this activity is to determine how integrating financing options can boost the perceived usefulness of the EPC, increase its impact on renewal decisions, and help public authorities develop more effective financial support schemes. For this, tests were developed in Denmark, Portugal and Romania. These tests consisted of workshops on this topic, interviews with stakeholders and the analysis of questionnaires filled out by the stakeholders. With the results obtained from these activities, guidelines were prepared for integrating financial information in the EPCs.

4.2.1.2 Output related to one-stop shop

The following outputs of X-tendo project related to one-stop shops are the following ones:

- Identification of the types of data needed to support, access and set up/improve an OSS
- Identification of OSS functionalities that can be adopted
- Understanding of how the EPC or its data can be channelled to the main target groups using the OSS
- Understanding of how the EPC can be used to map improvement needs and access the OSS, leading to effective implementation
- Provision of detailed information to homeowners about their homes and monitoring of the uptake of improvement measures
- Reduced barriers to finding information
- Responses to future EPBD-related provisions
- Methodologies for communicating with building owners and experts

These outputs were used to elaborate guidelines on how to set up or upgrade OSS and link EPC data. The developed guidelines were validated during a testing phase. This included analysis of the existing OSS, discussions with stakeholders about the possible design elements of OSS and their corresponding links with EPCs, the identification of possible pathways to implement or upgrade OSS, and consideration of how EPC data can be effectively integrated.

The main guidelines developed by X-tendo regarding the implementation of financing options in EPCs are the following ones:

- Provide information to homeowners on financing options, cost transparency, payback and other benefits.
- Provide information to financial institutions about the quality of the underlying asset and reduce risk associated with the financial instruments.
- Describe approaches and mechanisms to link EPC data to available financing options.
- Propose specific financial options based on building input data.

4.2.2 QualDeEPC

4.2.2.1 Project relevance

QualDeEPC created the concept of Deep Renovation Network Platforms, which are one-stop shops (OSS) for deep renovation linked to EPCs plus a Networking Platform for renovation supply-side actors and their joint communication/marketing. These platforms therefore address the needs of various stakeholders and end-users.

4.2.2.2 Output related to one-stop shop

QualDeEPC offered two options for the Deep Renovation Network Platform: basic and enhanced.

- **Basic platform concept**

The basic platform includes seven services/products, mainly offering a virtual one-stop shop (OSS) plus active marketing and networking of stakeholders.

The services included are the following ones:

1. Information on renovation actions (general information, information on potential savings, costs and other benefits, linking with renovation tools)
2. Linking with EPCs, building renovation roadmaps and passports
3. Information on building contractors/technicians and energy efficiency experts
4. Information on material or product manufacturers/suppliers
5. Information on financing opportunities for deep renovation
6. Active marketing of deep renovation and its benefits and costs
7. Network for learning, exchange and cooperation (local/regional/national)

- **Enhanced platform version**

The enhanced platform includes eight additional services:

1. Network for learning, exchange and cooperation (interregional/transnational)
2. Capacity building and training
3. Step-by-step guidance for a renovation project
4. Monitoring the implementation of the renovation project
5. Operating a physical network hub and information centre
6. Carrying out renovation projects
7. Initiation and coordinating of deep renovation demonstration projects
8. Aggregation of building renovation projects

Deep renovation platforms (pilots) developed under the frameworks of QualDeEPC can be found in the following link <https://qualdeepc.eu/deep-renovation-network-platforms>.

4.2.3 EUB-SuperHub

4.2.3.1 Project relevance

The EUB-SuperHub project (European Building Sustainability Performance and Energy Certification Hub) is a Horizon 2020 project that started in June 2021 and is scheduled to end in December 2024.

The goal of the EUB SuperHub is to create a new certification concept based on the Level(s) methodology, which involves calculating a series of Key Performance Indicators (KPIs). This certification concept will be integrated into a web platform that allows various users to interact (virtual one-stop shops). The outcome of the certification process will be a document called E-passport, which will display the building certification information, including the results of the selected KPIs.

These E-passports will be linked to a virtual matchmaking marketplace, creating a demand-driven market for energy-efficient, sustainable, and smart buildings. One of the key components of this new certification

concept, coupled with a virtual one-stop shop, is the digital building logbook, the definition of which is one of the primary outcomes of the EUB SuperHub project, along with the web platform where the entire certification process is carried out.

