



**TURNKEY
RETROFIT**



Benchmarking of promising experiences of integrated renovation services in Europe



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TABLE OF CONTENT

Glossary.....	5
Foreword.....	6
About this deliverable.....	6
Introduction	7
1. Existing research	8
2. Methodology.....	13
3. Description of the integrated renovation services	14
Operene	14
Izigloo	17
Oktave	19
SiRE.....	22
SuperHomes.....	25
ProEnergy Homes.....	27
BetterHome.....	29
Energiesprong	32
RetrofitWorks.....	34
4. Benchmarking and analysis.....	38
5. Key elements for Turnkey Retrofit business model concept.....	46
References	50
Annex	51

GLOSSARY

Single-family house – a structure maintained and used as a single dwelling unit

Multi-family building – a building or a structure that is designed to host several different families in separate housing units

Social housing – housing provided for low income families, or people with special needs, by public authorities or non-profit organisations

Local credit union – a type of financial cooperative that provides traditional banking services on a non-profit basis

One-stop-shop – providing or offering a comprehensive range of goods or services in a single location for the ease of the customer

Integrated renovation service – the main service of one-stop-shops, when all the renovation needs are accessible from a single-entry point

Nearly zero-energy building – according to the European Performance of Buildings Directive [[2010/31/EU](#)], a nearly zero-energy building (NZEB) has a very high energy performance and the nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including on-site or nearby

Energy performance contracting – a form of creative financing for capital improvement which allows energy upgrades to be funded through cost reductions

Energy performance certificate - according to the European Performance of Buildings Directive [[2010/31/EU](#)], means a certificate recognised by a Member State or by a legal person designated by it, which indicates the energy performance of a building or building unit

Business model canvas – a strategic management and lean start-up template for developing new or documenting existing business models

FOREWORD

The Turnkey Retrofit project will develop and replicate an integrated home renovation service, which will be operated in France, Ireland and Spain. The service will be 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 homeowner. It will comprise the initial technical and behavioural diagnosis, technical offer, contract development and agreement, structuring and provision of financial support, as well as the on-site coordination of works and quality assurance. In short, the homeowner is offered tailor-made solutions and is guided through the whole renovation process.

The service will be accessible through a user-friendly digital platform and will address drivers of building renovation that go beyond a desire to reduce energy bills and increase asset value, such as home improvement, increased comfort, improved health and quality of life.

ABOUT THIS DELIVERABLE

This task aims to build upon the work already undertaken by the consortium in identifying, analysing and extracting lessons learnt and guidelines from several promising home renovation services in Europe with a focus on: target group audience; offered service; relations between involved stakeholders; data required for operating the service; financial model; number of supported renovation projects and triggered investment. The main services are Izigloo, which targets single-family houses and is operated by [EP](#) (a digital oriented solution provider) and [Operene](#), which targets multi-family buildings and is governed by an engineering company with the same name. These services are benchmarked to promising emerging models in Europe including BetterHome (targeted at single-family houses), Energiesprong (targeted at the social housing sector) and SIRE (targeted at single-family houses operated by ANERR). The other services include Superhomes and Oktave (both targeting single-family buildings), RetrofitWorks (targeted at residential and non-residential buildings) and the new ProEnergy Homes (targeted at credit union members). This benchmark exercise will help identify areas of improvement when it comes to the adaptation and further replication of these services to other EU countries. Key lessons are derived for the Turnkey Retrofit business model.

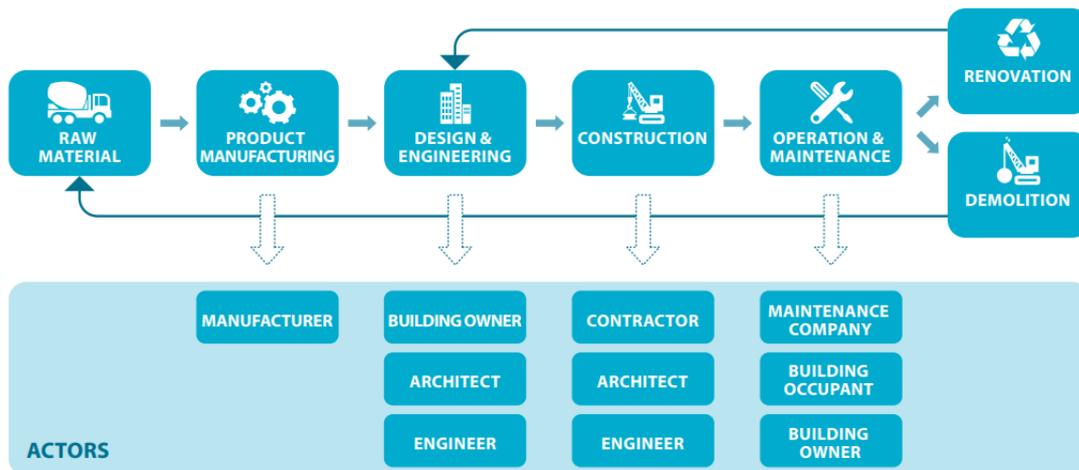
INTRODUCTION

There is a clear need for innovative business models that can entice and enable building owners to invest in energy renovations. Buildings are responsible for approximately 40% of energy consumption and 36% of CO₂ emissions in the EU, making them the single largest energy consumer in Europe. At present, about 35% of the EU’s buildings are over 50 years old. At the same time, only 0.4-1.2% of the building stock is energy renovated each year [1].

Renovation of existing buildings can lead to significant energy savings and play a key role in the EU’s clean energy transition. At the same time, the construction sector is crucial to Europe’s economic growth and employment. In 2011, it was responsible for 7% of the EU’s gross domestic product and over 11 million people were directly employed in the building sector, which makes it the single largest contributor to employment in Europe [2].

The renovation value chain differs from other sectors’ value chains, as it involves multiple actors (advisors, installers, bank representatives, etc.) within a single process. The fragmented value chain makes it difficult for the building owner to predict the renovation works, as well as estimate how much it will eventually cost. For example, when retrofitting existing buildings, small-scale contractors or installers often act as “gatekeepers” between suppliers of products and building owners. A high-level overview (see Figure 1) of the traditional construction sector from a life-cycle perspective shows which conventional actors are involved at the different stages such as product manufacturing, design, construction, operation, etc. [3].

Figure 1: High-level overview of the traditional construction sector (BPIE exploration)



Policymakers¹, researchers and companies have concluded that by simplifying the renovation process for building owners, it is possible to increase demand for energy renovations. Integrated renovation services², which are the main service offered by one stop shops, can be seen as a direct response to the problems that come with a fragmented value chain, where the new business models align the multiple services and actors.

The first chapter of this report outlines relevant existing research on one-stop-shops and integrated renovation services, including results from other Horizon 2020 projects. The second chapter explains the methodology behind the benchmarking exercise, while the third chapter describes the selected integrated renovation services in detail.

¹ The amended Energy Performance of Buildings Directive [2018/844] stressed the importance of one-stop-shops to improve energy advice and increase investments in energy renovations (see article 2a and 20(2))

² A one-stop shop is an organisation that offers multiple products or services to its customers. For energy renovations, the building owner will find all relevant information at the one-stop-shop.

1. EXISTING RESEARCH

The concept of one-stop-shops (OSS) is aimed at providing integrated renovation services for existing buildings. The interest in the OSS solution was increased after the recast of the EU Energy Performance of Buildings Directive [2010/31/EU], which called for improved advisory tools for consumers. Initially, a huge potential was identified in the existing residential building stock [2]. The interest took off in the Nordic countries, in which more than 40% of the building stock consists of single-family houses [4]. From 2010, several OSS were tested and piloted in the Nordics [4].

The renovation industry is facing a large number of barriers in meeting Europe's climate and energy targets. The barriers can be categorised as [5], [6]:

- Social: lack of awareness, communication, reliable information etc.
- Technical: low-quality auditing, absence of coherent technologies etc.
- Legislative: lack of effective policies and commitment at national or local level etc.
- Financial: high investment costs, lack of public funding etc.
- Market based: lack of skilled personnel, fragmented value chain, split incentives etc.

It is not uncommon that a homeowner needs to contact several different contractors to get an energy renovation completed, which also increases the risk of mistakes. To fill the void between the supply and demand side, innovative user-oriented services began to emerge in Europe to unburden the customer by providing them with an integrated renovation service [7]. The advantages of OSS include offering a turnkey solution to the clients, better communication and knowledge sharing and the potential to minimise the risk of errors in the process. The concept may also have some disadvantages, such as a reduction in flexibility and available options, potential conflicts of interest and project bias due to a single point of contact [8].

During the last few years, several EU-wide projects have explored the viability and acceptability of integrated renovation services. Table 1 presents a summary of the main ones.

Table 1 Summary of existing relevant projects on integrated renovation services (elaborated based on European Commission Joint Research Centre report on one-stop-shops [6]).

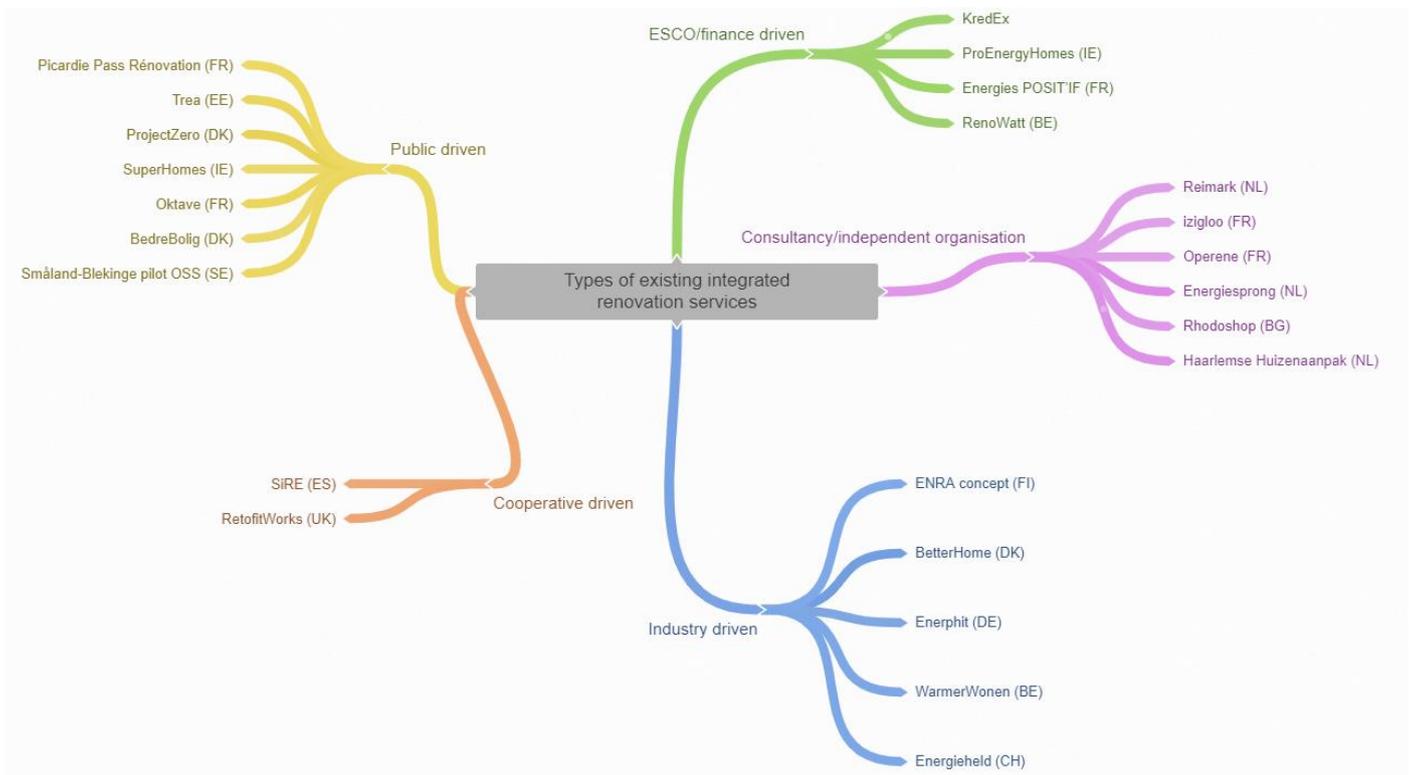
Project (year)	Aim	Supported by	Approach to One Stop Shops	Countries	Main outcomes
One-Stop Shop- <i>From demonstrati on projects towards volume market: innovations for one stop shop in sustainable renovation (2010-2012)</i>	Create a market for holistic and deep renovation of houses, motivate clients for integrated renovation and make fragmented market accessible for SMEs	IWT (BE); Nordic Innovation Agency (NO and DK); Tekes, VTT, City of Porvoo, ARA (FI) and Formas & Swedish Energy Agency, Jämtlands county administration (SE)	<ul style="list-style-type: none"> • Conceptual basis for collaboration • Web tools for collaboration • Guidelines and tools to establish OSS 	BE, NO, DK, FI	<ul style="list-style-type: none"> • Facilitated networking and collaboration • Explored pre-requisites for deep renovation • Developed guidelines for renovation • Templates for OSS websites
COHERNO- <i>Collaboration for Housing nearly zero Energy</i>	Strengthen the collaboration of SMEs for realising NZEB renovations in single-family	Intelligent Energy Europe (IEE)	<ul style="list-style-type: none"> • Innovative tools to increase trust and confidence • New business models for 	NL, BE, AU, NO, DE,	<ul style="list-style-type: none"> • Nationally recognised public list of NZEB actors • Overview of structure for successful collaboration

