Underpinning the role of One-Stop Shops in the EU Renovation Wave

First Lessons Learned from the Turnkey Retrofit Replication

TURNKEY RETROFIT

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Executive summary

The TURNKEY RETROFIT project has expanded existing one-stop shop services based on two existing French models – HEERO and Operene – and initiated a replication process of certain elements in Spain and Ireland. The first lessons learned are that it is possible to replicate an one-stop shop model and deploy it in another region, yet it can be complicated and resource-intensive. This report discusses the replicability of the renovation journey and highlights 12 key recommendations for how the European Commission can support an effective roll-out of one-stop shops across the European Union.

The challenge

Reducing the energy and carbon need of the building stock is a key priority for the European Union, as buildings are responsible for around 40% of energy consumption and 36% of CO_2 emissions in the region. The obvious solution is to improve their energy and carbon performance through renovation works. Yet, with only 0.2% of buildings being deeply renovated each year, the decarbonisation of the sector is moving too slowly. The European Commission's Renovation Wave Strategy proposes several solutions to this, with the new objectives of renovating 35 million building units by 2030 and of doubling the renovation rate within the next 10 years.

One-stop shops: one part of the solution

One-stop shops can play roles as facilitators in the Renovation Wave, by interconnecting funding opportunities, incorporating solutions to new regulatory requirements,[1] organising training and apprenticeship programmes and supporting various awareness-raising activities. One-stop shop is a collective term for services offering integrated renovation solutions with the main intention of simplifying the renovation process for homeowners.

The Renovation Wave Strategy acknowledges this and outlines a central role for one-stop shops where it identifies a need for "standardised one-stop shops that can be deployed quickly".[2] More than 60 one-stop shop models have appeared across the EU over the last 10 years.[3] Despite this, it remains a niche idea in the EU and the existing models have not achieved any particular scale. The roll-out of the Renovation Wave Strategy and concurrent Recovery and Resilience Facility plans[4] make it clear that these services will have to become more mainstream. The development of more standardised one-stop shop models, which can be replicated and quickly deployed across Europe, is an important step.

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1 For example, the Renovation Wave launched the idea of introducing mandatory minimum energy performance standards (MEPS), which would mandate the worst-performing buildings to be renovated.

2 Ibid

3 Economidou, M et. al. (2021) *One-stop shops for residential building energy renovation in the EU*. European Commission. [Report] Available: <https://op.europa.eu/en/publication-detail/-/publication/423a4cad-df95-11eb-895a-01aa75ed71a1/language-en>

4 To mitigate the economic and social impact of the coronavirus pandemic, the EU will "make €672.5 billion in loans and grants available to support reforms and investments undertaken by Member States". European Commission (2020) *Recovery and Resilience Facility* [Website] Available*: <https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility_en>

Replicability of the renovation Journey

The report analyses 15 elements, which are common to most all-inclusive one-stop shop models. These models guide the homeowner throughout the whole renovation process: attracting the customer to the first estimate and on-site visit, a proposal for the works, the actual renovation works, and a follow-up quality check. Homeowners need to be guided through the whole renovation process to achieve a high conversion rate, i.e. to avoid drop-outs and thus to make sure the homeowner goes from being interested in investing in a renovation to actually carrying one out.[5]

The analysis in Table 1 shows that it is possible to replicate certain elements of an one-stop shop, but also that it requires time and dedication to adapt the solution/tool to a new context. The digital aspects of an one-stop shop are easier to replicate, but templates and guidelines can help to streamline and simplify the physical aspects. The TURNKEY RETROFIT experience shows that, among other things, this often requires more time and resources than anticipated.

Table 1: Summary of the analysis of the replicability of the most typical renovation journey elements

Renovation journey step	One-stop shop element	Rating
Attract customer	Direct marketing	■■■□□
	Social marketing/ awareness-raising	■■■■□
	Website	■■■■■
Initial Assessment	Indication of potential energy and cost savings	■■■■□
	Automated building renovation passport	■■■■□
Work Programme Conception	On-site visit (social interaction)	■■□□□
	On-site visit (digital help to expert)	■■■■□
Work Programme Definition	Contract	■■■□□
	Project planning	■■□□□
Selection of professionals	Identification and matching of professionals	■■■■□
Renovation and Follow-up	Training and skills	■■■□□
	Quality assurance process (certification/ training)	■■■■□
	Quality assurance process (follow-up)	■■■□□

Classification of the different OSS elements according to their replicability, from 'not replicable' to 'fully replicable'.

■□□□□ **Not replicable**　　■■□□□ **Laboriously replicable**　　■■■□□ **Somewhat replicable**　　■■■■□ **Easily Replicable**　　■■■■■ **Fully Replicable**

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5 Volt, J, Zuhaib, S & Steuwer, S (2019) "Turnkey Retrofit project. D1.1 Benchmarking of promising experiences of integrated renovation services in Europe," September 2019. [Online]. Available: <https://www.turnkey-retrofit.eu/reports-findings/>
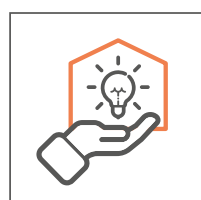
Recommendations for the European Commission

Rapid deployment of one-stop shops is required to double the Renovation Wave and to increase the overall quality of renovations. One-stop shops are just one part of a wider policy package, which ought to include regulatory measures (e.g. mandatory minimum energy performance standards and taxonomy regulation), training programmes for professionals, technical assistance support and communication campaigns. It also needs to include additional financial mechanisms and incentives, for example through European Investment Bank funds, the European Local Energy Assistance (ELENA) programme and Project Development Assistance (PDA).[6] One role of the one-stop shops could be to bring all these provisions together and make sure the result is attractive to homeowners across the European Union.

This section outlines 12 specific recommendations on how the European Commission can support a rapid deployment of OSS, divided into four broader categories: 1) mandate Member States to ensure access to reliable renovation advice, 2) contribute to creating a favourable environment for establishing one-stop shop services, 3) offer replicable OSS elements, and 4) provide detailed guidelines on how to develop and implement an one-stop shop.
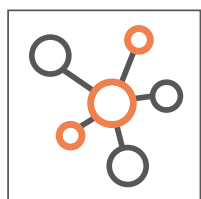
Figure 1: Overview of the 12 recommendations

Mandate Member States to ensure access to reliable renovation advice

1. Require Member States to ensure the majority of building owners have access to reliable renovation advice
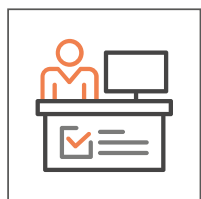
Contribute to creating a favourable environment for establishing one-stop shop services

2. Streamline technical assistance and funding requirements
3. Set up a standardised OSS project template
4. Set up an EU-wide certification for highly qualified experts
5. Build capacity at the local level to enable actors to implement one-stop shops
6. Encourage local authorities and financial institutions to get involved

Offer replicable one-stop shop elements

7. Toolbox of replicable OSS elements for local implementers
8. Set up standardised contract templates and use OSS to aggregate renovation opportunities
9. Explore how one-stop shops can be used to facilitate aggregation of renovation opportunities

Provide detailed guidelines on how to develop and implement an one-stop shop

10. Toolbox with guidelines and good practice examples for local implementers
11. Guidelines on how to involve stakeholders in the one-stop shop implementation
12. Explore how one-stop shops can be used to market deep renovations

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6   Economidou, M et. al. (2021) One-stop shops for residential building energy renovation in the EU. European Commission. [Report] Available: <https://op.europa.eu/en/publication-detail/-/publication/423a4cad-df95-11eb-895a-01aa75ed71a1/language-en>

Conclusion and next steps

The roll-out of the Renovation Wave will fuel a dramatic increase in demand for energy renovations across the EU. It has the potential to drive this demand through the introduction of mandatory minimum energy performance standards, anchor long-term energy and carbon targets for the building sector, improve the use of data amplified by enhanced energy performance certificates, steer investments towards deep renovations through the new deep renovation standard and various financial mechanisms, as well as improve the skills throughout the construction value chain. All this will also strengthen the necessity and role of one-stop shops.

One-stop shops can address several market gaps, including (i) offering a smooth renovation journey for the homeowners, (ii) forming a trustworthy process for the homeowner to find reliable and accredited experts, reliable renovation advice and result guarantees, and

(iii) address coordination gaps in the construction value chain. In addition, one-stop shops can contribute to making deep renovations more attractive for the homeowner by packaging technical and financial solutions and by demonstrating the long-term value of deep renovations.

During the last few years, the number of one-stop shops has steadily increased throughout the EU, yet their scale and impact remain limited. In addition, there are limited harmonisation and collaboration between one-stop shops in different regions, which hampers a more effective replication process. Many local actors also view the development of one-stop shops as complicated and expensive, in contrast to the perceived associated benefits, which is another barrier to a faster uptake. The European Commission should contribute to the acceleration of this development while contributing an overall higher quality of the provided services.