4.2.3.2 Output related to one-stop shop

The EUB SuperHub Platform serves as the operational centre for the certification process developed by EUB SuperHub. It functions as a repository for collecting, analyzing, and archiving building-related data, which can then be shared with relevant stakeholders. Its multifaceted capabilities position it as a virtual one-stop shop.

The EUB SuperHub platform consists of four modules:

- Planning and Verification Tool (PVT) module,
- E-passport cockpit (E-cockpit),
- Virtual Marketplace (VM) and
- E-training module.

The EUB SuperHub modules work together as a connecting system configuring an interactive cloud data hub for building energy and sustainability performance certificates.

Below each of these modules is described more detailed.

- **The E-passport cockpit (E-cockpit) module**

The E-cockpit module serves as a comprehensive database for storing and accessing important data concerning buildings and their associated certificates such as EPCs, sustainability certificates, and Smart Readiness Indicator (SRI). This module functions as an open-access data and communication hub that facilitates real-time information exchange among building users, planners, investors, and policymakers. The data in this database is sourced from the PVT module.

- **The planning and verification tool (PVT)**

This module can be considered the private part of the platform. The PVT module enable building owners to claim their buildings in the platform, upload the related information and decide on the type of building information they would like to share with the public in the E-cockpit or the Virtual Marketplace to find an energy or consultant or other service providers.

The PVT module stores the Digital Building Logbook and other building information. Additionally, it offers various features, such as the building performance analysis tool and the renovation analysis tool. With access to comprehensive building data and these specific features within the PVT module, users can assess their buildings' actual performance based on stored building information in the logbook or through what-if simulations to evaluate potential technology-neutral interventions and retrofitting options.

- **The Virtual marketplace (VM) module**

The Virtual Marketplace (VM) facilitates connections among building users, auditors, solution providers, funding sources, and other market actors and service providers. It is open to a wide range of service providers, such as SMEs, constructors, professionals, auditors, or banks, who can offer auditing, consulting, and funding services across the EU. These providers can join the VM for free and showcase their solutions and technologies to users through digital yellow pages on the VM platform. Building owners and users can also use the VM to find qualified service providers for their projects. For instance, owners can share building EPC and other certificates via the VM platform. Additionally, the VM can assist building planners in finding auditors or specialised contractors.

- **The E-training module**

The E-training module is an independent component of the EUB SuperHub platform with two main purposes. Firstly, it provides training material for platform users to learn how to use the EUB SuperHub platform, including the E-cockpit, VM, and PVT modules. Secondly, it offers advanced learning and training materials for the new generation of energy, sustainability, smart solution experts, and assessors, relevant to their field of expertise and collaboration module. The E-training module is publicly accessible and can be expanded during and after the project duration. It will utilise E-learning methods such as wiki pages, video tutorials, webinars, and podcasts, and will support multi-language environments.

4.3 Other projects related to one-stop shop

4.3.1 EFFECT4buildings

EFFECT4buildings use the experience acquired to develop guidelines regarding the information provided to the end-user about the renovation measures and for their integration in one-stop shops tools. EFFECT4buildings has developed tools that could be used in one-stop shops. This includes tools for financial calculations, bundling, funding, Energy Performance Contracting, Multi-Service Contracting, Green Lease Contract and Prosumerism.

4.3.2 EPC4SES

EPC4SES developed applications based on the EPC data. These applications are:

1. Energy consulting for individual buildings
2. Support of market development for building thermal refurbishment
3. Support of energy policy
4. Pre-planning of energy systems
5. Building energy management and
6. Network/grid energy management

4.3.3 FINSESCO

Finsesco aims at developing a Fintech Platform Solution for Sustainable Energy System Intracting and Contracting, using the EPC data as the basis for the evaluation of the energy saving that can be achieved and the economic resources required.