<i>RENOvation</i> (2013-2016)	owner-occupied houses		integrated services			<ul style="list-style-type: none"> • Recommendations on quality assurance in business models • Development of 24 new collaborative models
<i>REFURB-REgional process innovations FOR Building renovation packages opening markets to zero energy renovations</i> (2015-2018)	Provide homeowners with overview, advice and solutions to compensate fragmented renovation offers in the residential sector	European Union (H2020)	<ul style="list-style-type: none"> • Dedicated renovation packages • Online tool for evaluation and roadmap to renovation • Conceptual analysis of supply and demand 	DK, NL, DE, BE, EE, SI		<ul style="list-style-type: none"> • Online tool to advise on NZEB standard renovation • Step-by-step renovation advice • Dedicated renovation packages for different market segments • Guidance on possibilities of financing
<i>INNOVATE - INtegrated solutioNs for ambitiOus energy refurbishment of privATE housing</i> (2017-2020)	Motivate homeowners to deep-retrofit single-family houses and condominiums and develop business model with communication and marketing tools, tailored products, financial plans with guaranteed results	European Union (H2020)	<ul style="list-style-type: none"> • Conceptual and actual creation of renovation packages • Establishment of OSS in some partner countries 	NL, BE, CY, ES, DK, LV, SE, IT, UK		<ul style="list-style-type: none"> • Pre-set, tailor-made and attractive renovation packages for homeowners • Set-up of OSS business solutions • Mobilisation of private investments in renovation • Achieve minimum 50% energy savings
<i>STUNNING - Sustainable business models for the deep renovation of buildings</i> (2017-2019)	Support the growth of a diverse stakeholder community around a web-based knowledge-sharing platform addressing technology and business models for refurbishment in EU28	European Union (H2020)	<ul style="list-style-type: none"> • Set up a knowledge-sharing platform • Create stakeholder community in value chain • Benchmarking refurbishment packages • Promotion of innovative business models 	FR, ES, DE, IT		<ul style="list-style-type: none"> • Develop stakeholder community database • Live knowledge-sharing platform • Energy efficiency renovation market mechanisms, trends and barriers • Successful replication in renovation business schemes
<i>TripleA-reno</i> (2018-2021)	Support decision-making and make deep and near-zero energy renovation attractive for consumers.	European Union (H2020)	<ul style="list-style-type: none"> • Consumer-centred business model • Tailor renovation with the TripleA-reno decision-support tools • Gamification features to influence behaviour and increase attractiveness 			<ul style="list-style-type: none"> • No published outcomes

Types of integrated renovation services (business model concepts)

OSS can play different roles under different business model concepts, such as (i) industry-driven, where manufacturers and installers aim to extend their businesses; (ii) consultant-driven, where they develop customer-related business models; (iii) energy service company-driven, where they extend the value-added solutions; (iv) local government-driven, where the programmes are generally climate or energy related; and (v) cooperative-type, where they aim at societal benefits beyond energy or cost savings [6]. The nine cases analysed in this report represent all these five roles³. Figure 2 displays the main OSS categorised into the five different roles (see list in Annex).

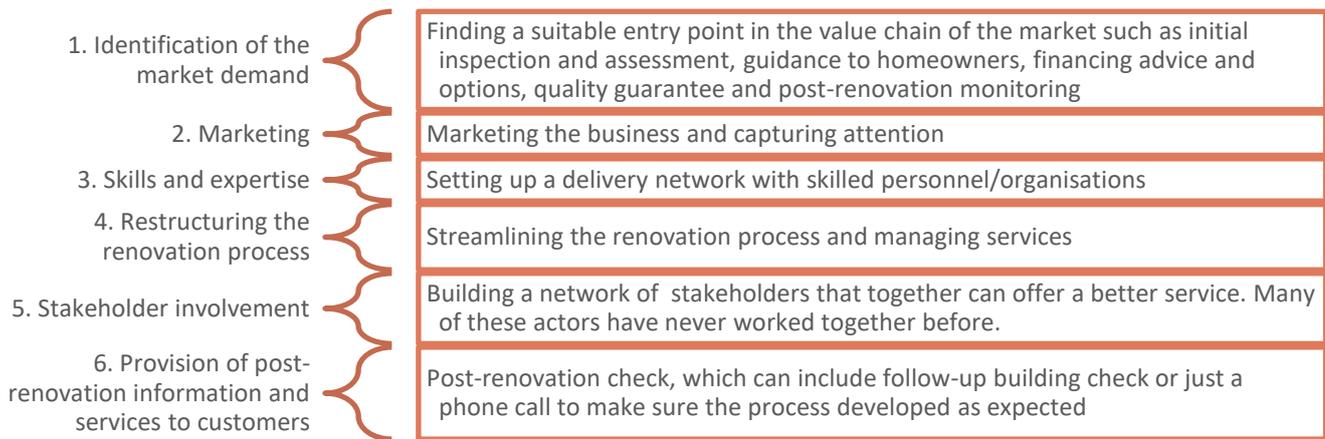
Figure 2: Compilation of existing OSS (compilation by Turnkey Retrofit consortium)



Most of the existing business model concepts focus on residential buildings, including single-family houses, multi-family buildings, as well as social housing and public buildings. Few existing OSS focus primarily on commercial buildings. The existing OSS focus on six main central aspects, as displayed in Figure 3.

³ (i) BetterHome, (ii) Operene, izigloo, and to some extent Energiesprong, (iii) ProenergyHomes, (iv) SuperHomes (local and public energy agency) and Oktave (local semi-public company), (v) SiRE and RetrofitWorks.

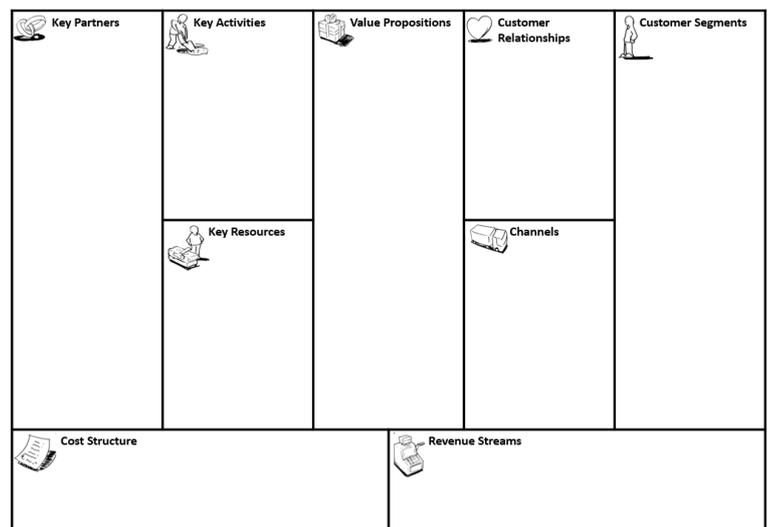
Figure 3: The existing integrated renovation services focus on six central aspects



Generally, a business model is understood to describe the rationale of how an organisation creates, delivers and captures value. Several integrated renovation services discussed above are targeted towards specific segments to create value in offerings and attract the customer. A concept created by Osterwalder and Pigneur [9] was proposed to create a shared language in developing business models. Nine building blocks (shown in Figure 4) have been identified to build a successful business model. These nine building blocks provide a relevant framework to assess the existing business models in the renovation industry:

1. **Customer segments:** the community of potential customer the model is aiming for (building typology, income level, geographic area etc.)
2. **Value propositions:** what provides value to the customer?
3. **Channels/outreach:** which communication channels are used to reach potential customers?
4. **Customer relationships:** are established and maintained throughout and beyond the renovation journey
5. **Revenue streams:** sources of income for the business model
6. **Key resources:** the assets required to offer and deliver the previously described elements
7. **Key activities:** what services are provided by the model?
8. **Key partnerships:** relationships with private and public actors, enabling a better renovation service
9. **Cost structure:** costs related to the business model

Figure 4 Business model canvas [3]



Customer journey

The customer journey in marketing refers to the customer's path to their decision to purchase an item. The customer journey in energy renovation is slightly different: it starts with the first contact and ends with a follow-up check of the completed renovation. The journey comprises two main steps, the first being to get the homeowner to "purchase" an energy renovation while the second step is the actual renovation process. The concept is often used in relation to OSS as they encompass both steps.

Two examples are presented below. One focuses on the customer's experience of the renovation, while the other focuses on the different services the journey comprises.

REFURB's customer-oriented journey comprises 11 steps to a NZEB renovation

The H2020 project [REFURB](#) identified 11 steps in the homeowners' journey to a nearly zero-energy renovation [10]. This customer journey takes the perspective of the homeowner, outlining the essential steps they will have to go through in order to finalise the renovation:

1. Becoming aware – homeowners receive timely information at a relevant moment.
2. Becoming interested – a trusted party provides the information.
3. Becoming active – the homeowners understand why they must act now.
4. Considering the offer – homeowners understand the value proposition, and are potentially connected to a single point of contact (advisor).
5. Financing – homeowners understand costs and how the investment can be financed.
6. Selecting a supplier – an overview enables homeowners to make simple comparisons between the options and draw on others' experiences.
7. Installation and payment – a personal approach and structured communication are provided.
8. Experience – impact measures and comfort meet expectations.
9. Organising – the service provider offers a maintenance contract, is proactive and provides advice.
10. Sharing – users are encouraged to share their experiences, both for word-of-mouth publicity and for their own confirmation of decisions made.
11. Wanting more – the service provider stays in touch with the homeowner and keeps him/her up to date about new measures.