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The Renovation Wave
and the potential role of one-stop shops

The Renovation Wave Strategy
aims to renovate…

35 million building units… **…by 2030**

Reducing the energy and carbon need of the building stock is a key priority for the European Union (EU), as buildings are responsible for around 40% of energy consumption and 36% of CO_2 emissions in the EU[7]. The obvious solution is to improve their energy and carbon performance through renovation works. Yet, with only 0.2% of buildings being deeply renovated each year[8], the decarbonisation of the sector is moving too slowly. The European Commission's Renovation Wave Strategy proposes several solutions to this, with the new objectives of renovating 35 million building units by 2030 and of doubling the renovation rate within the next 10 years.[9]

One-stop shops (OSS) can play roles as facilitators in the Renovation Wave, by interconnecting funding opportunities, incorporating solutions to new regulatory requirements[10], organising training and apprenticeship programmes and supporting various awareness-raising activities. OSS is a collective term for services offering integrated renovation solutions with the main intention of simplifying the renovation process for homeowners. The Renovation Wave Strategy acknowledges this and outlines a central role for OSS where it identifies a need for "standardised one-stop shops that can be deployed quickly".[11] In the light of the pending Renovation Wave, this paper explores which elements of the renovation process can be replicated across the EU, based on the

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7   European Commission (2020) In focus: Energy efficiency in buildings. [Website] Accessed May 10, 2021. Available: <https://ec.europa.eu/info/news/focus-energy-efficiency-buildings-2020-feb-17_en>
8   Deep renovation refers to renovations that results in a reduction of energy consumption by, at least, 50–60%. Source for the figure: IPSOS & Navigant (2019) Comprehensive study of building energy renovation activities and the uptake of nearly zero-energy buildings in the EU. European Commission. [Report] Available: < https://op.europa.eu/s/pnbN>
9   European Commission (2020) A Renovation Wave for Europe – greening our buildings, creating jobs, improving lives. COM/2020/662 final. [Report] Available: <https://ec.europa.eu/energy/sites/ener/files/eu_renovation_wave_strategy.pdf>
10 For example, the Renovation Wave launched the idea of introducing mandatory minimum energy performance standards (MEPS), which would mandate the worst-performing buildings to be renovated.
11 Ibid

lessons learned from the TURNKEY RETROFIT project. The paper also provides recommendations on what the European Commission can do to boost the uptake of successful OSS.

There are plenty of reasons why homeowners choose not to renovate their buildings, including high upfront costs, distrust of contractors and disruption of everyday life.[12] Most homeowners view the renovation process as a hassle including multiple contacts and contracts, unreliable contractors and uncertainty over whether the final result really will meet their expectations. In several cities across the EU, OSS have proven effective in lessening these barriers by integrating financial and technical advice for the homeowner and guiding them through the whole renovation journey (i.e. the process the homeowner goes through, from the first idea to finalisation of the works).[13]

> *"OSS models generally offer full-service retrofitting, which consists of several phases, including the initial building evaluation and thorough analysis, the proposal of retrofit solutions, coordinated and managed retrofit execution, followed by quality assurance procedures and continued commissioning of the building. Moreover, by providing a single point of contact, the OSS model guides homeowners through the entire retrofit process."*
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> **One-stop shop definition by McGinley, O et al.**

Currently, every implementing organisation is developing its own version of OSS, resulting in a wide range of OSS models. The models can be differentiated by their **ownership type**, which broadly includes (i) industry-driven, (ii) consultant-driven, (iii) energy service company or utility-driven, (iv) local government-driven, and (v) cooperative-driven models.[15,16] OSS can also be differentiated by the **type of service** they provide such as (i) facilitation-oriented, where the focus of the OSS is to give advice and put the homeowner

in contact with the right installers, (ii) coordination-oriented, where the OSS coordinates the required work, and (iii) all-inclusive, where the OSS guides the building owner throughout the full renovation journey.[17]

More than 60 OSS have appeared across the EU over the last 10 years.[18] Despite this, OSS remain a niche idea in the EU and the existing models have not achieved any particular scale. The roll-out of the Renovation Wave Strategy and concurrent Recovery and Resilience Facility plans[19] make it clear that these services will have to become more mainstream. The development of more standardised OSS models, which can be replicated and quickly deployed across Europe, is an important step. However, the European Commission needs to address several barriers which are currently hampering an effective replication of OSS models.

Existing cases show how complicated it can be to replicate an OSS. The TURNKEY RETROFIT project has expanded existing OSS services based on two existing French models – HEERO and Operene – and initiated a replication process of certain elements in Spain and Ireland. The first lessons learned are that it is possible to replicate an OSS model and deploy it in another region, yet it can be complicated and resource-intensive. The next section discusses which elements of the renovation journey can be easily replicated and deployed across Europe, while the following section features 12 key recommendations for how the European Commission can support an effective roll-out of OSS.

The results presented in this report are based on interviews with the TURNKEY RETROFIT project partners in Spain and Ireland, existing TURNKEY RETROFIT project results, interviews with leading experts and stakeholders (including the European Consumer Organisation, the European Investment Bank, the EU Joint Research Centre, GNE Finance, Wuppertal Institute /ProRetro project and ARKtPlus), and a compilation of existing research on OSS for energy renovations. The questions used for semi-structured interviews are included in the Annex and the used literature in the Reference list.

12 D'Oca, S et al. (2018) Technical, Financial, and Social Barriers and Challenges in Deep Building Renovation: Integration of Lessons Learned from the H2020 Cluster Projects. Buildings/MDPI. Concept Paper. [Report] Available: <https://www.mdpi.com/2075-5309/8/12/174/pdf>

13 Volt, J, Zuhaib, S & Steuwer, S (2019) "Turnkey Retrofit project. D1.1 Benchmarking of promising experiences of integrated renovation services in Europe," September 2019. [Online]. Available: <https://www.turnkey-retrofit.eu/reports-findings/>

14 Definition from McGinley, O et al. (2020) Key considerations in the design of a One-Stop-Shop retrofit model. [Report] Available: <https://sword.cit.ie/cgi/viewcontent.cgi?article=1062&context=ceri>

15 Boza-Kiss, B & Bertoldi, P (2018) One-stop-shops for energy renovations of buildings, European Commission, Ispra, 2018. [Report] Available: <https://e3p.jrc.ec.europa.eu/publications/one-stop-shops-energy-renovations-buildings>

16 See also Volt, J, Zuhaib, S & Steuwer, S (2019) "Turnkey Retrofit project. D1.1 Benchmarking of promising experiences of integrated renovation services in Europe," September 2019. [Online]. Available: <https://www.turnkey-retrofit.eu/reports-findings/>

17 J Cicmanova et. al. (2020) How to set up a One-Stop-Shop for Integrated Home Energy Renovation?, INNOVATE project [Report] Available: <https://energy-cities.eu/publication/how-to-set-up-a-one-stop-shop-for-integrated-home-energy-renovation/>

18 Economidou, M et. al. (2021) One-stop shops for residential building energy renovation in the EU. European Commission. [Report] Available: <https://op.europa.eu/en/publication-detail/-/publication/423a4cad-df95-11eb-895a-01aa75ed71a1/language-en>

19 To mitigate the economic and social impact of the coronavirus pandemic, the EU will "make €672.5 billion in loans and grants available to support reforms and investments undertaken by Member States". European Commission (2020) Recovery and Resilience Facility [Website] Available: <https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility_en>

What parts of the renovation journey can be replicated?

An all-inclusive OSS guides the homeowner throughout the whole renovation process: attracting the customer to the first estimate and on-site visit, a proposal for the works, the actual renovation works, and a follow-up quality check. Homeowners need to be guided through the whole renovation process to achieve a high conversion rate, i.e. to avoid drop-outs and thus to make sure the homeowner goes from being interested in investing in a renovation to actually carrying one out.[20]

Figure 2 illustrates the stages of an OSS service derived from an analysis of existing OSS models.[21] The subsequent table (Table 2) dissects the main OSS services based on the renovation journey steps and discusses the replicability potential of each element. The analysis focuses on the central steps of a renovation journey as these tend to be similar for most OSS offering integrated renovation services.

An all-inclusive one-stop shop guides the homeowner throughout the whole renovation process

ONE STOP SHOP

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20 Volt, J, Zuhaib, S & Steuwer, S (2019) "Turnkey Retrofit project. D1.1 Benchmarking of promising experiences of integrated renovation services in Europe," September 2019. [Online]. Available: <https://www.turnkey-retrofit.eu/reports-findings/>
21 ibid