4.3.4 The MedZEB Protocol

The MedZEB protocol was designed and developed with the aim of incentivising clients to invest in building retrofitting, by offering them a guarantee that the retrofitting process will be carried out properly along the whole value chain. Furthermore, the protocol contains the quality requirements necessary for accessing the HAPPEN financial solution¹⁵, as well as specific KPIs addressing comfort, behavioural and well-being aspects. The protocol includes also the following main documents:

- Energy Performance Certificate (EPC. BPIE 2014; Caceres and Diaz 2018)
- Preliminary Retrofitting Project, identifying the boundary conditions and the design objectives

¹⁵<https://medzeb-happen.eu/>, July 2024

- Building Renovation Roadmap, describing the breakdown of the retrofitting project into steps
- Business Plan, based on the HAPPEN financial solution
- MedZEB Voluntary Certification Scheme (VCS)

The VCS will be issued at the end of each renovation step, after a positive assessment of the achievement of energy saving targets. For this reason, the MedZEB VCS entails a “relative,” and not an “absolute,” certification of the energy performance.

To this end, a monitoring process will be implemented after each renovation step, based on a dedicated monitoring protocol. In case the assessment is not fully positive, the guaranteed framework of the protocol will be activated, leading to the definition of a contingency plan, the execution of which will be mandatory for the activation of the next step. The development of the MedZEB protocol was based on extensive literature research, including building environmental assessment methods. The protocol was designed not only as a detailed, standardised and transparent tool, but also as a simple and cheap one to be used throughout the renovation process.

4.3.5 INNOVATE

The INNOVATE project was about experimentation, but also and above all, it led to the concrete implementation of fully operational and viable one-stop shops¹⁶. For most partners, this was a challenge they happily accepted in order to lead by example and to learn by doing. Now, at the end of their journey, partners share their hands-on expertise. With the recommendations below, one-stop shop newcomers can achieve in a short time what would have taken them years on their own:

1. Be aware that it might take a lot of time before you see the first results of your one-stop shop.
2. Take time for your local stakeholders and homeowners.
3. Local suppliers might not be able to meet your quality criteria.
4. Consider the geographical location, size and attractiveness of your territory.
5. An online platform is a MUST to increase the one-stop shop efficiency and conversion rates.
6. It could be interesting to opt for a neighbourhood approach in energy renovation.
7. If your one-stop shop can get subsidies, use them to develop your infrastructure and partnerships.
8. If your one-stop shop is a private company or a cooperative, try to get support from local or regional authorities on which area you operate
9. Consider alternative revenue sources for your one-stop shop, in addition to service fees you charge to homeowners
10. Offer innovative services to your citizens.
11. The one-stop shop can facilitate project bundling and act as an interface vis-à-vis financial institution.
12. Get ‘real’ marketers and salesmen on board.
13. Decide between deep renovation or step-by-step approach?.
14. Think big, start small: prove that your concept works and scale it up.

¹⁶https://energy-cities.eu/wp-content/uploads/2020/11/INNOVATE_publishable_report_final_web-1.pdf, July 2024

5 Recommendations and guidelines

In addition to technical difficulties with data transfer between tools, there are organisational difficulties with using next-generation EPC tools with one-stop shops. These difficulties include low levels of digitalisation, isolated schemes or a lack of linking of available data (e.g., databases, software tools), problems with data protection, a lack of willingness to link disparate information sources, low levels of trust and interest in EPCs. Therefore, the following set of recommendations and guidelines on how to drive the implementation of next-generation EPCs in the existing one-stop shops is proposed:

- Having access to a functional EPC database is essential for processing data and advising homeowners.
- OSS verification techniques are essential for building suppliers' and homeowners' trust.
- The General Data Protection Regulation (GDPR) is a major problem when it comes to information processing and exchange of personal data.
- Establishing reliable alliances and finding more affordable alternatives are crucial in overcoming the current market constraints that stand in the way of service providers and beneficiaries.
- In order to provide vulnerable households with tailored information, there has to be a greater awareness of one-stop shops.
- Assure the EPCs' quality assurance so that beneficiaries can receive trustworthy guidance.
- Determine which stakeholders are interested and what information is required in each Member State by conducting thorough market surveys.
- Strengthen the role of the EPC in funding accessibility, namely by making the EPC a requirement for eligibility in both the ex-ante and ex-post evaluation.
- Use the EPCs to streamline and lessen bureaucracy in the funding programme applications; the certification programme needs to be a reliable resource that instills confidence in the procedure and permits benchmarking.
- Duplicate successful models that bring together various stakeholders and advance their expertise in the context of building energy renovation; these include leveraging the connection to EPCs, the potential for technical advice, and the interoperability of the EPC database with the financing platforms.
- Establish a clear communication plan for the financing initiatives for energy renovation and connect and disseminate the benefits that are already offered at the national and regional levels, specifically through digital platforms connected to EPCs.
- Offer national programs and other governmental incentives and financing schemes first, followed by private financing schemes.
- Detailed requirements for each finance source's eligibility.
- Clearly state how the promised finance amount and the degree of energy efficiency improvement, including emission reduction, are related. Indicate which labour expenses are refundable and which need to be paid for out of pocket.
- Financial data is crucial for making sure reports and one-stop shop guidance motivate action on measures.
- Enhance the EPC's renovation suggestions so that they serve as the foundation for each building's deep restoration roadmap or passport. High-quality, energy-efficient solutions must be supplied by assessment software programs as their output for refurbishment recommendations. An overview of these suggestions and, if feasible, energy savings should

be included in the first few pages of the EPC, along with links to additional resources and funding sources.

- Make an online tool available that contrasts energy usage and EPC suggestions with market averages or common building types; additionally, provide recommendations for specific deep energy renovations that align with the typical components of a person's deep renovation passport or roadmap.

6 Conclusions

Even with their enormous potential to encourage renovation decisions, one-stop shops are still unable to overcome several obstacles on their own, most notably the financial ones. Only a banking and institutional framework that acknowledges the social, economic, and other advantages linked to energy efficiency enhancements could contribute to securing the capital needed by one-stop shops to launch their businesses as well as by homeowners to pay for renovations. Scaling up the one-stop shops market also requires favorable financial conditions, a suitable policy framework, experience sharing, and model transfer both within and across nations. It may also be able to forge a closer bond between the one-stop shops model and deep renovations through suitable policy interventions. These interventions could involve targeted incentives, mandatory renovation programs, or access to soft loan facilities, but most significantly, they have to be grounded in an ambitious long-term plan by governments with defined energy transition goals. Encouraging policy developments include the EU's Renovation Wave Strategy, which calls for at least doubling renovation rates throughout Europe over the next ten years, the Energy Efficiency Directive's central government renovation requirement, and the updated Energy Performance of Buildings Directive's requirement to set milestones in national long-term building renovation strategies.

Key policy initiatives that reinforce the framework for OSSs include, but are not limited to, national targets, strict energy performance criteria and standards, targeted awareness-raising programs, and specialised financial incentives. By using OSSs to offer combined loans and guarantees from public and private sources, renovation trust may grow, and specific quality standards may be satisfied. Lastly, there is a connection between OSS renovations and the development of energy-efficiency obligation schemes.

With a focus on vulnerable households and those impacted by energy poverty, the EPBD gives special attention to OSS. It is true that OSS services can be customised to meet various demands. Specific needs or obstacles may arise from the real estate sector's diversity as well as the peculiarities of its various segments and players. OSS services can be customised to better serve vulnerable households, multi-unit buildings, single-family homeowners, and small landlords by offering relevant and sufficient information. One-stop shops will make it easier to implement customised energy-saving measures, beginning with the worst performing buildings and vulnerable households.

To identify the appropriate target market and present them with a compelling offering, one-stop shops require accurate information. For many of these business models, post-renovation quality assurance is also a crucial but challenging phase. With a few notable exceptions, the EPC regimes do not now provide this information, but they could be of assistance.

One-stop shops give homeowners and other property owners thorough information on renovation packages, incentives, assistance programs, technological solutions, artisans, etc. They are seen to be an important tool for lowering obstacles and transaction costs. These features ought to be connected to EPCs as well. Renovating an energy efficient home is an extremely complicated task, which is also the major reason homeowners are reluctant to implement even affordable improvement measures. One-stop shops may overcome market fragmentation on both the supply and demand sides by interacting with every link in the remodeling value chain. EPC data is already used by many one-stop shops in their business models, but there is still a lot of unrealised potential.

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