Elevate Energy's full-service approach

[Elevate Energy](#) is an OSS in the Chicago area of the United States. Its customer journey focuses on the main services it provides, from an on-site assessment of the building to a follow-up.

1. Assessment – an energy analyst conducts a free but full-service assessment and recommends practical improvements.
2. Guidance – the advisor suggests cost-effective solutions and solicits bids from qualified contractors.
3. Finance – the homeowner receives access to financing options, as well as help to apply.
4. Quality assurance – Elevate Energy provides construction oversight and inspects the building once work is complete.
5. Follow-up – annual reports show the utility bill savings.

2. METHODOLOGY

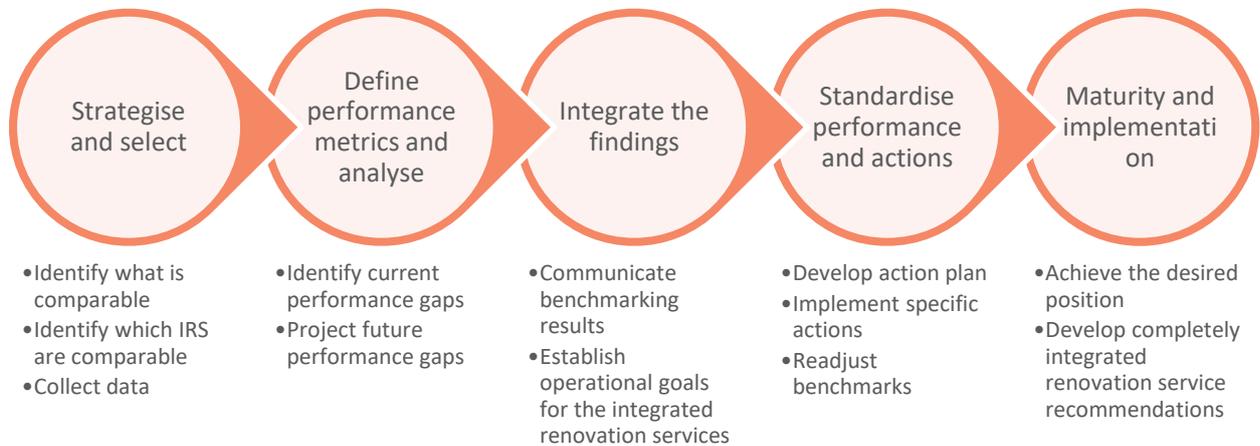
A descriptive qualitative analysis of the most relevant integrated renovation services was conducted to understand their strengths and weaknesses. The information was gathered from interviews with OSS managers, project descriptions and existing compilations and reports. The selection of integrated renovation services considered in the analysis was based on the following key criteria:

- Currently active in the relevant geographical area
- Interesting business model
- Provides an integrated energy renovation service
- Works in collaboration with other organisations and actors in the value chain
- Innovative approach or experiences with a significant number of renovations completed
- Active in France, Spain, Ireland or a similar country.

The analysis was conducted by benchmarking the existing OSS and their services based on a number of performance parameters (e.g. business model, renovation journey, market penetration etc.).

The benchmarking process involved five steps as shown in Figure 5. In the first step, the comparable aspects are identified between the integrated renovation services. In the second step, performance metrics responsible for creating performance gaps are identified. The third step integrates the result of the benchmarking exercise. In the fourth step the performance metrics are standardised, and specific action areas identified. Finally, in the fifth step all the important aspects are included based on which recommendations are derived.

Figure 5: five steps of the benchmarking process



Future renovation services need to adapt to the benchmarks to achieve the desired performance. The learnings from the benchmarking process will be applied in developing the Turnkey Retrofit Services.

3. DESCRIPTION OF THE INTEGRATED RENOVATION SERVICES

This section comprises brief descriptions of the nine integrated renovation services, encompassing Operene, izigloo, Oktave, SiRE, SuperHomes, ProEnergy Homes, BetterHome, Energiesprong and Retrofitworks. The description for each case covers the nine business model building blocks, including key partners, key activities, key resources, value proposition, customer relationships, channels, customer segments, cost structure and revenue streams. In addition, the description of the OSS includes general information (year started and background), information relevant for integrated renovation services (renovation journey, data gathering etc.), as well as some key figures (e.g. number of renovations).

Operene

An engineering company started in 2014, Operene offers comprehensive energy renovation packages for multi-family houses (condominiums, social housing) and the public service sector, mainly in the Auvergne-Rhône-Alpes region. Operene intervenes at every stage of the project, from the financial study, through the coordination of a group of local businesses to guarantee the performance of the works.

Aspect	Information
Location of the integrated renovation services	Lyon, France
Active since (year)	2014
Why was it started	The French Housing Ministry introduced the energy transition law in 2012 to reduce energy consumption of the residential building stock by 50% by 2050. Following this, regional and local authorities have implemented a myriad of financial support schemes to stimulate energy renovation projects. The Lyon metropole, where Operene is active, invested €30 million in a five-year programme until 2020 to increase renovation in social and residential buildings.
Main objective	Provide an integrated renovation service for multi-family buildings.
Host organisation	Operene is an independent organisation with private shareholders.
Key partners	Operene joins larger projects in a consortium of organisations and is the single-point contact and project manager. Operene needs to work closely with its co-contractors, which (depending on the project) include professionals such as installers, architects, designers, as well as a consultancy office conducting thermal studies of buildings.
Key activities	Operene offers two main services: <ol style="list-style-type: none"> 1. <i>Financial engineering</i>: Operene performs a financial projection of the related cost and energy savings the various project options will bring. The service enables owners to know what financial effects their decision will have. 2. <i>Integrated renovation service</i>: Operene can carry out all the required work for a deep renovation (including façade insulation, roof insulation, boiler replacement) and the construction site coordination (project management).
Key resources	<ul style="list-style-type: none"> • Staff of project managers and promoters • Network of local professionals in each work package • Unique contact point for the client

Value proposition	<ul style="list-style-type: none"> • High-quality work • Better work planning • Boost the local economy • Energy performance guarantee
Customer relationship	Operene is the customer’s single-point contact, maintaining the relationship throughout the whole renovation journey.
Channels	<ul style="list-style-type: none"> • Local networks • Online (website) • Local renovation advice centres
Customer segments	<p>Financial engineering: homeowner associations in multi-family buildings</p> <p>Integrated renovation service: multi-family buildings, social housing and public buildings</p>
Cost structure	<ul style="list-style-type: none"> • Labour cost of project managers • Administration costs
Revenue streams	<p>The main revenues are gained when a company is involved in a consortium selected to conduct a Groupement Momentané d'Entreprise (GME) project⁴. The financial engineering service generates a smaller revenue stream. The renovation offer is highly dependent on the nature of the call for projects. The call can relate to the renovation works, the design-realisation or the design-realisation-operation-maintenance.</p> <p>Shared phases to all projects:</p> <ul style="list-style-type: none"> ➤ Before: setting up a renovation bundle via a GME. Operene is the single-contact point of the client. It coordinates the actions of the multiple partners ➤ During: project supervision / quality control (thermal camera, infiltrometry, airtightness) / performance guarantee <p>The GME special agent shares the evolution of the clients’ updated needs and expectations during the project with the whole group, and sets the pace for the overall project. The agent is the unique interlocutor and Operene supports and assists the agent in this task.</p>
Data gathering	The energy diagnosis and the work programmes are provided by a partner. The diagnosis is based on existing information (utility bills, building permits etc.) and information gathered on-site by an auditor.

⁴ The GME is an official legal form in France that allows joint projects on the basis of co-contracting. A special agent is appointed (usually the company that wins the most important lot) and will be the legal referent of the project. The GME implies legal and financial solidarity. The special agent takes care of the realisation of the work in case one of the partners fails to execute its tasks. Operene is very rarely appointed special agent.

Renovation journey	<p>The renovation process for the Operene integrated renovation follows five main steps:</p> <ol style="list-style-type: none"> 1. The project design is conducted by an architect, a thermal engineer's study or surveyors. The contractor (i.e. the assembly of co-owners and their representatives) then provides Operene with the renovation programme. 2. Operene selects SMEs specialised in each work package needed to realise the work programme. 3. Operene defines and outlines a project in collaboration with selected SMEs including the cost, the means used and the objective to be achieved. 4. Operene supervises the project and is the unique contact point for the client. 5. Operene ensures quality control during the construction phase to guarantee the proper performance of the work.
Certification	Most projects reach BBC (low energy building) label, but certification is optional.
Post-installation QA	Quality control to guarantee the proper performance of the work, comprising different tests in order to ensure the quality of the refurbishment (especially the energy aspects).
Professional skills/training	No training activities within the OSS. Operene selects co-contractors based on the quality of their work.
Financial subsidies/loans	Operene informs clients about financial subsidies and bank loans.
Number of supported renovation projects	<ul style="list-style-type: none"> • 50 projects of financial engineering service • 10 projects of integrated renovation offer • 2 projects of integrated renovation offer including energy performance contracts
Investments	Operene has generated over €30 million of work over a four-year period
Average project size	A total of 4,000 dwellings in renovation projects. In privately owned buildings, around €800,000 per multi-family building, with energy savings around 40-50%.
Conversion rate	<ul style="list-style-type: none"> • 80% of the performed financial engineering services result in actual renovation works. • 33% of the organisation's tenders for private buildings are successful.
Other	Operene is working at the same time on R&D projects to develop new refurbishment solutions designed with a consortium of SMEs.
Links	Website: operene.fr
Sources	Interview with Operene managers

Izigloo

The [izigloo](#) platform is an intelligent online registry, keeping track of the maintenance and management of the house. Based on an analysis of data from 70,000 completed renovation projects, the izigloo can derive quick estimation of the building, which often entices people to engage in a renovation. The izigloo renovation service allows homeowners check their energy balance online, get personalized advice on how to improve the performance of the building and provide links with the best professionals to carry out the work.