Figure 2: Typical stages of an OSS service for multi-family buildings, developed by the TURNKEY RETROFIT consortium based on an analysis of existing OSS models. The renovation journey steps for single-family buildings are similar but less multifaceted. The figure for single-family buildings can be found in the Annex.
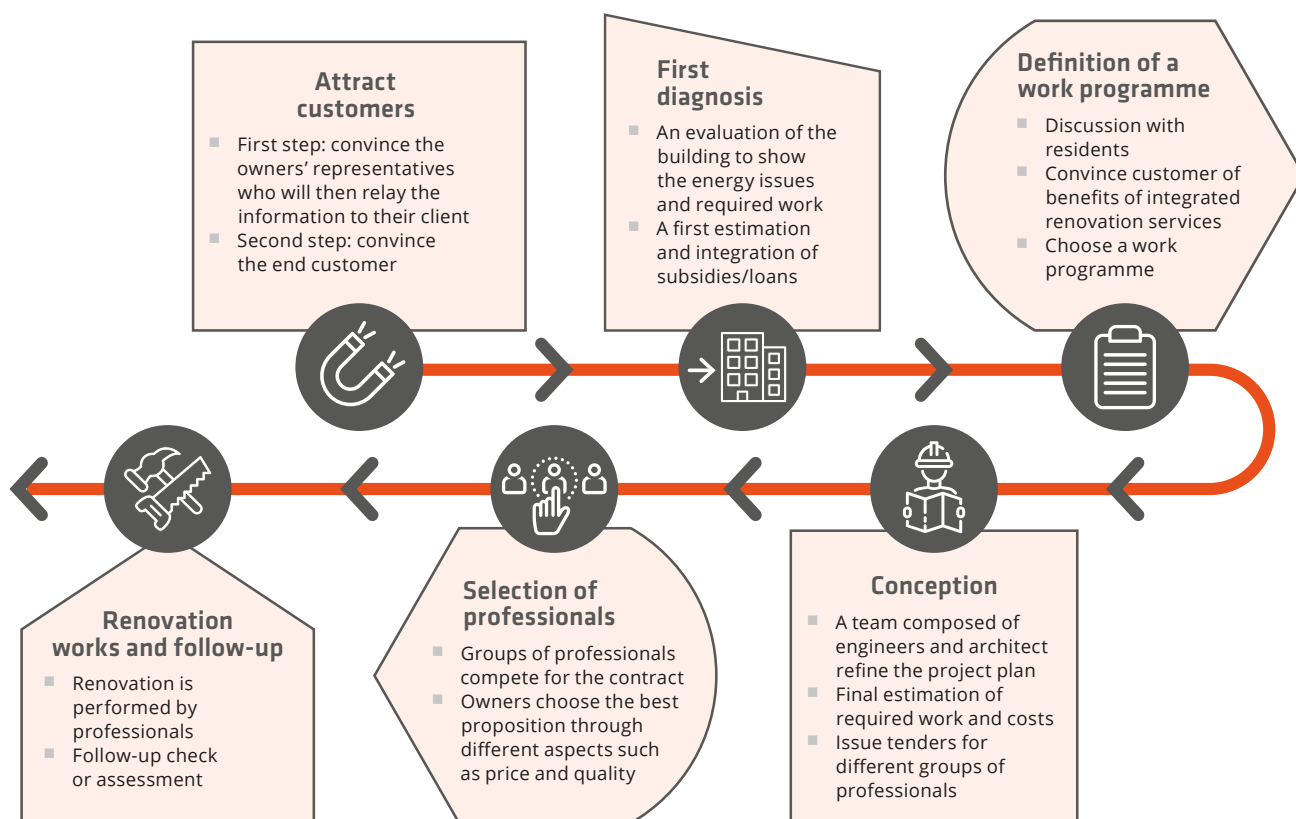
Attract customers
- First step: convince the owners' representatives who will then relay the information to their client
- Second step: convince the end customer

First diagnosis
- An evaluation of the building to show the energy issues and required work
- A first estimation and integration of subsidies/loans

Definition of a work programme
- Discussion with residents
- Convince customer of benefits of integrated renovation services
- Choose a work programme

Renovation works and follow-up
- Renovation is performed by professionals
- Follow-up check or assessment

Selection of professionals
- Groups of professionals compete for the contract
- Owners choose the best proposition through different aspects such as price and quality

Conception
- A team composed of engineers and architect refine the project plan
- Final estimation of required work and costs
- Issue tenders for different groups of professionals

Table 2 discusses and rates the replicability of elements included in the five stages typically included as part an OSS service, as illustrated in Figure 2. Reviewing existing OSS demonstrates a wide difference in the models, in terms of the central business model, ownership, objectives, services provided and how stakeholders/contractors are involved.[22,23] New OSS implementers develop solutions for the different elements included in Table 2, such as developing a strategy for attracting customers, setting up a website, selection of professionals and drafting contracts.

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22 J Cicmanova et. al. (Energy Cities) (2020) *How to set up a One-Stop-Shop for Integrated Home Energy Renovation?,* INNOVATE project [Report] Available: <https://energy-cities.eu/publication/how-to-set-up-a-one-stop-shop-for-integrated-home-energy-renovation/>

23 Economidou, M et. al. (2021) *One-stop shops for residential building energy renovation in the EU.* European Commission. [Report] Available: <https://op.europa.eu/en/publication-detail/-/publication/423a4cad-df95-11eb-895a-01aa75ed71a1/language-en>

Table 2: Analysis of the replicability of the most typical renovation journey elements

Renovation journey step: Attract customer	
One-stop shop element	**Replication potential description and solutions**
Direct marketing RATING: ■■■□□	**Description:** Similar to other products and services, energy renovations must be promoted. Jurisdictions across the EU will have different rules and the customers different needs and preferences, which all need to be properly assessed before effective marketing can be tailored and launched.
	Solutions: (1) Set up a toolbox including lessons learned and good practices that can offer valuable insights to the local implementers. (2) Offer customer survey templates, which can assist local authorities to enquire about the local needs and preferences for an OSS. The survey should be carried out to cover both people who have already renovated their building and also people who have not.
Social marketing/ awareness-raising RATING: ■■■■□	**Description:** OSS communications must be adapted for different audiences and pitch the potential of deep renovations. OSS can play an important role in generating a positive narrative around deep renovations, e.g. by communicating about the positive outcome of completed renovations and demonstrating that the renovation process doesn't have to be a hassle. While this is mainly the responsibility of public authorities and companies, OSS can have a voice, bringing the information to homeowners.
	Solutions: (1) A replicable digital solution that enables OSS to showcase completed renovation projects. The project information should include, at a minimum, installed measures, achieved energy and CO_2 savings, cost, estimated payback time, and homeowner testimonials. Several of the existing OSS have a library/map showcasing their completed work, including Oktave (FR),[24] SuperHomes (IE)[25] and Operene (FR).[26] (2) Guidance to local OSS implementers on how to contribute to raising local awareness of the benefits of deep renovations to get more people interested.
Website RATING: ■■■■■	**Description:** A website/platform is generally the face of an OSS. The core website can easily be replicated while allowing local authorities to tailor specific functions to their specific needs. Communication via a website can be an effective way to attract customers and get them interested in (deep) energy renovation works. First, though, they need to find their way to the website. As with marketing, customers in different regions will have different expectations and look for different types of information.
	Solutions: (1) A website template that can be easily deployed by local authorities and stakeholders across the EU, with information specific to the local region/area used to populate the template, as demonstrated within the TURNKEY RETROFIT project.[27]

Classification of the different OSS elements according to their replicability, from 'not replicable' to 'fully replicable'.

■□□□□ **Not replicable**

■■□□□ **Laboriously replicable**

■■■□□ **Somewhat replicable**

■■■■□ **Easily Replicable**

■■■■■ **Fully Replicable**

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24 Oktave, Exemples de rénovations énergétiques (in English> Examples of energy renovations). [Website] Available: <https://www.oktave.fr/renovations/>
25 SuperHomes, Stories [Website] Available: <https://superhomes.ie/case-studies/>
26 Operene, Découvrez nos références (In English: Discover our references) [Website] Available:<http://operene.fr/references/>
27 See the Solution4Renovation website developed under the TURNKEY RETROFIT project. The website solution is identical for France, Ireland and Spain, even if the OSS approaches differ. [Website] Available: <https://www.solutions4renovation.eu/>

Renovation journey step: Initial Assessment		
One-stop shop element	**Replication potential description and solutions**	
Indication of potential energy and cost savings RATING: ▌▌▌▌▌	**Description:** Several OSS models offer an automated calculation of the potential outcome of the renovation (e.g. energy and cost savings, renovation cost, payback time etc.), often based on existing data (e.g. EPC data) and user-inserted information. This first indication of results is an important trigger point, in that it can convince the end-user to invest in a deep renovation.	
	Solution: (1) Develop a comprehensive automated calculation tool, based on existing tools (e.g. TURNKEY RETROFIT,[28] CO_2Online (DE),[29] Sparenergi (DK)[30]) and make it available to local implementers. Furthermore, information is available for many countries through the EU-developed TABULA tool,[31] although its usefulness is hampered by an old website and outdated data. This can be made available in a toolbox with various replicable elements. (2) Work towards harmonisation of building data in Europe to simplify replication across borders. The TURNKEY RETROFIT experience also shows it is resource-intensive and time-consuming to translate data from one jurisdiction to another. (3) Improve the gathering, availability and quality of building data in all Member States. Only a few countries (e.g. Ireland, Denmark and Belgium (Flanders)) have granular EPC databases with detailed building data that can be used to improve the OSS experience.	
Automated building renovation passport RATING: ▌▌▌▌▌	**Description:** The automated building renovation passport is similar to more tailored advice for the specific building but also indicates in which order the measures should be carried out. In contrast to a building renovation passport based on a detailed energy audit, the main purpose of this passport is to show what a deep renovation would mean for the specific building. In addition to the previous element, it also indicates the order in which the homeowner should carry out their renovation measures. The building renovation passport is automated in that it is based on available building data and user-inserted information. The energy agency in Flanders, Belgium, has included an automated building renovation passport linked to energy performance certificates[32] in an effort to trigger more renovations.	
	Solution: (1) Develop a smart digital solution based on existing experiences, such as Flanders' automated renovation passport and Denmark's automated advice linked to energy performance certificates.[33] This can be made available in a toolbox with various replicable elements. (2) Develop guidelines for how existing building data can be translated and adapted to be used in the digital solution.	

28 See the "Punch-diag" developed in the TURNKEY RETROFIT project [Website] Available: <https://www.solutions4renovation.eu/>

29 The private organisation CO_2Online has developed different types of checks to offer indication of different saving potentials, including their Heizcheck (in English, heating check). [Website] Available: <co2online.de/energie-sparen/heizenergie-sparen/heizkosten-sparen/>

30 SparEnergi is a website by the Danish government which based on publicly available building data (incl. EPC data) offer a detailed estimate of energy, CO_2 and cost savings renovations can entail. The only thing the user needs to do is to insert their address. [Website] Available: <https://sparenergi.dk/forbruger/boligen/energimaerkning-boliger>

31 Tabula tool. [Website] Available: <https://webtool.building-typology.eu/?c=all#bm>

32 See BEreel (2019) *Flemish houses now have a Building Passport*. [Website] Available: <https://www.be-reel.be/en/flemish-houses-now-have-a-building-passport>

33 Energistyrelsen (Danish energy agency) *Sparenergi*. [Website] < https://sparenergi.dk/forbruger/spar-energi-i-dit-hus>

Renovation journey step: Work Programme Conception

One-stop shop element	Replication potential description and solutions
On-site visit (social interaction) RATING: ▮▮▯▯▯	**Description:** The first on-site visit is also a great opportunity to establish trust and convince the homeowner of the idea of a deep renovation. Some OSS train their experts in this social interaction, transforming their roles to become more like salespeople.[34] Building a good relationship is key to a high conversion rate in the OSS model. Building relationships can be time-consuming and thus also resource-intensive for OSS.
	Solution: (1) Provide guidelines and exchange good practices on how good relationships can be established between homeowners and renovation professionals.
On-site visit (digital help to expert) RATING: ▮▮▮▯	**Description:** A digital tool can help to minimise auditing work for building retrofit professionals by providing a step-by-step checklist of available data about the building. The digital solution can be replicated but would require modification to adapt to local building practices. The Danish BetterHome OSS model was, for example, valued by the associated experts as the OSS helped streamline their work.[35]
	Solution: (1) Develop a digital assistance tool for retrofit professionals, to streamline the building audit process. The main purpose of the tool should be to reduce the required time on site for retrofit professionals and to collect consistent information across each building audit. This could be made available in a toolbox with various replicable elements. (2) Set up guidelines for how the checklist can be adapted to different local jurisdictions, including input from key stakeholders.

Renovation journey step: Work Programme Definition

One-stop shop element	Replication potential description and solutions
Contract RATING: ▮▮▮▯▯	**Description:** Depending on the OSS model and jurisdiction, different types of contracts will be signed, such as contracts between (i) the OSS and the end-user, (ii) different professionals and the end-user, (iii) energy performance contracts between the involved partners, (iv) specification of public procurement rules (when assisting public actors), etc. OSS should help the actors involved by providing contract templates to simplify the process.
	Solution: (1) Provide guidelines and ready-to-use templates that can be adapted to various local jurisdictions. This could be made available in a toolbox with various replicable elements.
Project planning RATING: ▮▮▯▯▯	**Description:** An integrated renovation service needs to aggregate services from various actors in the renovation value chain. It is important to define clear roles for all actors, including the benefits and responsibilities that come with being involved in the process. Creating a strong and reliable team of building professionals requires an effective local network.
	Solution: (1) Provide guidelines and exchange best practices on how to build a strong network of contractors. (2) Provide funding for dedicated training of contractors to make sure the quality is high and that enough contractors in the area can carry out deep renovation advice and measures.

34 BPIE (2017) *Boosting renovation with an innovative service for home-owners*. [Report] Available: <https://www.bpie.eu/publication/boosting-renovation-with-an-innovative-service-for-home-owners/>

35 BPIE (2017) *Boosting renovation with an innovative service for home-owners.* [Report] Available: <https://www.bpie.eu/publication/boosting-renovation-with-an-innovative-service-for-home-owners/#>

Renovation journey step: Selection of professionals	
One-stop shop element	**Replication potential description and solutions**
Identification and matching of professionals RATING: ▮▮▮▮▯	**Description:** Connecting the building owner with the right professionals is one of the central services of OSS. What this looks like depends on the type of OSS.[36] The identification of the best professionals for certain renovation projects can be time-consuming for local OSS.
	Solution: (1) Develop a digital platform based on existing best practices, simplifying the selection of qualified contractors and professionals, through which the homeowner or the OSS operative easily can find the best professionals. The platform could also be used by professionals to enclose their cost proposals. This solution could be made available in a toolbox with various replicable elements.

Renovation journey step: Renovation and Follow-up	
One-stop shop element	**Replication potential description and solutions**
Training and skills RATING: ▮▮▮▯▯	**Description:** Difficulties in obtaining appropriately skilled professionals have been identified as a barrier to retrofit uptake. The National Status Quo study of the BUILDUP Skills Initiative found that, as of 2020, more than 3 million construction workers across Europe need to increase their skills in relation to energy efficiency and renewable energy systems in the building sector.[37] Thus, OSS can play a key role in removing this barrier and addressing this challenge, by improving the skills of local experts and practitioners. Training may be provided internally by the OSS, or through partnerships with training centres or other construction associations.[38] This may also be achieved, for instance, through the promotion of courses that already exist across Europe, or through the provision of accreditation of local actors before their involvement with the OSS.[39] In addition to this training, some OSS provide digital assistance tools to support contractors on site and in managing clients and their data.[40] Several OSS models provide training to local construction actors, such as the OSS model of Public Energy Efficiency Service (SPEE) Picardie and the Doremi OSS model (both in France), Litoměřice in the Czech Republic, and CleanTech, ProjectLavenergi and BetterHome in Denmark. The SiRE OSS model in Madrid partners with product manufacturers who provide training and product demonstrations to other actors, while a key focus of the Superhomes OSS model scale-up plans in Ireland is capacity building and training for homeowners, surveyors, contractors and other technical staff, with training planned for more than 200 individuals.[41]
	Solution: (1) Establish an EU-wide certification for highly qualified experts (2) Guidelines based on good practice examples on how skills can be increased within an OSS.

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36 J Cicmanova et. al. (Energy Cities) (2020) *How to set up a One-Stop-Shop for Integrated Home Energy Renovation?,* INNOVATE project [Report] Available: <https://energy-cities.eu/publication/how-to-set-up-a-one-stop-shop-for-integrated-home-energy-renovation/>

37 European Construction Sector Observatory (2018) *Improving energy and resource efficiency – Analytical Report.* [Report] Available: <https://ec.europa.eu/docsroom/documents/33121>

38 Economidou, M et. al. (2021) *One-stop shops for residential building energy renovation in the EU.* European Commission. [Report] Available: <https://op.europa.eu/en/publication-detail/-/publication/423a4cad-df95-11eb-895a-01aa75ed71a1/language-en>

39 Mlecnik, E. (2012) *One Stop Shop: Development of Supply Chain Collaboration for Integrated Housing Retrofit.* [Report] Available: <https://repository.tudelft.nl/islandora/object/uuid%3A61af0585-e8f6-434f-a2b2-9c56dcd2c48d>

40 Ibid

41 Ibid

  ★★★ **Quality assurance process (certification/ training requirements)** RATING: ■■■■▱	**Description:** OSS could offer certification for the actors involved, linked to certain criteria/completion of mandatory training and assessment of contractors' knowledge, their handling of customer relationships, the financial capability of contractors etc. It could also discuss the potential of establishing a standard and recognised 'brand' for OSS and all those involved.
	Solution: (1) Set up an EU-wide training scheme for professionals to carry out certain work, such as deep renovations, building renovation passports and/or indoor environmental quality assessments. The renovations carried out by these certified professionals could be rewarded with higher grants or lower interest rates on their loans. A solution could be that professionals recommended/employed by the OSS service are required to have certain qualifications. For example, only contractors approved by the grant funding body in Ireland (SEAI) are allowed to work on homes that receive grants.[42] (2) Explore the potential of an EU-wide quality certification for OSS. Homeowners would be assured the certified OSS offered reliable and unbiased deep renovation support.
  ✓ **Quality assurance process (follow-up)** RATING: ■■■▱▱	**Description:** Guaranteed quality of the works is often viewed as one of the most attractive benefits of an OSS[43] and the follow-up process is generally integrated into the all-inclusive OSS models[44]. It is not uncommon that installations are faulty or operated inappropriately by the homeowner, resulting in lower energy savings and possibly also dissatisfied customers. An OSS offering an integrated renovation service ought to follow up on the renovation to make sure the result meets expectations. If it doesn't, the role of the OSS should be to identify the reason (faulty installations, improper use of the installation or a change in behaviour among the tenants) and sort out the potential liability issues.
	Solution: (1) Develop guidelines on how to carry out a proper follow-up check. The main purpose of the guidelines should be to ensure works are carried out to meet, at minimum, local building regulations and to collect consistent information across each building audit. The guidelines should include information on how the checklist can be adapted to different local jurisdictions (e.g. building regulations, grant requirements etc.). This could be made available in a toolbox with various replicable elements. (2) Continue to support the use of energy efficiency services (e.g. energy performance contracts) to finance deep renovation projects, as quality assurance is a central part of these models and could even be introduced as a performance guarantee vis-à-vis the occupant[45]. (3) Introduce an EU-wide certification for OSS that guarantees a high-quality renovation result. The certification would assure financial institutions that the renovation loan (or mortgage) is de-risked, i.e. they can be confident the quality of the house will improve and energy cost be reduced. The certification can also be linked to subsidies and beneficial loan settlements

The analysis in Table 2 shows that it is possible to replicate certain elements of an OSS, but also that it requires time and dedication to adapt the solution/tool to a new context. The digital aspects of an OSS are easier to replicate, but templates and guidelines can help to streamline and simplify the physical aspects. The TURNKEY RETROFIT experience shows that, among other things, this often requires more time and resources than anticipated. Replicable solutions and guidelines must exist to make quickly deployable OSS models possible. For example, the process of interlinking data from several databases was more complicated to replicate than anticipated. Minor issues like not being able to match building postcodes to the energy performance certificate database hampered the replication process. Connecting the local data to the digital OSS solution requires common 'languages', where the data is being converted so that it can be used in the digital solution. The European Commission can, for example, address this issue through harmonisation and specific guidelines.