Aspect	Information
Location of the integrated renovation services	France
Active since (year)	2015
Why was it started	EP has been carrying out renovation projects since 2010, with a focus on the financing part. After 70,000 completed projects, EP identified a need for a more structured support for renovation projects because customers, often, perceive them as complicated, expensive and time-consuming. Few customers were willing to pay for this additional service, hence the idea of industrialising the support through a digital platform.
Main objective	Trigger renovation work and match customers with building professionals.
Host organisation	EP is a private independent organisation.
Key partners	EP collaborates with three types of stakeholder: <ul style="list-style-type: none"> • independent companies and SMEs • professional associations • “major account”, which is larger companies having several agencies in the entire country and that can buy a lot of projects
Key activities	<ul style="list-style-type: none"> • Provides automated calculation and estimations of the required cost, energy savings, available subsidies relating to a potential renovation project • Offers energy renovation advice • Allocates the right building professionals to a project
Key resources	<ul style="list-style-type: none"> • Online portal and extrapolation solution • Network of professionals
Value proposition	The online renovation advice instrument encourages homeowners to invest in energy renovations and sets them up with the right professionals. The solution reduces uncertainty for homeowners in the initial parts of the renovation journey.
Customer relationship	izigloo reaches most customers through online marketing and guides them through the steps of the renovation journey.
Channels	<ul style="list-style-type: none"> • Online (social media and website) • Network of actors
Customer segments	Single-family houses
Cost structure	<ul style="list-style-type: none"> • Labour cost of project developer/promoters • Online renovation solution and related data crunching • Marketing (mainly Google and social media)
Revenue streams	<ul style="list-style-type: none"> • Selling potential projects to professionals (i.e. leads) • Percentage of the project value when a project is carried out

Data gathering	For the development of the “Smartdiag”, Izigloo crunches data, such as the geometric modelling of the house, climate zone and available sunshine, year of construction, construction norms and house templates, thickness (U-value) of the envelope, energy performance certificates, etc. To be able to accurately estimate potential cost and energy saving, izigloo has comprised and categorised data of more than 70.000 completed renovation projects.
Renovation journey	<ol style="list-style-type: none"> 1. The building owner finds their way to the izigloo website. The organisation uses social media and Google adds to get traffic to the website. 2. User receives either: <ul style="list-style-type: none"> • An estimation of the total cost (based on decision trees, product list with prices, subsidies and eligibility criteria) • Smartdiag: a more comprehensive evaluation of the building and required work. 3. If the building owner is interested, an appointment is made with an advisor. The building owner indicates how soon he/she would like to get the work done. 4. The project is published on the portal as an open tender for the professionals to bid on. 5. Up to three professionals can “buy” the prospective project and deliver their proposal. 6. The building owner signs with the preferred professionals. 7. The renovation work is conducted. 8. Follow-up feedback form is filled in by the building owner.
Certification	Not within the model
Post-installation QA	Not within the model
Professional skills/training	Not within the model
Financial subsidies/loans	izigloo incorporates two main subsidies : CITE and CEE <ul style="list-style-type: none"> • CITE = A tax rebate for audits. Audit is a service provision that is regulated by law. It has to provide energy simulations of the building, several scenarios of renovation plans and energy simulations of each of them. Limited impact as audits are still seen as too expensive for households. 30% tax rebate (CITE) also exists for voluntary EPC. • CEE = energy efficiency certificate: The French CEE scheme requires energy suppliers whose sales are above a certain threshold to participate in energy saving measures, such as energy renovations, either through direct savings on their own installations or by helping their customers to save energy.
Number of supported renovation projects	130.000 since 2010, whereof 40.000 since 2015.
Investments	Around €8 million

Average project size	€9000
Conversion rate	10%
Links	Website: izigloo.com
Sources	Interview with EP managers

Oktave

Oktave is an integrated renovation service model in the French region of Alsace, which aims to increase the number of deep renovations. The model provides the building owner with a main point of contact that guides them throughout the renovation process.

Aspect	Information
Location of the integrated renovation services	Grand Est region, France
Active since (year)	2016
Why was it started	Reducing greenhouse gas emissions by a factor of four is required to meet the regional 2050 target set by the Regional Climate Air Energy strategy , and enforced by France's Energy Transition for Green Growth Act . For the region's building sector, this requires that 38,000 individual homes are renovated to BBC (nearly-zero energy) level every year. The region sees a significant growth potential for the building industry (equivalent to €1.9 billion of work annually), which can generate good local jobs and an economic boost. Public authorities are therefore determined to help the industry develop its capacity, in order to meet the forthcoming increase in deep renovation demands.
Main objective	Provide homeowners with an independent renovation advice service specialising in deep energy renovations. Oktave compares and evaluates individual offers by suppliers and compiles a holistic solution that suits the specific customer.
Host organisation	Oktave is a new entity founded by the Grand Est Region and the French Environment and Energy Management Agency (ADEME). It is a semi-public company.
Key partners	Oktave works in close collaboration with local authorities and local contractors. There is no special partnership with banks but Oktave arranges offers from banks and energy service companies.
Key activities	<ul style="list-style-type: none"> • Technical renovation advice tailored to the specific building • Support with a financial plan, combining potential grants, tax rebates and low-interest loans • Project management assistance throughout the renovation process • Personalised “post-works care” for two years after completion of the renovation • A directory of qualified and experienced professionals trained by Oktave to guarantee long-term building performance
Key resources	<ul style="list-style-type: none"> • Financial management (accounting, auditing, quality control, litigation)

	<ul style="list-style-type: none"> Operational management (renovation advisors, loan advisors, relationship with contractors and companies) Relationship with local authority and actors
Value proposition	Okatve offers a holistic deep renovation solution, covering financial and technical aspects. It simplifies procedures and provides clear and understandable information to customers.
Customer relationship	The customer is provided with single-point contact throughout the renovation journey.
Channels	<ul style="list-style-type: none"> Local renovation advice centres Local network (installers, architects, tradespeople etc.) Website and social media
Customer segments	<p>All single-family houses but most notably:</p> <ul style="list-style-type: none"> Homeowner with fully, or nearly, paid mortgages High-income families First-time buyers Employees of regional authorities and banks, tradespeople
Cost structure	<ul style="list-style-type: none"> Labour cost (advisors, admin personnel etc.) Information system cost (development, maintenance) Communication cost
Revenue streams	<ul style="list-style-type: none"> Compensation of the technical support in the form of a service package billed to the customer Financial income generated through its credit intermediary activity
Data gathering	<p>The renovation advice is based on information gathered through an on-site visit. The possible renovation solutions are discussed with the building owner.</p> <p>In addition, Oktave has developed an “information system”, which has been designed to improve the flow of information between the different partners and the collection of technical and financial information needed for the scoping of the overall renovation project. The purpose of the information system is to centralise and share data between Oktave SPC, its partners and the building owner. The system is interoperable with other information systems.</p> <p>The partners who will share, update and use information include:</p> <ul style="list-style-type: none"> The regional operator The project funders (retail banks, ANAH, CAF, pension funds, local authorities, etc.) Building professionals Local energy platforms and advisors Homeowners looking to renovate their individual home.

Renovation journey	<p>The renovation journey follows four main steps:</p> <ol style="list-style-type: none"> 1. The first step comprises the initial contact and on-site visit, from which the suggested measures are derived. The renovation plan is discussed and outlined based on the need and financial means of the homeowner. Following this, an Oktave contract is signed, stipulating the terms and cost. 2. The Oktave advisor collects offers from relevant building professionals and puts together the most appropriate renovation package. The homeowner agrees on a renovation and financial package suggested by the advisor. 3. The actual renovation works take place, during which the advisor supports the homeowner when needed. A blower-door test is used to control the general quality and performance of each renovation. 4. The final step is the “post-work care”, in which the advisor stays in contact with the homeowner and ensures the technical and financial plans work as intended.
Certification	Not within the model
Post-installation QA	The post-work care continues for two years following the completion of the renovation to ensure proper handover to the owner of the renovated housing. The Oktave advisor stays in contact with the building owner to handle any events that may arise during the loan repayment period.
Professional skills/training	<p>Oktave has set up a teaching programme to improve the contractors’ technical and sales expertise, in order to facilitate deep renovation works. After the contractor completes the teaching programme, they are entitled to conduct deep renovations for Oktave. The Oktave-branded experts can also be hired by external organisations to solve complicated situations.</p> <p>The overall goal of Oktave is to increase the capability of professionals (management, sales technicians and construction workers) to manage a deep renovation process in a simplified and coordinated way and by doing so reduce the risk of mistakes. By 2017, around 250 building professionals had been trained within the programme.</p>
Financial subsidies/loans	No special partnership with banks but facilitates offers from banks and ESCOs. On average, 14% of the final renovation cost is covered by public subsidies and 63% by private loans.
Number of supported renovation projects	Number of projects: 180 projects (from 2016 to 2018). The number of supported renovation projects is projected to increase to 1,000 per year in 2021/2022.
Investments	<ul style="list-style-type: none"> • Total investment: €10.3 million • Share of private investments: 86% (23% personal contribution, 63% loans) • Share of public grants: 14%
Average project size	On average, €80,000 per BBC renovation of a single-family house
Conversion rate	<ul style="list-style-type: none"> • First contact -> dialogue: 25% • Dialogue -> investment: 50% • First contact -> contract: 12.5%
Other	Oktave has also developed a partnership with the real-estate agency ORPI France . A simulation tool and training programme were developed for real-estate agencies and are currently being tested (April-December 2019), which will enable Oktave to effectively target clients with a suitable budget and needs

Links	Oktave website: www.oktave.fr
Sources	<ul style="list-style-type: none"> Oktave model description: www.oktave.fr/sites/oktave/files/publishable_report_en.pdf Interreg best practice description: www.interregeurope.eu/policylearning/good-practices/item/379/psee-oktave Information provided by Oktave manager

SiRE

The SiRE platform aims to be the meeting point of all actors involved in the renovation process, including administration, construction workers, suppliers and citizens. SiRE also provides citizens with advice, information and knowledge on how to reduce their energy bill through energy renovation. ANERR is the name of the association, while SiRE is the OSS and ReformAnerr is the name of the website.

Aspect	Information
Location of the integrated renovation services	Madrid, Spain
Active since (year)	Started in 2015 with a “face-to-face” service. Since 2017, the service was also offered through the ReformAnerr website.
Why was it started	ANERR (the national association of renovation companies) was started at a time (2011) where few new buildings were built, and renovation of existing buildings was almost non-existent in Spain. Following the economic/social and climate crises, energy efficiency and urban regeneration became increasingly important. ANERR developed SiRE, an integrated renovation platform, to increase interest in energy efficiency, bring the fragmented value chain together and professionalise the sector.
Main objective	The main objective of SiRE is to boost energy renovations in the region through information and training of professionals. While some customers just enquire about general information and explore their options, often without having a concrete idea about what to do, other customers use SiRE to ask for hands-on solutions, including estimated budget and financial solutions. The ANERR-affiliated companies are supportive of the service because more renovations increase demand for their products.
Host organisation	SiRE provides free renovation advice to citizens of the region. The service is offered by ANERR which is private association.
Key partners	<ul style="list-style-type: none"> Manufacturers are involved in offering training and product demonstrations. They are private companies and members of ANERR, including companies like Vaillant, MAPEI and UPONOR. ANERR collaborates with the EMVS, which is a public institution in Madrid in charge of promoting building-relevant information. The professional association for building managers contributes to the dissemination process and is involved in the process. <p>In addition, ANERR is involved in the regular experts meeting with public officials to discuss laws and regulations. Through these meetings, early information about grants and opportunities is provided, which ANERR disseminates to</p>

	citizens and associate companies which adapt their business models accordingly.
Key activities	<p>SiRE is the meeting point between government, professionals and citizens, where the user gets information about energy renovation solutions, including information on grants and other funding opportunities.</p> <p>The SiRE renovation service is free for citizens, property managers, professionals, etc. It promotes benefits of energy renovation measures and provides advice for the renovation process, and provides:</p> <ul style="list-style-type: none"> • Assessment of the building performance and possibilities, from which recommendations and cost estimates are provided • Recommendations of suitable professionals and renovation companies for the specific work • Advice on which measures to install, including information on available subsidies etc. <p>SiRE also offers awareness raising activities (workshops, seminars etc.), including information and training days.</p>
Key resources	<ul style="list-style-type: none"> • Strong network of building professionals • Several forums, private and public, to disseminate the information
Value proposition	SiRE provides citizens with free advice, information and knowledge on how to reduce their energy bill, while bringing work to local companies.
Customer relationship	The customer is guided throughout the whole renovation journey.
Channels	<ul style="list-style-type: none"> • Local network (companies, association of building managers etc.) • Renovation advice centres • Website
Customer segments	<ul style="list-style-type: none"> • Mainly multi-family buildings • Single-family houses <p>In addition, energy advice is offered to the general public.</p>
Cost structure	<ul style="list-style-type: none"> • Labour cost (advisors, admin personnel etc.) • Communication/outreach cost
Revenue streams	<ul style="list-style-type: none"> • The model retrieves an overhead cost for every contracted work, which amounts to over 6% of the total cost. The fee is paid by the company that wins the work through the SiRE model. Companies that are involved in the offering process, but not selected, do not have to pay anything. • ANERR is an association which receives private sponsorship that supports SiRE. The association also sponsors events and technical trainings that indirectly support the SiRE renovation model.
Data gathering	The building owner answers a questionnaire about their building and the renovation needs. This is complemented by a chat with an ANERR advisor. Data can also be collected on-site, if the project requires this.