The next section summarises 12 specific recommendations that can help the European Commission in the rapid deployment of OSS.

42 Sustainable Energy Authority of Ireland (SEAI) [Website] Available: <https://www.seai.ie/grants/home-energy-grants/how-to-apply/>

43 See e.g. Pardalis, G (2021) "Prospects for the Development of a One-Stop-Shop Business Model for Energy-Efficiency Renovations of Detached Houses in Sweden". *Linnaeus University Dissertations*. No 411/2021. [Report] Available <http://lnu.diva-portal.org/smash/get/diva2>:1541714/FULLTEXT03.pdf>

44 J Cicmanova et. al. (Energy Cities) (2020) How to set up a One-Stop-Shop for Integrated Home Energy Renovation?, INNOVATE project [Report] Available: <https://energy-cities.eu/publication/how-to-set-up-a-one-stop-shop-for-integrated-home-energy-renovation/>

45 See more details on the potential role of energy efficiency services in the Horizon 2020 project QualitEE [Website] Available: <https://qualitee.eu/>

How can the European Commission support the rapid deployment of one-stop shops?
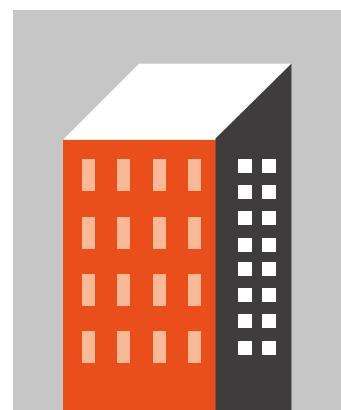
Rapid deployment of OSS is required to double the Renovation Wave and to increase the overall quality of renovations. OSS are just one part of a wider policy package, which ought to include regulatory measures (e.g. mandatory minimum energy performance standards and taxonomy regulation), training programmes for professionals, technical assistance support and communication campaigns. It also needs to include additional financial mechanisms and incentives, for example through European Investment Bank funds, the European Local Energy Assistance (ELENA) programme and Project Development Assistance (PDA). [46] The role of the OSS could be to bring all these provisions together and make sure the result is attractive to homeowners across the EU.

This section outlines 12 specific recommendations on how the European Commission can support a rapid deployment of OSS, divided into four 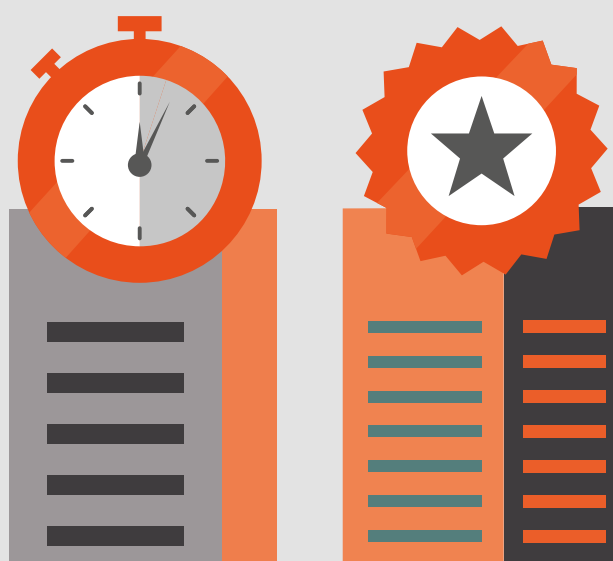broader categories: 1) mandate Member States to ensure access to reliable renovation advice, 2) contribute to creating a favourable environment for establishing OSS services, 3) offer replicable OSS elements, and 4) provide detailed guidelines on how to develop and implement an OSS.

Rapid deployment of one-stop shops is required to double the Renovation Wave and increase overall quality

46 Economidou, M et. al. (2021) *One-stop shops for residential building energy renovation in the EU.* European Commission. [Report] Available: <https://op.europa.eu/en/publication-detail/-/publication/423a4cad-df95-11eb-895a-01aa75ed71a1/language-en>

Figure 1: Overview of the 12 recommendations

Mandate Member States to ensure access to reliable renovation advice

1. Require Member States to ensure the majority of building owners have access to reliable renovation advice

Contribute to creating a favourable environment for establishing one-stop shop services

2. Streamline technical assistance and funding requirements
3. Set up a standardised OSS project template
4. Set up an EU-wide certification for highly qualified experts
5. Build capacity at the local level to enable actors to implement one-stop shops
6. Encourage local authorities and financial institutions to get involved

Offer replicable one-stop shop elements

7. Toolbox of replicable OSS elements for local implementers
8. Set up standardised contract templates and use OSS to aggregate renovation opportunities
9. Explore how one-stop shops can be used to facilitate aggregation of renovation opportunities

Provide detailed guidelines on how to develop and implement an one-stop shop

10. Toolbox with guidelines and good practice examples for local implementers
11. Guidelines on how to involve stakeholders in the one-stop shop implementation
12. Explore how one-stop shops can be used to market deep renovations

Mandate Member States to ensure access to reliable renovation advice
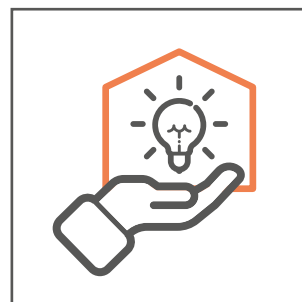
1	**Recommendation #1:** Require Member States to ensure the majority of building owners have access to reliable renovation advice

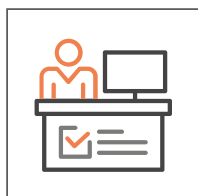The Renovation Wave unveiled several ambitious measures intended to increase renovation activity in Europe, in order to achieve the objective of doubling the renovation rate within 10 years. These provisions include a renovation obligation for the worst-performing buildings (i.e. mandatory minimum energy performance standards), an expanded scope for the requirement to renovate public buildings, the affordable housing initiative to address energy poverty, and making more funding available for energy renovations, among other things. A boost in demand for deep renovations will only be successful if it's coupled with reliable renovation advice, which can be facilitated by OSS and similar services. Requiring Member States to guarantee that most cities have access to OSS would ensure that the majority of the population could get reliable renovation advice that allows them to carry out the best possible renovation measures for their building.

The Member States should still be allowed to decide their strategy for how to best upgrade their building stock and which roll OSS will plan in this. One risk of mandating the implementation of OSS is that implementing actors have no engagement and simply meet the minimum requirements. However, access to reliable energy advice is a prerequisite to a successful implementation of renovation obligations (i.e. mandatory minimum energy performance standards) and a boost of deep renovations. Therefore, Member States should be required to explain how they are planning to ensure that most citizens have access to reliable renovation advice. A broad uptake of OSS could be one solution to this requirement.

Contribute to creating a favourable environment for establishing OSS services
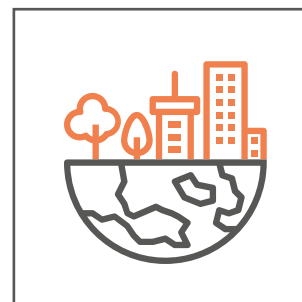
2	**Recommendation #2:** Streamline technical assistance and funding requirements

The ELENA programme, governed by the EIB and the European Commission, offers advisory services to public and private entities including municipalities, regions, and private estates[47] interested in setting up OSS or financing renovation. The Renovation Wave communication discusses upscaling ELENA and implementing a programme that will establish ELENA models in the Member States and the local level. ELENA has provided funding that helped many successful OSS to begin, including the inspiring cases of SuperHomes (IE) and Picardie Pass Renovation (FR). Scaling up this work by further simplifying the requirements for implementing an OSS model, supported by ready-to-use project templates (see Recommendation 3), would enable more local authorities and actors to set up OSS.