Renovation journey	<ol style="list-style-type: none"> 1. The customer visits the ReformAnerr website. People interested in a real project fill out a basic form about their needs and receive some initial information about the process. Following this, the customer is contacted by a specialist within two days. 2. In the second step, the team prepares the renovation proposal, including: <ol style="list-style-type: none"> a. Developing a questionnaire for the building owner about the project and finding the right installers. With the initial questionnaire, the professionals make an initial diagnostic about renovation needs and financial ability, based on which a suitable installer is selected. The online questionnaire is complemented by a phone call. This first interaction and expectation check enables a more aligned process, which improves the experience for associate companies as well as the customer. b. Suggesting a financial solution for the specific project. SiRE provides information about public and private funding options. ANERR's associates sometimes help to facilitate a financial solution with better conditions. 3. All the gathered information goes back to the building owner, who decides what to do. 4. The renovation is implemented and ANERR keeps in contact with the building owner throughout the process. 5. Following completion, a user survey is conducted.
Certification	Only the energy performance certificate. Building owners rarely want to pay for it as they see few related benefits in terms of grants or taxes.
Post-installation QA	There is no effective post-implementation check of the improvement (such as energy consumption or CO ₂).
Professional skills/training	ANERR has developed a special training itinerary to increase the skills of the associate companies.
Financial subsidies/loans	ANERR has special agreements with Banco Santander, Deutsche Bank and Bankia. No public subsidy exists that is vital for the model.
Number of supported renovation projects	In 2018, 139 renovation requests, of which 74 projects were implemented.
Investments	In 2018, 74 multi-family building renovations with an average cost of €72,900
Average project size	No data on average energy savings.
Conversion rate	In 2018, 300 first contact (less than 1% of potential customers) -> renovation proposal 10% -> actual renovation 5.8%
Other	ANERR is working on new maintenance services for multi-family houses which represent a large part of the actual work. Renovated buildings need to be maintained, and maybe renovated again in the future, which represents a great opportunity for the companies.
Links	ANERR Website: anerr.com ReformANERR website: www.reformanerr.com
Sources	Interview with ANERR managers

SuperHomes

SuperHomes is an integrated renovation service that has been successful in increasing the number of deep energy renovations by providing technological and financial support for homeowners.

Aspect	Information
Location of the integrated renovation services	Tipperary region, Ireland
Active since (year)	2015
Why was it started	Tipperary Energy Agency (TEA) launched SuperHomes as a way to reduce the sector's climate impact and bring better homes to citizens. It is a result of the country's and region's vision to decarbonise the building sector.
Main objective	SuperHomes wants to provide an integrated deep renovation service for single family homes, with all homes renovated to an EPC A3 rating, which is equivalent to a low energy building. With the OSS, TEA also aims to [11] provide a significant financial support package, including: <ul style="list-style-type: none"> • A public grant to incentivise renovation works • A loan covering the remaining cost, which can be paid back over a five -year period.
Host organisation	TEA, a regional energy agency, provides a professional project management service to the building owner, including selection of contractors and subcontractors to carry out the works, checking of the work quality and post-occupancy evaluation. It also processes public subsidies for deep energy renovation, which simplifies the process for the building owner.
Key partners	The main collaboration is with SEAL , the Irish Energy Agency, which has provided subsidies for homes completing a deep energy renovation. The OSS also collaborates with local professionals and public authorities. Being the local energy agency, TEA has a natural and strong network with actors in the region.
Key activities	<ul style="list-style-type: none"> • Home energy assessment/survey • Renovation project management • Grant/subsidy application • Post-installation check/evaluation
Key resources	<ul style="list-style-type: none"> • Good project managers • Strong local network • Financial package
Value proposition	SuperHomes offers the only holistic renovation solution that will reduce the energy consumption to nearly-zero energy level.
Customer relationship	Single-point contact that guides the customer throughout the whole renovation process.
Channels	<ul style="list-style-type: none"> • Local network (companies, association of building managers etc.) • Local renovation advice centres • Website
Customer segments	Single-family houses
Cost structure	<ul style="list-style-type: none"> • Labour cost (advisors, admin personnel etc.) • Communication/outreach costs
Revenue streams	The main revenue comes from: <ul style="list-style-type: none"> • Project management and professional fees which are included in the total cost of the works for the homeowner.

Data gathering	The building owner completes an initial questionnaire through the SuperHomes website. Following this, an on-site home energy survey is carried out using the DEAP EPC generation software to explore a pathway to a nearly zero energy level.
Renovation journey	<ol style="list-style-type: none"> 1. The building owner expresses interest and makes an application on the SuperHomes website. The deep energy pilot required the aggregation of at least five homes to participate in the programme. 2. If the project is deemed feasible, a home energy survey (i.e. an on-site evaluation) is carried out at a cost of €475. The assessment includes an air infiltration test. 3. A suggested package of measures designed to achieve an EPC A-rating is proposed. Some measures are mandatory within the scheme. The complexity of a deep renovation is simplified and presented in a digestible way to the homeowner, while the recommendations are tailored to the specific building and the incentives of the homeowner. 4. SuperHomes provides costs to the homeowner from a pre-approved panel of contractors and sub-contractors. 5. If the homeowner wishes to proceed, TEA accesses subsidies on behalf of the client. 6. The project management and quality assurance of the various contractors and installers is by TEA. 7. A post-audit is carried at the end of the works by TEA and this is subject to further audit by the subsidy provider SEAI. 8. A post-occupancy evaluation is carried out for up to three years by TEA.
Certification	An EPC is conducted. The target is an A3 rating and this is required to access the SEAI subsidy/grant.
Post-installation QA	An audit is carried out by TEA, followed by an audit by SEAI. The homes are monitored by TEA for up to three years after occupation.
Professional skills/training	The installation of air-to-water heat pumps requires special skills which are provided in the scheme.
Financial subsidies/loans	As part of the of a pilot programme SEAI offer up to 50% subsidy for deep energy renovation carried out to nearly zero energy rating. However, given the limited budget for the pilot there is no guarantee. As of 14.08.2019 the programme is closed to new applications for 2019, and the future for this grant is unknown.
Number of supported renovation projects	Approximately 200 to date, with around 80 deep renovations planned in 2019.
Investments	The cost of the renovation ranges between €40,000 and €60,000 depending on the size of the project.
Average project size	<ul style="list-style-type: none"> • Average energy cost reduction: €1,800 per year • Average primary energy saving: 71% <p>The model targets homes rated D1 (though some C3 homes are permitted) or below to renovate to the A3 rating, which amounts to between 50 and 75kWh/m² of regulated energy, (including energy for heating, hot water fixed electricity such as lighting and pumps, but not plug loads for white or black electrical goods). Subsequently, the saving is in the order of at least 150kWh/m².</p>
Conversion rate	Around 33% accept the proposed renovation package.
Other	The homeowner is obliged to upgrade certain parts of the building, in order to receive financial support. The primary heating system must be renewable, such as a heat pump,

	while an advanced ventilation system must be installed. In addition, the building's airtightness must also be upgraded. Support is also available for non-mandatory measures, such as window and door upgrades, insulation and solar PV.
Links	Website: superhomes.ie
Sources	<ul style="list-style-type: none"> Information provided by SuperHomes manager Case study by Covenant of Mayors: https://www.covenantofmayors.eu/index.php?option=com_attachments&task=download&id=275

ProEnergy Homes

ProEnergy Homes is a credit union initiative supported by the SEAI in association with Retrofit Energy Ireland Ltd. It offers an integrated service, combining technical advice with practical financial solutions.

Aspect	Information
Location of the integrated renovation services	Ireland, including the counties of Galway, Dublin, Limerick, Tipperary, Wicklow, Kildare, Offaly, Louth, Westmeath and Cork.
Active since (year)	Started in 2017 as a small pilot and from 2019 at a large scale.
Why was it started	Article 7 of the EU Energy Efficiency Directive [2012/27/EU] obliges energy companies to carry out measures that help final consumers improve energy efficiency and achieve additional annual energy savings equal to the amount of 1.5% of annual sales of energy companies to final consumers.. In Ireland, the Energy Efficiency Obligation Scheme is projected to deliver half of the required 1.5% target. ProEnergy Homes brings together three parties to deliver energy renovation. A pilot programme by a credit union had been trialled but they struggled with providing the technical information needed by the customers. Irish Petroleum Industry Association (IPIA) needed to meet the increasing targets set by the Irish government under the energy obligation.
Main objectives	To make it affordable to renovate homes with low interest credit union loans.
Host organisation	Retrofit Energy Ireland Ltd (REIL). REIL is Ireland's leading energy services provider working towards a sustainable Ireland by enabling schemes and integrated, innovative solutions to domestic, commercial, social and public buildings on behalf of government, public and private sector clients. REIL currently manage the energy obligation on behalf of IPIA which represents 95% of the Irish oil industry under the Enprova brand. ProEnergy Homes is a credit union initiative supported by the Sustainable Energy Authority of Ireland (SEAI) in association with REIL.
Key partners	The OSS consists of three main partners: <ul style="list-style-type: none"> SEAI facilitates grants. REIL manages the project (and grant application). Local credit union handles the loan management.
Key activities	Building owners who apply receive a free home survey and a detailed energy evaluation report, including recommendations for potential energy saving measures, indication of cost of each upgrade and how much they could expect to save in heating bills once the works are completed.

	REIL offers grant management for qualifying works, including insulations (attic, cavity wall, internal wall/drylining, external wall), heating upgrades (heating controls, solid fuel stoves, solar thermal panels, heat pumps), windows and doors, solar electricity and battery storage. The local credit unions provide the balance as a loan.
Key resources	<ul style="list-style-type: none"> • Holistic renovation solution • Financial package • Strong local network
Value proposition	Integrate energy efficiency obligation credits in the renovation offer, including low interest credit union loans.
Customer relationship	The customer is guided throughout the whole renovation journey.
Channels	<ul style="list-style-type: none"> • Network (credit union members)
Customer segments	<ul style="list-style-type: none"> • Mainly multi-family buildings • Single-family houses • Especially buildings built before 2006
Cost structure	<ul style="list-style-type: none"> • Labour cost (advisors, admin personnel etc.)
Revenue streams	The scheme is relatively new and there is no clear business model yet. REIL project management costs are covered by the obligated party (IPIA) who cover some of these costs with the 'energy credits' needed to meet their energy efficiency obligation targets.
Data gathering	Members of the credit union complete an online questionnaire, including questions on property type, estimated annual spend on heating and current heating system.
Renovation journey	<ol style="list-style-type: none"> 1. The credit union⁵ members who own a house/apartment built pre-2006 express their interest online. 2. REIL contacts people who have expressed an interest in the process. If they are eligible (short phone conversation): 3. REIL does an onsite visit and produce an advisory report. 4. The advisory includes a list of suggested actions, costs and anticipated savings. 5. The homeowners select the measures they want to implement. 6. REIL manages the retrofit works and handles the grant application (35% SEAI grants). 7. The credit union loan covers the balance – flexible loan options. 8. A post-installation EPC is completed.
Certification	Post-renovation EPC
Post-installation QA	Post-renovation EPC
Professional skills/training	All contractors must be SEAI registered contractors, which guarantees certain quality. No training within the model.