While ELENA has been a success story, it can be further scaled and used to boost the uptake of OSS across the EU. In order to achieve this, it can:

- Lower the bar for access to funding from ELENA style programmes, including the size of the investment programme, project size and the bankability of the proposal.
- Simplify the administrative application requirements, which can be daunting for a smaller municipality.
- Provide guidance to ELENA style programmes, including programmes that support small-scale projects and technical assistance for establishing OSS.
- Further, explore how OSS can ensure the provided grants are linked to actual energy efficiency improvement and carbon emission reductions.

3	**Recommendation #3:** Develop standardised OSS project templates to simplify the process of setting up a local OSS

Existing OSS are very different in terms of scope, business model and services provided[48], yet there are many common elements as discussed in the previous chapter. Providing ready-to-use OSS templates that can be used by local authorities and other implementing actors would reduce the time and resources to set up an OSS. The templates could comprise different strategies for how to approach the different renovation journey elements, as discussed in the previous chapter. It could also encompass details on establishing key services in business, customer segments, crucial partners, cost structures and revenue streams, which could be organised along with a business model canvas (as done within the TURNKEY RETROFIT project[49]). The actors following the template models could be awarded easier access to technical assistance and financial support (see Recommendation 2), as the supporting organisation can be sure the project idea fulfils certain minimum requirements.

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47 The ELENA applicant can be a public or private entity including local, regional or national authorities, transport authorities and operators, social housing operators, estate managers, retail chains, energy services companies, and financial institutions. See European Investment Bank. ELENA – European Local ENergy Assistance. [Website] Available: <https://www.eib.org/attachments/documents/elena_faq_en.pdf>

48 See e.g. Economidou, M et. al. (2021) *One-stop shops for residential building energy renovation in the EU.* European Commission. [Report] Available: <https://op.europa.eu/en/publication-detail/-/publication/423a4cad-df95-11eb-895a-01aa75ed71a1/language-en>

49 Volt, J, Zuhaib, S & Steuwer, S (2019) "Turnkey Retrofit project. D1.1 Benchmarking of promising experiences of integrated renovation services in Europe," September 2019. [Online]. Available: <https://www.turnkey-retrofit.eu/reports-findings/>

4	**Recommendation #4:** Establish an EU-wide certification for highly qualified experts

OSS should be associated with high-quality works, and therefore should employ highly qualified experts, and invest in training and accreditation for the involved experts involved. It is critical that those implementing the renovation works are appropriately skilled and trained in the technical aspects of a renovation, and additionally, that other involved actors involved along the renovation journey, such as energy experts (i.e. the individual being the main contact for the renovation journey), are also trained in the same. This technical training should develop the actors' understanding of energy efficiency technologies and the methods for their implementation, as well as in conducting accurate energy audits. It is equally important that these actors are appropriately trained in the social aspects of a renovation, including how to best sell the idea of a deep renovation to homeowners, how to ensure a high level of customer treatment service, and how to best assist homeowners along their retrofit journey, to ensure the homeowners completes the

entire renovation process. Such training will not only ensure a high level of quality is achieved, but ensuring that only properly accredited actors are included in the OSS provides credibility, and reduces trust issues among homeowners. Moreover, training may also help integrate the renovation process, and contribute to the establishment of a uniform brand.

The European Commission should establish a training programme for renovation experts to ensure they are able to provide the best possible renovation advice, carry out deep renovation works or guide the homeowner throughout the renovation journey. Such training will not only ensure a high level of quality is achieved, but ensuring that only properly accredited actors are included in the OSS provides credibility, and reduces trust issues among homeowners. The introduction of an EU-wide certification could increase the overall quality of the OSS while contributing to a harmonisation of the training programmes across the EU.

5	**Recommendation #5:** Build capacity at the local level to enable actors to implement effective OSS

Building capacity with local implementing actors, such as local authorities, and upscaling this workforce is essential to building successful OSS models. Beyond the competence of the expert (see recommendation 4), a wide range of skills and expertise are required to successfully implement an OSS, including;

- **Capacity to tailor communications to different audiences.** Building experts tend to talk about technical efficiency improvements and their potential to save energy, which is difficult for most homeowners to grasp. [50]
- **Local expertise to provide the necessary training**. It may also be the case that banks and financiers if partnering with an OSS, should have on some level a general awareness of energy renovation and are offered training in such.
- **Project management skills** including the management of various contractors, the timing of works, material supply, and the establishment and oversight of quality control procedures.

- **Monitoring and verification capacity,** which includes the skills needed to install meters and for a proper understanding of meter readings, follow-up audits, energy bill reporting, conducting satisfaction surveys, and the capacity for ongoing maintenance post-works when issues arise through quality assurance procedures.
- **Financial skills** – among the OSS or local administration employees to ensure that financing is provided in case it is needed. Intermediation with (local) banks or other financial institutions is essential in this regard.

The Renovation Wave relies on a broad upskilling of the workforce. OSS could play a key role in this effort, but currently, the business model and available funds are rarely sufficient. There could be a future role for ELENA to include an educational programme concerning OSS activities.

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50 BEIS (2021) *International review of domestic retrofit supply chains*. [Report] Available: <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/987411/international-review-domestic-retrofit-supply-chains.pdf>

The TURNKEY RETROFIT analysis of the market conditions for OSS in Spain, France and Ireland showed that the existing regulatory and financial framework sets out the potential role for an OSS model.[51] In replicating or setting up an OSS, it is necessary to look at existing funding sources which can be integrated into the model. An OSS that brings an innovative financing mechanism to a market (e.g. long-term low-interest loans, energy performance contracting) has a greater potential to gain momentum.[52] The French Picardie Pass Renovation is a good example: the region was a pioneer in setting up a third-party financing mechanism (Picardie PSEE) to facilitate investments in deep renovations.[53] Another example is the Dutch WoonPas,[54] where building owners pay back the costs of renovation through a special municipal tax linked to the building, not higher than the energy savings, and spread over up to 30 years. OSS can facilitate a de-risking instrument like this, and thus allow for a secure, long-term and low-cost repayment mechanism.

The involvement of local financial institutions can help to make the business model more viable by offering preferential loans and subsidies to renovations linked to the OSS[55]. To support this development, the European Commission could introduce a certification for the OSS that guarantees a high-quality result (e.g. through a robust quality assurance process), which would help to reduce the risk for the lenders. The lender can be confident the risk is lower than a conventional renovation loan, as the prospect of achieving energy and cost savings is higher.

51 For more information on the results of the PESTLE analysis carried out in France, Spain and Ireland in TURNKEY RETROFIT. R Desmaris, et. al. (2019) *D.2.1 Market & PESTLE Analysis.* TURNKEY RETROFIT [Report]. Available: <https://www.turnkey-retrofit.eu/reports-findings/>

52 S Hunking & K Krell, *Supporting energy renovation of private households through One-Stop-Shops, September 2019.* Interreg Europe. [Report]. Available: <https://www.interregeurope.eu/fileadmin/user_upload/plp_uploads/policy_briefs/2019_02_10_PolicyBrief_OSS.pdf>

53 SPEE Picardie Pass Rénovation "Le Service public de l'efficacité énergétique des Hautsde-France – Rapport d'activité 2014–2018" [Report], Available:<http://www.planbatimentdurable.fr/IMG/pdf/dp-bilanforumspee-fev2019.pdf>

54 De Woonpas [Website] Available <https://www.dewoonpas.nl/de-gvr/>

55 Both public and private models should be eligible to offer these beneficial loans and subsidies. The requirement should be linked to the quality of the OSS rather than the ownership structure of the model.

Offer replicable one-stop shop elements
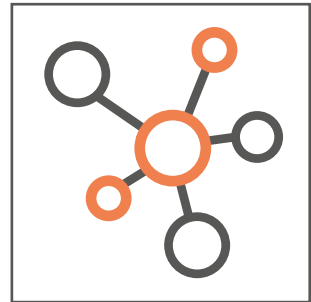
7	**Recommendation #7:** Set up a toolbox offering replicable OSS elements for local implementers

The European Commission could further boost the uptake of OSS by making replicable OSS elements[56] available. This could be done by setting up a toolbox with different OSS elements to be used by local actors in their OSS development and implementation. The analysis of the replicable elements of the renovation journey shows that its digital aspects can be scaled and replicated to advantage. The European Commission could support the development of open-source digital solutions that can be easily used and adapted by local OSS implementers.

The TURNKEY RETROFIT project is developing solutions (e.g. the "punch diag") that can provide the first elements of a toolbox of this kind.

Figure 3: Example of replicable OSS elements, several of which have been explored in the TURNKEY RETROFIT project

Social marketing	**Indication of energy, CO_2 and cost savings**	**Punch diag**
Digital solution that enables OSS to showcase completed renovation projects and make the case for (deep) energy renovations	A first indication of the potential energy, CO_2 and cost savings can be made through an automated calculation	Illustrates the potential benefits of an energy renovation, in terms of energy savings, thermal comfort, air quality and better acoustics

Evaluation procedure	**Automated building renovation passport**	**Website**
Assessing the quality of the customer journey through an OSS or retrofit service, incl. the social, environmental and economic impact for the homeowner	Based on available data and user-inserted information, identifies the best renovation measures and in which order they should be carried out	Contains information about the OSS and host the digital solutions, such as punch diag, automated building renovation passport

On-site visit (digital help for the expert)	**Selection of professionals**
Digital assistance to the energy expert conducting the on-site visit, incl. pre-filled automated data and guidance of how to carry out the visit	Digital solution that simplifies the process of couple the right professionals to the renovation project

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56 The TURNKEY RETROFIT project is developing and replicating several digital OSS elements, including the "punch diag", which provides an initial indication of the energy savings, renovation costs and expected payback time; a renovation roadmap which offers recommended retrofit packages for various typologies which include costs and energy savings; and a cost tool which provides a personalised cost estimate for retrofit costs. When replicating these tools there is a need to calibrate the instrument based on (i) building technical characteristics data, (ii) classification of pre-selected user-input sections (e.g. common type of heating systems differ between countries), (iii) economic and legal aspects of the building sector, and (iv) cultural and user behaviour. In the project, several knowledge transfer meetings have been organised to share information and make replication possible.

8   Recommendation #8: Set up standardised contract templates and use OSS to aggregate renovation opportunities

Developing contracts can be time-consuming for a local OSS with limited resources. The European Commission could support local implementers by offering standardised contracts for the most common OSS services, especially for major renovation projects and energy performance contracts. The contracts will have to be adapted to the local context but the templates would save local actors both time and resources. Standardised contracts are fairly common in the energy performance contracting market in the EU.[57] For example, the Croatian government has developed a standardised contract for energy performance contract financed projects, intending to boost market development.[58]

9   Recommendation #9: Explore how OSS can be used to facilitate aggregation of renovation opportunities

OSS can assist local authorities in creating a pipeline of multiple renovation projects and facilitating the aggregation of renovation opportunities, especially by organising renovations at the district level; and they can also enable aggregation of projects through standardised energy performance contracts. While existing OSS have not explored this possibility, or at least not pursued it, aggregation of renovation projects remains one of the key opportunities for scaling up renovation activity in Europe. The OSS would need support from a building renovation passport (which identifies the next renovation steps for an individual building) and a digital building logbook (a repository making sure all required building data is available to the OSS and the energy service company) to facilitate an effective aggregation.

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57 BPIE (2020) *Energy Services and the Renovation Wave*. [Report] Available: <https://www.bpie.eu/wp-content/uploads/2020/09/REPORT-ESCO_FINAL-1.pdf >

58 EuroAce (2019) *Energy Efficient Building Renovation in South East Europe*. [Report]. Available: <https://euroace.org/wp-content/uploads/2019/05/2019_05_08-EuroACE-Conference-Slovenia-SpeakersPresentations.pdf>

Provide detailed guidelines on how to develop and implement an OSS
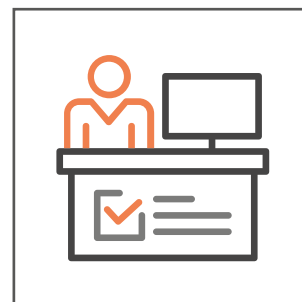
10 — Recommendation #10: Develop a toolbox with guidelines and good practice examples for local implementers

Develop a toolbox outlining the key guidelines for setting up and implementing an OSS, including detailed good practice examples. This would serve as a starting point for municipalities interested in implementing an OSS and support their replication of specific elements (see Recommendation 6). The toolbox could include all relevant components of an OSS as well as links to further information regarding funding and technical support.

Despite the challenges, offering replicable OSS elements to new projects would reduce the required investment and thus also the risk. Guidelines on how to overcome barriers linked to data accessibility, adaptability of data from one region to another,[59] cultural and legal differences would simplify the process. Many of these required insights have been gathered and described by various EU projects,[60] but they remain scattered across multiple platforms and reports.

For example, the toolbox could include strategies for how to tackle drop-out moments, when homeowners lose momentum and decide not to carry out the renovation. These can be unforeseen life events or financial expenses that occur when investments are larger than expected due to a lack of financing, or housing owner associations are involved resulting in more decision-makers.[61] The TURNKEY RETROFIT project also analysed these drop-out moments (referred to as "negative flows" in the project) and concluded that the OSS needs to be constantly wary of the possibility of them occurring. Insights into how they can be reduced include having one single contact, transparent communication, guarantees for the homeowner etc.[62]

11 — Recommendation #11: Provide guidelines on how to involve stakeholders in OSS implementation

OSS can align the supply-side actors and thus provide a more reliable and attractive offer for the end-users. It is, therefore, crucial to involve and engage key stakeholders when developing and implementing an OSS. These stakeholders can include homeowners, contractors, construction companies, energy auditors, local manufacturers, financial institutions and public authorities. The OSS will depend on their skills, engagement and expectations, which makes it necessary to integrate their needs into the equation from the beginning.

For example, by surveying potential customers and asking what is most important to them, the services provided in the OSS can be tailored to meet their requirements. OSS can then use these insights to calibrate their model to the specific trigger for the renovation decision, such as general and thermal comfort, reducing energy costs, increasing the value of the home, and ensuring a healthier living environment).[63]

59 The data is often available but the cost of treating it to adapt to the developed tools is too expensive. In Spain the cadastre is digitalized, but the data was not in the version needed to put directly in the developed functionalities.

60 Including Horizon projects like REFURB, X-tendo, ProRetro and INNOVATE, research efforts by Interreg and EU's Jont Research Centre, as well as city initiatives such as Convenant of Mayors and EnergyCities.

61 Economidou, M et al. (2021) *One-stop shops for residential building energy renovation in the EU.* European Commission. [Report] Available: <https://op.europa.eu/en/publication-detail/-/publication/423a4cad-df95-11eb-895a-01aa75ed71a1/language-en>

62 Volt, J, Zuhaib, S & Steuwer, S (2019) "Turnkey Retrofit project. D1.1 Benchmarking of promising experiences of integrated renovation services in Europe," September 2019. [Online]. Available: <https://www.turnkey-retrofit.eu/reports-findings/>

63 Economidou, M et al. (2021) *One-stop shops for residential building energy renovation in the EU.* European Commission. [Report] Available: <https://op.europa.eu/en/publication-detail/-/publication/423a4cad-df95-11eb-895a-01aa75ed71a1/language-en>

12 Recommendation #12: Explore how OSS can be used to market deep renovations

The EU Renovation Wave sets out to increase the renovation rate but also the average renovation depth. Deep renovation refers to renovations that reduce building energy consumption by at least 60%, which can be achieved in one stage or through a number of stages over several years. As part of the EPBD revision, the Commission is considering introducing a deep renovation standard, aiming to streamline investments for this purpose.

The introduction of Mandatory Minimum Energy Performance Standards (MEPS) – which might include strengthening minimum thresholds over time, and the taxonomy regulation/deep renovation standard which incentivises investments in the best-performing buildings – unveils a new potential role for OSS. These pending regulations would make it easier for OSS to make the case for investing in a deep renovation.[64] OSS could, for example, market deep renovations by (i) increasing awareness of their many benefits, (ii)

pitching deep renovation to potential customers, and (iii) package the financial and technical solutions which make it possible.

There is a clear potential to integrate or link building renovation passports to OSS, an instrument that sets out an individual renovation roadmap for a specific building, to avoid technical and financial lock-ins of deep renovations carried out in several stages. The passport has also proven to be effective in convincing homeowners to pursue deeper renovations and higher quality materials. TURNKEY RETROFIT has explored the potential to integrate an automated individual renovation roadmap into the OSS model and the result shows that it is possible to replicate but time-consuming as the data language, audit culture etc. differs between the markets[65] (see the discussion in the previous chapter). One central role for OSS should be to drive deep renovations, as it is clear that the number and share of deep renovations must increase.

64 Steuwer, S et al. (2021) Lessons learned to inform integrated approaches for the renovation and modernisation of the built environment. European Commission. [Report] Available: <https://op.europa.eu/en/publication-detail/-/publication/b20fc84d-c418-11eb-a925-01aa75ed71a1/language-en>
65 Volt J, et al. (2020) Technical study on the possible introduction of optional building renovation passports. European Commission. [Report] Available: <https://op.europa.eu/en/publication-detail/-/publication/a38ea088-aead-11ea-bb7a-01aa75ed71a1/language-en>

Conclusion

The roll-out of the Renovation Wave will fuel a dramatic increase in demand for energy renovations across the EU. It has the potential to drive this demand through the introduction of mandatory minimum energy performance standards, anchor long-term energy and carbon targets for the building sector, improve the use of data amplified by enhanced energy performance certificates, steer investments towards deep renovations through the new deep renovation standard and various financial mechanisms, as well as improve the skills throughout the construction value chain. All this will also strengthen the necessity and role of OSS.

OSS can address several market gaps, including (i) offering a smooth renovation journey for the homeowners, (ii) forming a trustworthy process for the homeowner to find reliable and accredited experts, reliable renovation advice and result guarantees, and (iii) address coordination gaps in the construction value chain. In addition, OSS can contribute to making deep renovations more attractive for the homeowner by packaging technical and financial solutions and by demonstrating the long-term value of deep renovations.

During the last few years, the number of OSS have steadily increased throughout the EU, yet their scale and impact remain limited. In addition, there are limited harmonisation and collaboration between OSS in different regions, which hampers a more effective replication process. Many local actors also view the development of OSS as complicated and expensive, in contrast to the perceived associated benefits, which is another barrier to a faster uptake. The European Commission should contribute to the acceleration of this development while contributing an overall higher quality of the provided services.