⁵ Credit unions are not-for-profit organisations that exist to serve their members.

Financial subsidies/loans	SEAI grants cover 35% of the cost. The balance is covered by credit unions through a low rate loan (6.9% or lower). A minimum of two qualifying works must be completed for projects to be eligible.
Number of supported renovation projects	None. The scheme was only fully launched in June 2019.
Investments	No official statistics available yet, but it is anticipated that between €12k and €15k will be spent on each individual house. Official data to be released in Oct. - Nov. 19
Average project size	Anticipated: €12k to €15k
Conversion rate	Not applicable. The scheme was only launched at full scale in June 2019.
Links	Website: proenergyhomes.ie
Sources	Information provided by ProEnergyHomes managers

BetterHome

BetterHome is an industry-driven one-stop-shop model. Since it was launched in Denmark in 2014, it has proven successful in increasing demand for deep energy renovations. The model reduces the burden on the building owner by streamlining the renovation process

Aspect	Information
Location of the integrated renovation services	Denmark
Active since (year)	2014
Why was it started	Four supply-side actors, Danfoss, Grundfos, the ROCKWOOL Group and VELUX Group, created the model to increase renovation activity in Denmark.
Main objectives	To offer homeowners a burden-free, organised renovation opportunity to improve energy performance and indoor climate, based on standardised packages.
Host organisation	BetterHome was created as an independent organisation. The overall objective is governed by the private suppliers through regular board meetings.
Key partners	<ul style="list-style-type: none"> Partnered with local banks, who can refer their customers to the BetterHome offers, and vice versa Network of local installers Relationship to public authorities, including Copenhagen and Fredrikshavn
Key activities	<ul style="list-style-type: none"> Renovation advice. The homeowner uses an online tool to enter details about their homes and energy consumption and receive a report and recommendations on renovation measures and offers from local suppliers. Skilled professionals. Local craftspeople carry out the installation work. The craftspeople receive training and guidelines from BetterHome. Financial package. 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.
Key resources	<ul style="list-style-type: none"> • Project managers • Smart digital solution • Network of building professionals • Expertise in building components
Value proposition	Providing the homeowner with a solution tailored to their building, needs and financial means. BetterHome works hard to be synonymous with quality products and installers.
Customer relationship	The customer has single-point contact throughout the whole renovation journey. While the customer mainly talks with the installer (who is the single-point contact), BetterHome monitors the process to safeguard a good renovation journey for the customer.
Channels	<ul style="list-style-type: none"> • Online portal • Network (suppliers, installers etc.) • Social media (Facebook, Twitter)
Customer segments	<ul style="list-style-type: none"> • Single-family houses • Multi-family buildings <p>The online portal provides the customer with a first estimate of the energy efficiency potential based on data from a public registry (including energy consumption, year built, heating type etc.). Buildings that are already energy efficient, with a higher EPC rating, are not encouraged to proceed with their energy renovation plans.</p>
Cost structure	<ul style="list-style-type: none"> • Labour cost (project managers, business model developers, admin personnel etc.) • Development and maintenance of the online portal/solution
Revenue streams	The financial model of BetterHome is very simple: there are no payments between BetterHome and the installers or the building owners. BetterHome receives its whole budget from Danfoss, Grundfos, the ROCKWOOL Group and VELUX Group, who, in return, retrieve indirect sales revenues. While BetterHome and its owners have an incentive to increase the sales 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.
Data gathering	EPC and other building data is openly available in Denmark, which is used to give the homeowner a first indication of potential energy savings. The data is complemented by an on-site visit, which includes a survey on indoor environmental quality.

Renovation journey	<ol style="list-style-type: none"> 1. Initial contact After the building owner uses the BetterHome online portal to get a first estimate for their building and indicates that they want to know more about their renovation possibilities, an advisor calls them to hear more about their building as well as expectations. If both parties are interested in moving forward, they schedule a date for an on-site visit. 2. On-site visit During the on-site visit a building performance check is conducted, for which the installer has an online standardised survey to complete. The installer also discusses different renovation possibilities that they have and informs them about indoor environmental quality aspects and how to improve these. Based on the online survey, the installer can present energy and cost saving potential for different renovation alternatives. 3. Proposal development If they find a solution that meets the expectations of the building owner, they sign a contract. While BetterHome assists in providing standardised contracts, the contract is between the installer and building owner. 4. Renovation is carried out. 5. Post-renovation survey to make sure everything went as planned. Installers that receive substantial complaints are removed from the BetterHome network.
Certification	Not within the model
Post-installation QA	No but a post-work check of customer satisfaction is made
Professional skills/training	BetterHome trains installers and project leaders in how to carry out the renovation journey and how to approach (and persuade) the potential customer.
Financial subsidies/loans	Few subsidies exist but access to finance is rarely a problem among the target group. The banks play an important role in making the renovation project a reality. The homeowner discusses the intention to renovate their house with their usual bank. The bank screens together with them their financial capabilities and refers 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.
Number of supported renovation projects	1182 since 2015. 350 last year (2018)
Investments	Project turnover in all lead channels: €66.7 million since 2015 (1182 projects)
Average project size	€50,000-60,000 for single-family houses. No data for multi-family buildings at this point.
Conversion rate	<ul style="list-style-type: none"> • Renovation leads (person inserted their data on the website) to meetings = 57% • Meeting to renovation offer = 72.3% • Renovation offer to order = 83.1% • Renovation leads to actual renovation = 34.2%
Links	Website: www.betterhome.today

Sources	<ul style="list-style-type: none"> • BPIE briefing on BetterHome (Link: bpie.eu/wp-content/uploads/2017/10/CASE-STUDY_BETTERHOME_05.pdf) • Interview with BetterHome manager made for BPIE briefing
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Energiesprong

The Dutch Energiesprong⁶ project achieves net-zero energy renovation of (mainly) terraced houses through a restructuring of the value chain, rapid installations and prefabricated materials. The performance is guaranteed and paid through an energy performance contracting set up, where most of the cost will be covered by lower future energy bills.

Aspect	Information
Location of the integrated renovation services	Netherlands
Active since (year)	2010 (idea), 2013 (first volume deal under Energiesprong project), since 2017 via Stroomversnelling
Why was it started	Residential buildings in the Netherlands are heavily gas dependent, with 89% of Dutch buildings having a gas-fired boiler. The Dutch government wants all residential buildings to be disconnected from the gas grid by 2050. To achieve this, 7 million houses must be disconnected from the gas grid by then, which amounts to around 170,000 houses every year. Energiesprong, with its large-scale renovation approach, has been developed to contribute to this target.
Main objectives	Deep renovation of whole house to net-zero energy consumption level with only short installation time on-site, including long (up to 40 years) performance guarantee, which includes minimum indoor environmental quality parameter. The works typically comprise use of prefabricated facades, PV panels and a heat pump.
Host organisation	Stroomversnelling is a non-profit organisation with members from construction companies, housing associations, municipalities, suppliers, monitoring organisations.
Key partners	The model brings together many different building professionals, from installers and SMEs to larger manufacturers. Stakeholders are engaged and updated via the network organisation (formerly by Energiesprong market development team), which organises network events, bilateral conversations, as well as provision of guidance, tools and templates. In addition, Energiesprong sees the interaction with the residents as key to a successful implementation.
Key activities	<ul style="list-style-type: none"> • Whole house net zero renovations (typically with prefabricated facades, PV-panel and heat pump) with short installation time on-site • Up to 40 years performance guarantee • Project management
Key resources	<ul style="list-style-type: none"> • Project managers • Smart digital solution

⁶ In the Netherlands called *Stroomversnelling*.

	<ul style="list-style-type: none"> • Network of building professionals • Expertise in building components
Value proposition	<ul style="list-style-type: none"> • Net zero renovation solution • Long-term performance guarantee • Collaboration among contractors, suppliers etc.
Customer relationship	n/a. Energiesprong manages groups of building owners, which are managed by a project manager.
Channels	<ul style="list-style-type: none"> • Online portal • Network (suppliers, installers etc.) • Social media (Facebook, Twitter)
Customer segments	Social housing associations of mainly terraced and semi-detached houses but also multi-family buildings. Buildings built between 1946 and 1975 with a rather low energy performance and high energy bills.
Cost structure	<ul style="list-style-type: none"> • Labour cost (project managers, business model developers, admin personnel etc.)
Revenue streams	<ul style="list-style-type: none"> • The model offers a long-term performance guarantee (net zero energy consumption) where the renovation costs are paid for through the rent (i.e. an energy service fee) while energy is produced on-site. • Public support programmes (EU and national)
Data gathering	Mainly on-site data collection, including 3-D scanning to enable tailored prefabrication of façade and PV modules.
Renovation journey	<p>Energiesprong does not target single owners but groups of buildings, as well as larger multi-family buildings. The process regularly follows these steps:</p> <ol style="list-style-type: none"> 1. A social housing association expresses interest in the Energiesprong solution. 2. A rather complex preparation phase that comprises an on-site visit(s) and comprehensive analysis of the buildings. 3. Call for tenders including target cost and energy performance level. 4. Complex planning of solution provider (responsible for whole renovation process) and preparation of contracts between both solution providers and housing association, as well as housing association and tenants. 5. Signing of the contracts. 6. The renovation work is performed through a fast installation of the components (often less than one week for an individual house). 7. The performance is monitored over the agreed time period.
Certification	Net-zero energy performance guaranteed by contract; homeowner should be able to monitor consumption permanently
Post-installation QA	Constant monitoring of energy consumption and some other parameters (e.g. temperature) due to long-term performance guarantee.
Professional skills/training	Not directly included but the business model implies a revision of the whole production chain; new tasks for construction company (delivering whole net-zero product and taking over performance guarantee), housing associations (e.g. maintenance taken over by solution provider with the help of on-site monitoring; guaranteeing performance vis-à-vis tenants; training also required

	with regard to new technologies such as 3-D Scan Industry 4.0 and the respective changes for on-site installations).
Financial subsidies/loans	<ul style="list-style-type: none"> • Project support (especially network activities of market development teams) is financed within European means. • Some national and regional support schemes eligible, including an energy service fee of up to €1.42/m².
Number of supported renovation projects	3,886 net-zero energy renovations by the end of 2018 and 2,447 planned to be finalised in 2019
Investments	See below.
Average project size	On average €70,000 to €77.000 investment per parcel house. Project size comprises a couple of dozen up to a thousand dwellings.
Conversion rate	Not applicable. It typically takes a long time to find the right project and get actors on board; once it is agreed upon, the whole journey is typically completed.
Links	<ul style="list-style-type: none"> • Dutch “Energy agenda” (including 2050 gas targets): www.rijksoverheid.nl/documenten/rapporten/2016/12/07/ea • Website: stroomversnelling.nl
Sources:	<ul style="list-style-type: none"> • Information provided by Energiesprong managers • Publications from Interreg NWE and TransitionZero

RetrofitWorks

RetrofitWorks is a multi-stakeholder cooperative, owned by its members. The Cooperative aims to develop a reliable, high quality and complete retrofit service to resident

Aspect	Information
Location of the integrated renovation services	United Kingdom
Active since (year)	2015
Why was it started	The concept of RetrofitWorks was developed in response to the Green Deal Policy launched by the UK government. SMEs believed they were losing customers due to the Green Deal policy process. This initiated the drive for local SMEs to collaborate and generate a delivery model whereby the Green Deal policy could operate but not dictate the process.
Main objective	To create, manage and maintain a delivery supply chain consisting of its user members for the supply of retrofit work and services to other user members and others.
Host organisation	RetrofitWorks is a multi-stakeholder cooperative, owned by its members. The board is made up of private actors, including members from Parity Projects , professional institutions, trade associations, installers, energy auditors etc.
Key partners	It includes three tiers of membership:

	<ol style="list-style-type: none"> 1. Governance members on the board who set the standards and ensure quality 2. Lead generators who refer customers to the cooperative 3. Retrofit service providers such as builders, installers, energy advisers, architects and other building professionals who deliver the energy saving retrofit work for local residents.
Key activities	<p>The RetrofitWorks service includes the following steps:</p> <ul style="list-style-type: none"> • On-site assessment of the house takes place. • Three quotes are generated from the energy survey from local SME companies via a software portal. • All installers are quality vetted and referenced. • RetrofitWorks advises on the best grant scheme for the householder’s circumstances.
Key resources	Network of professionals from Parity Projects, professional institutions, trade associations, installers, energy auditors etc.
Value proposition	<ul style="list-style-type: none"> • RetrofitWorks is a not-for-private-profit cooperative, matching communities and homeowners who want to retrofit their homes, with local, quality-assured SME assessors and installers. • RetrofitWorks joins associated advocates and practitioners to identify the need for and deliver high-quality renovation projects.
Customer relationship	After the customer contacts the RetrofitWorks scheme, he/she is assigned a retrofit co-ordinator who oversees the development and implementation of the whole renovation journey.
Channels	<ul style="list-style-type: none"> • Communication and on-site survey • Online web-portal • Network of members
Customer segments	<ul style="list-style-type: none"> • Single-family buildings • Multi-family buildings • Community buildings • Commercial buildings
Cost structure	<ul style="list-style-type: none"> • Cost of renovation services is generally provided through membership fees and for the use of the RetrofitWorks services. • A small percentage is added to the cost of the work for every job. That percentage is agreed for each scheme by all the involved organisations. • RetrofitWorks also takes on some of the administration and customer care services, so member costs are further reduced by no longer having to provide these services. • Being a cooperative, the percentage fee goes back into providing member services for the benefit of the local community.
Revenue streams	Revenue is mainly generated through memberships fees and for the use of the RetrofitWorks services.

Data gathering	<p>An auditor performs an on-site check based on which a detailed survey is developed. The RetrofitWorks portal provides a facility to record the following during the design and completion of the retrofit work:</p> <ul style="list-style-type: none"> • Work location and address • Actual commencement and completion date • Surveys, designs, specifications and drawings • Briefing records, scanned and uploaded • Inspection records • Test outcomes (if applicable) • Commissioning records (if applicable).
Renovation journey	<p>The RetrofitWorks service involves four main steps:</p> <ol style="list-style-type: none"> 1. The first step is to conduct an on-site survey of the residential building. 2. Three quotes are generated from the energy survey from local SME companies via a software portal. RetrofitWorks members use the web portal to land retrofit projects and ensure they have sufficient information to be able to come up with a reliable quote. The building owners, or clients, have access to the quote via the same web portal. 3. All the work that is generated through the RetrofitWorks portal have a contract in place. 4. RetrofitWorks oversees installation and satisfactory sign off. This includes photos of all work, before and after completion.
Certification	The building owner receives a new EPC.
Post-installation QA	RetrofitWorks checks with the building owner after the installation is completed to make sure they are satisfied. What the post-installation quality check comprises is unclear.
Professional skills/training	RetrofitWorks offers support for training for its members. Members are expected to continue to develop and update their skills, knowledge and expertise throughout their careers for the benefit of their clients, and the quality of the built environment.
Financial subsidies/loans	RetrofitWorks has access to a charity-based loan provider which offers competitive rates specifically for home improvement works.
Number of supported renovation projects	<ul style="list-style-type: none"> • Four projects have been completed, while four projects are ongoing. • Two of the completed projects involved retrofit measures for 249 domestic buildings.
Investments	<ul style="list-style-type: none"> • £1.6 million worth of investment was made in 249 domestic projects. • £40,000 was invested in retrofit measures for privately rented houses in another completed project. Number of houses unknown. • £250,000 was invested in 16 commercial and community-based properties from 2013-2015.
Average project size	Details on project size in terms of energy savings are unknown.
Conversion rate	Data from the RetrofitWorks North London Smart homes scheme found where 159 converted customers and 104 lost customers got their referrals for the smart homes scheme, which amounts to a dropout rate of 40% for this



	<p>scheme. Most of the dropouts (74%) received their information from a project partner and not RetrofitWorks members.</p>
<p>Links</p>	<ul style="list-style-type: none"> • Further information on why RetrofitWorks was started and its journey from concept to application can be found on the RetrofitWorks website: retrofitworks.co.uk/our-story • Membership criteria: retrofitworks.co.uk/wp-content/uploads/2017/07/Membership-Criteria-Overview-for-Stakeholders-V1.1.pdf
<p>Sources</p>	<ul style="list-style-type: none"> • Information available on RetrofitWorks website

4. BENCHMARKING AND ANALYSIS

This chapter compares the integrated renovation services against a number of key performance parameters. The purpose is to identify success factors and lessons learnt, which are further discussed in chapter 5. It should be noted that the exercise compares cases that are operating in different markets, with different regulations, subsidies and renovation traditions⁷. In addition, the OSS have diverse governance structures as well as purposes.

The first part describes the current implementation status and governance structure of the models. The next section outlines key partners and activities, including training and skills and data gathering strategies, followed by target building typologies. The next chapter compares the nine renovation journeys, while the last section describes cost and revenues. Table 2 comprises an overview of the benchmarking of the nine cases.

Market penetration

The nine integrated renovation services have all been launched during the last six years, with Energiesprong in 2013 as the first one. Most of the integrated renovation services still struggle to achieve enough scale, required to lower costs, reorganise and streamline the value chain and become the natural go-to solution.

- izigloo has reached the largest number of supported renovation projects but the model supports smaller renovation measures.
- Operene has supported deep renovation of around 4,000 dwellings.
- Energiesprong has achieved 3,886 net-zero energy renovations.
- SiRE supported 74 renovations, mainly multi-family buildings.
- BetterHome has realised 1,182 renovations of single-family buildings.
- Oktave has achieved 180 deep renovations of single-family buildings.
- SuperHomes has facilitated around 200 deep renovations of single-family buildings.
- ProEnergy Homes has just started and not completed any renovations.
- RetrofitWorks has realised around 250 residential renovations.

Host organisation and key partners

The nine services have been started by a heterogeneous group of actors. Izigloo and Operene are both governed by independent private organisations, while Oktave and Energiesprong are governed by a mix of private and public actors. ProEnergyHomes and SiRE are private membership associations, while BetterHome is governed by an organisation started by four private manufacturers (Rockwool, Danfoss, Velux⁸ and Grundfos). SuperHomes is governed by a regional energy agency.

An integrated renovation service needs to align the work of multiple actors, such as architects, energy experts, contractors and installers. An effective collaboration is key to a successful implementation of the works. Several of the models (Oktave, Operene, SuperHomes, ProEnergyHomes) have employed project managers while the actual construction work, and in some cases also the energy check, is conducted by an external partner. Other models (izigloo, BetterHome, RetrofitWorks, SiRE) focus on matching the renovation project with the right installers/contractors and leave the project managing to them.

The organisation which is responsible for the service needs to consider which parts of the service may be delivered by in-house resources of the company and which must be covered by other actors. Some of the services deliver most of

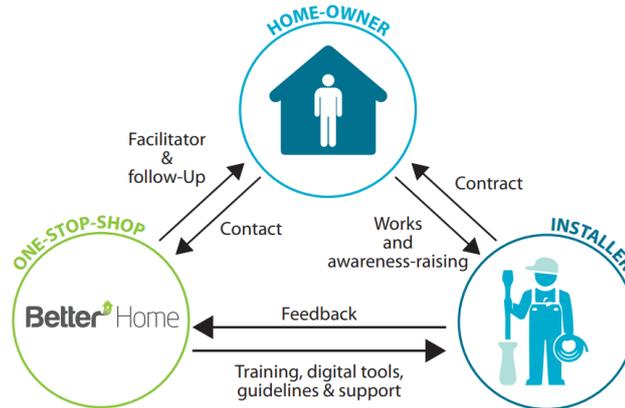
⁷ The market conditions will be analysed in Work Package 2 of the Turnkey Retrofit Project

⁸ Velux later left the BetterHome board.

the work with internal personnel, while others rely more on sub-contracting, or on stronger partnership agreements. This depends on the organisation’s capabilities and capacity, need of control and risk management [4]. Four different approaches are described below.

- An Oktave advisor guides the customer throughout the renovation process. Auditors and building professionals are contracted for the specific work.
- BetterHome mainly facilitates the work and finds the right installer for the specific work. BetterHome has a network of approved installers. The installer writes the contract with the building owner and functions as the sole point of contact.

Figure 6: BetterHome's facilitator role [12]



- Operene forms a consortium of co-contractors to ensure that all partners are invested in the project and aim for the highest quality. They find building professionals specialised for the required work, most of whom are already part of the Operene network.
- Energiesprong in the Netherlands is mostly a supporting organisation (standardised contracts, impact analysis, network meetings, surveys etc.) and not directly involved in the renovation works.

Several of the models use an online portal solution to structure the work. Izigloo, RetrofitWorks and SiRE use their online platforms to match demand (i.e. potential customers) with the right solution providers. The “matchmaking” reduces the hassle for both building owners and professionals. BetterHome takes it a step further and uses innovative solutions to transform the work of building professionals, including digital guidance tools and continuous evaluation. The digital tools make the work easier for the professional and harmonise the renovation process, and the variability in quality between different professionals is minimised.

Key activities

The key activities include technical and financial aspects of the renovation service.

- Building inspection and energy audit (eight of the models)
- Approvals from local authorities and applying for subsidies (seven of the models)
- Managing renovation works (seven of the models)
- Independent post-renovation inspection (five of the models)
- Energy performance contracting (three of the models)
- Upskilling activities (five of the models)

Two of the central activities where approaches between the OSS differ are described below: (i) building diagnosis and data gathering and (ii) upskilling activities.

Building diagnosis and data gathering

The role of the integrated renovation services includes providing renovation advice to the building owner, which can include an assessment of the economic feasibility of their projects, potential energy reduction, enhanced indoor environmental quality etc. In addition, the professional needs accurate data to be able to evaluate the project and plan for the best measures. The most common approach is to combine existing information with an on-site check. Data can be gathered through:

- An on-site evaluation, in which an auditor/expert visits the building and assesses the needs and possibilities.
- Extrapolation of data based on similar building typologies, climate data, etc.
- Existing information such as energy performance certificates, utility bills etc.
- User-inserted data.