The analysis in this report shows that several of the OSS services are replicable and could be quickly deployed across the EU if accompanied with the right support and guidance. The digital elements of an OSS are more suitable for a standardised replication across the EU, although aspects like the language, data governance and design still need to be adapted to the local context. Furthermore, simplifying the implementation of OSS through additional technical and financial support, streamlining the financial support application (e.g. ELENA), and creating templates of common contracts and guidelines, would enable more local actors to launch OSS.

There are multiple potential roles for OSS in the future, which have not been explored within this project. For example, OSS could contribute to municipalities' local heating and cooling plannings, by providing access to data or by aggregating local renovation opportunities (e.g. a whole district which then can be coupled with an effective renewable heating solution). Furthermore, OSS can potentially also play an important role in alleviating energy poverty, by empowering tenants in a multi-family building to make the case for a renovation or by helping the energy-poor get access to various funding opportunities[66,67]. In order to valorise these wider opportunities, the first step must be to scale up the implementation of good OSS models across the EU.

The TURNKEY RETROFIT replications are still ongoing and the final results will be available in March 2022.

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66 See the topic of OSS and energy poverty discussed in detailed here: Economidou, M et. al. (2021) *One-stop shops for residential building energy renovation in the EU.* European Commission. [Report] Available: <https://op.europa.eu/en/publication-detail/-/publication/423a4cad-df95-11eb-895a-01aa75ed71a1/language-en>

67 The European Commission funded Horizon 2020 project Opengela has showcased the potential role of OSS in urban regeneration projects and explore how the model can target socially vulnerable groups. See: Opengela. Horizon 2020. European Commission. [Website] Available: <https://opengela.eus/en>

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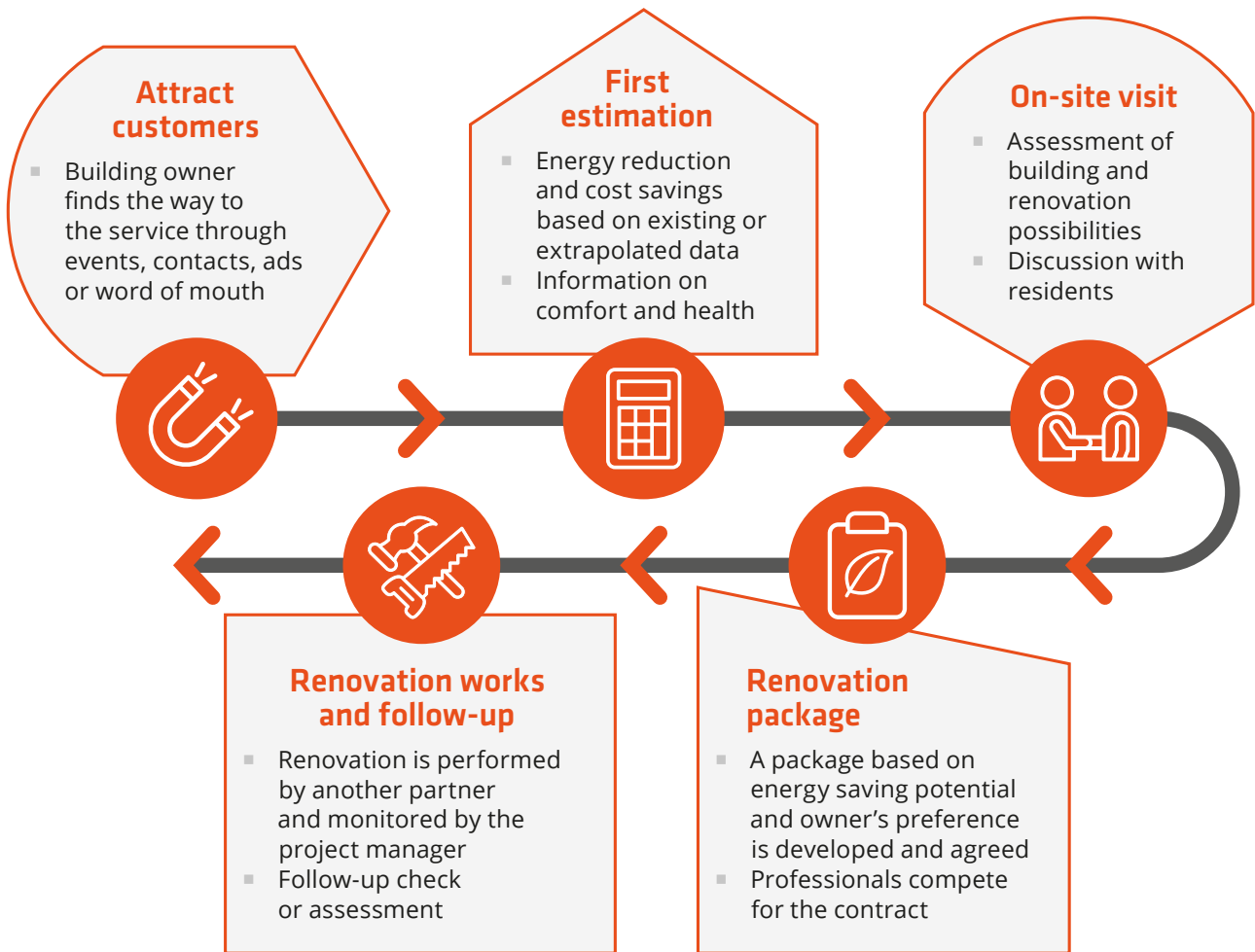
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Annex

Interviews

Six in-depth interviews were held during the summer of 2021. The nature of the interviews were semi-structured, where the following questions were used to guide the discussion.

1. In your view, what role will One Stop Shops (OSS) for energy renovations (or integrated renovation services) play in facilitating a rapid increased renovation demand?
2. What is in your opinion an example of a successful OSS with high replication potential?
3. Which (policy) actions and initiatives can make it easier to replicate successful OSS models across Europe?
4. In your opinion, are any elements of the OSS model more easily replicable than others?
5. What can the EU Commission and EIB do to increase the uptake of OSS for energy renovations across Europe?
    a. Require Member States to make sure all cities over a certain size to offer reliable renovation advice to their citizens (e.g. through OSS)
    b. Support cities to offer reliable renovation advice by streamlining and simplifying the application process for technical and financial assistance for setting up OSS (e.g, through ELENA)
    c. Offer replicable OSS elements, such as digital solutions (see e.g Solution4renovation), standardised renovation packages and contract-templates
    d. Provide detailed guidelines and best practice case studies as inspiration
    e. All of the above
    f. Other (please elaborate…)
6. How can One Stop Shops make deep energy renovations more attractive for building owners and real estate investors?
7. Do you think One Stop Shops need to broaden their services further? If so, what should this include?
    a. Life Cycle Analysis
    b. Aesthetic/architectural advice
    c. Indoor environmental quality inspection and advice
    d. Building renovation passport (individual renovation roadmap for the specific building)
    e. Linking it to ESCOs – private sector financing offers
8. How can the skills of local administrators/authorities best be improved to increase the effectiveness and success of OSS?
9. What is the best way to get local stakeholders (construction companies, banks, consultants, owner associations) involved to improve the effectiveness of the OSS?

Renovation journey for single-family buildings

Attract customers

- Building owner finds the way to the service through events, contacts, ads or word of mouth

First estimation

- Energy reduction and cost savings based on existing or extrapolated data
- Information on comfort and health

On-site visit

- Assessment of building and renovation possibilities
- Discussion with residents

Renovation works and follow-up

- Renovation is performed by another partner and monitored by the project manager
- Follow-up check or assessment

Renovation package

- A package based on energy saving potential and owner's preference is developed and agreed
- Professionals compete for the contract

Underpinning the role of One-Stop Shops in the EU Renovation Wave

First Lessons Learned from the Turnkey Retrofit Replication

Project Acronym	Turnkey Retrofit
Project Name	TURNKEY solution for home RETROFITting
Project Coordinator	Dominique CACCAVELLI +33 (0)4.93.95.64.01
Project Duration	33 months (starting 1 June 2019)
Website	www.turnkey-retrofit.eu

Deliverable No.	4.4
Dissemination Level	Public deliverable
Work Package	4
Lead beneficiary	BPIE
Contributing beneficiary(ies)	NUIG, IGBC, R2M, CSTB, Tecnalia & ANERR
Author(s)	Jonathan Volt (BPIE) & Orlaith McGinley (NUIG)
Co-author(s)	Paul Moran (NUIG), Mariangiola Fabbri & Sibyl Steuwer (BPIE)
Reviewed by	Johanna Vargese (IGBC), Rachel Desmaris (R2M), Miriam García Armesto (ANERR), Jorge Torres Barriuso (Tecnalia), Rutger Broer, Helene Sibieau, Jessica Glicker (BPIE)
Date	27 August 2021
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Project partners

CSTB — le futur en construction

tecnalia — Inspiring Business

ANERR — Asociación Nacional de Empresas de Rehabilitación y Reforma

perene

IGBC — IRISH GREEN BUILDING COUNCIL

NUI Galway — OÉ Gaillimh

BPIE

R2M SOLUTION — RESEARCH TO MARKET

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