Upskilling activities

The building professional that meets with the building owner has a significant influence on their choice of renovation measure. Most of the OSS integrate some training for experts to be able to give reliable information about energy renovation alternatives and/or how to best approach the customer. Many building owners have low trust in renovation advisors, which is one crucial barrier the integrated renovation services need to overcome. Most of the schemes offer some sort of training for their workers to enable them to provide a good service:

- Oktave has set up a teaching programme to improve the contractors' technical and sales expertise in deep renovations. After the teaching programme is completed, contractors are entitled to perform deep renovations. Oktave experts are also available for hire on demand to solve complicated situations.
- BetterHome trains all its installers conducting the on-site visit on how to approach the customer. Part of the installers' training focuses on how to address potential customers and get them to realise the full value of energy renovations (e.g. increased indoor comfort and air quality).
- RetrofitWorks offers training support for its members.
- SuperHomes offers training of how to install air-to-water heat pumps, which is a recurrent part of its renovation solution.
- SiRE develops a special training itinerary to increase the skills of its members.

Customer segment

Most of the renovation services focus on single-family houses (seven cases) and multi-family (six cases), of which a few target non-residential buildings and social housing. Large scale renovation services aim to bundle buildings such as single-family houses to achieve a sufficient size for a project and work on behalf of the public authorities to get better contractual terms and minimise the investments⁹. Pooling similar building typologies increases the scope of work, making it attractive for financiers such as social housing or multi-family building owners and business models such as public–private partnerships would be suitable for OSS¹⁰. Most of the small renovation services tend focus on residential buildings due to the ease in consultation, large clientele, replication of solutions, small network of service providers and reduced complexity of buildings.

The approaches differ between the nine models. The main target groups¹¹ are:

⁹ www.citynvest.eu/content/guide-launch-one-stop-shop-energy-retrofitting

¹⁰ renovation-hub.eu/business-models

¹¹ The models can have more than one target group.

- Single-family buildings: izigloo, BetterHome, SuperHomes, Oktave, ProEnergyHomes and RetrofitWorks
- Multi-family buildings: Operene, SiRE
- Other (public, social housing etc): Energiesprong

Renovation journey

An integrated renovation service should take care of all aspects of the renovation journey and make the process more convenient for the customer. An Ipsos survey demonstrated that the perceived hassle related with renovation works was the largest barrier behind “lack of funds/too expensive” [13].

Renovation level

The renovation journeys have different “end stations”, from implementing single measure to holistic deep renovations.

- A [nearly zero-energy building](#) (NZEB) is a building with a very high energy performance. The exact definition is defined by EU Member States and not all have implemented a definition for NZEB renovations.
- Neither is there a common definition for “deep renovation” but it generally refers to renovations that reduce the energy consumption by more than 50%.
- Most renovations are shallow, meaning that there is no minimum requirement for the renovation works, which can imply a change of heating system or new windows.

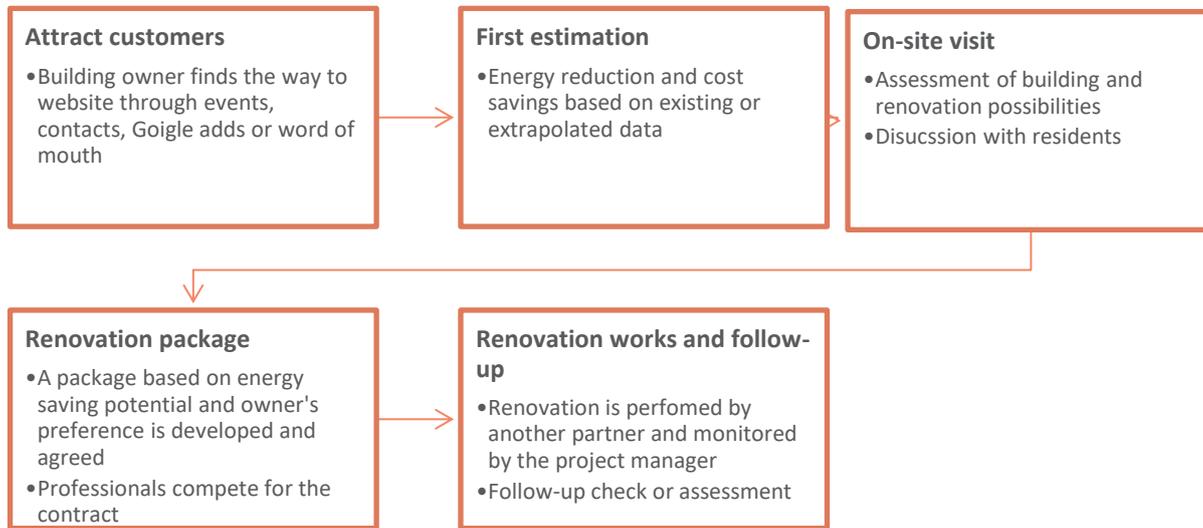
Most of the renovation services support all types of renovation, although some encourage more comprehensive energy renovation works. Operene focuses mainly on deep renovations, while Oktave, Energiesprong and SuperHomes conduct only NZEB renovations¹².

Single-family houses /smaller clients

Four of the renovation services focus solely on single-family houses and their renovation journeys are similar in many ways. Figure 7 shows the typical journey for single-family houses.

¹² In France, NZEB (or in French, Bâtiment Basse Consommation) definition for major renovations: the energy consumption in homes shall be less than 80kWh/year/m², which varies with the climate region ([link](#)). In Ireland, NZEB level for major renovations: the energy consumption in homes shall be less than 125kWh/year/m² ([link](#)) Alternative compliance routes are possible. The Spanish model does not aim for NZEB renovations.

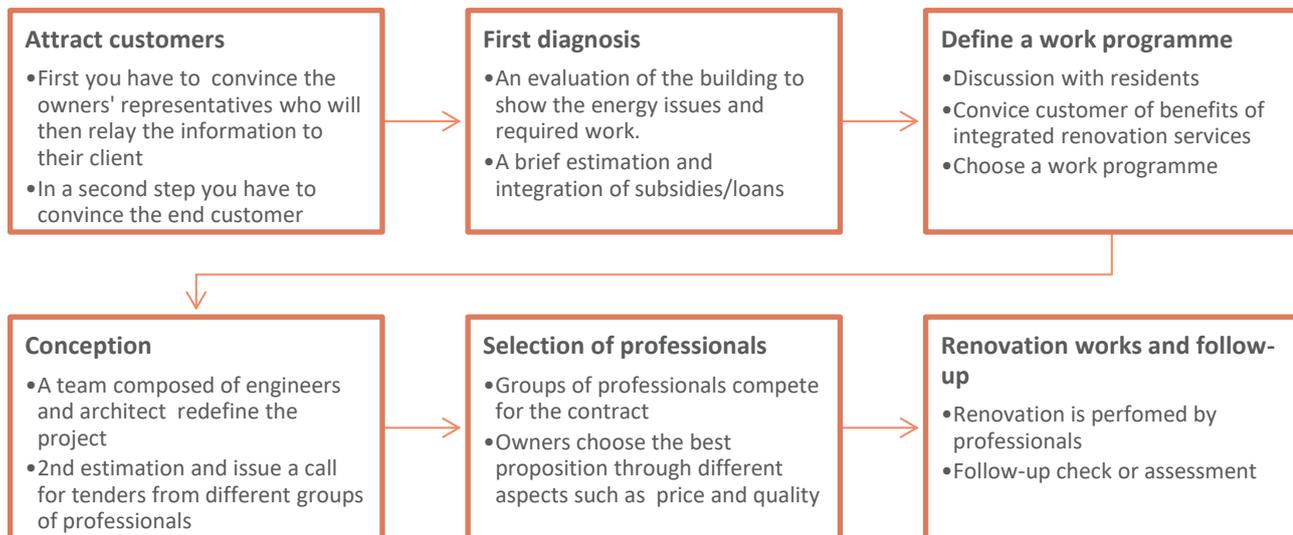
Figure 7: Typical renovation journey for single-family houses (based on case study information – see chapter 3)



Multi-family buildings/ larger clients

Only a couple of the renovation services focus solely on multi-family buildings, but their renovation journeys tend to follow the same six steps. Figure 8 shows the typical journey for multi-family buildings or for larger projects.

Figure 8: Typical renovation journey for multi-family buildings (based on case study information – see chapter 3)



Happy and negative flows

A renovation journey consists of positive and negative aspects that can influence the customer's will to proceed with the process. Initially, the high cost and/or uncertainty of energy savings might discourage the potential customer from engaging in a renovation journey, while existing subsidies and good customer service might have the opposite effect. Figure 9 is based on input from several OSS and displays the main happy and negative flows of the journey.

Figure 9: Happy and negative flows of a customer journey



Revenue streams and costs

The diversity of revenue streams in the nine models illustrates how differently the business models have been developed. The most common revenue type is to get compensation for every completed project, which can be directly (the service gets paid to carry out the works) or indirectly (percentage per conveyed project). A couple of projects charge membership fees (mainly for professionals) to gain access to the model’s services and/or ability to access project leads. Several of the projects receive support funds from third parties, which can be either from public (i.e. EU¹³, national or regional funds) or from private actors (e.g. manufacturers, energy suppliers). Energy performance contracting is another mentioned revenue stream when it comes to larger projects.

The largest and most common cost relates to labour, which comprises salaries for project managers, advisors, business developers etc. A related cost is for administrating the renovation journeys, as well as the internal organisation. The renovation services need to be visible to attract potential customers, which requires marketing, public relations, networking events etc. Another common cost is to develop and maintain an online portal to entice building owners to renovate, match building owners with the right contractors, and/or to coordinate the renovation process.

¹³ A couple of the models (Oktave and SuperHomes) have received supporting funds from [ELENA technical assistance facility](#), which is a fund governed by the European Investment Bank in collaboration with the European Commission. ELENA provides grants for technical assistance focused on the implementation of energy efficiency, distributed renewable energy and urban transport projects and programmes.

Benchmarking overview

Table 2 comprises a comparative assessment of the key performance parameters of the selected integrated renovation services. It reiterates the information from the case study descriptions in the previous chapter and the benchmarking analysis of this chapter.

Table 2: Comparative assessment of the integrated renovation services

Description of renovation services	France			Spain	Ireland		Denmark	Netherlands	United Kingdom
	izigloo	Operene	Oktave	SiRE	Super-Homes	ProEnergy Homes	BetterHome	Energie-sprong	Retrofit-Works
Launch									
Active since (first renovation)	2015	2014	2016	2015	2015	2019	2014	2013	2015
Host organisation type									
Service provider	Independent org.	Independent org.	Semi public	Private association	Energy agency	Energy service company	Component manufacturers	PPP	Co-operative
Target building typology									
Single-family houses	+		+	+	+	+	+		+
Multi-family buildings		+		+		+	+	+	+
Other (non-residential, social housing, public buildings etc.)		+					+	+	+
Renovation level									
Nearly Zero Energy			+		+			+	
Deep renovation (≈50%)		+							
All renovation levels	+			+		+	+		+
Data gathering									
On-site		+	+	+	+	+	+	+	+
Extrapolation (based on climate, building typologies etc.)	+								
User-inserted data	+						+		
Key partners									
Contractors/installers	+	+	+	+	+		+	+	+
Products/energy suppliers			+	+	+	+	+	+	+
Energy auditor		+	+		+		Installer	+	+
Financial institutions			+		+	+	+	+	
Outreach channels									
Online	+	+		+			+		+
Network of actors	+		+		+	+	+	+	
Renovation advice centres		+	+					+	

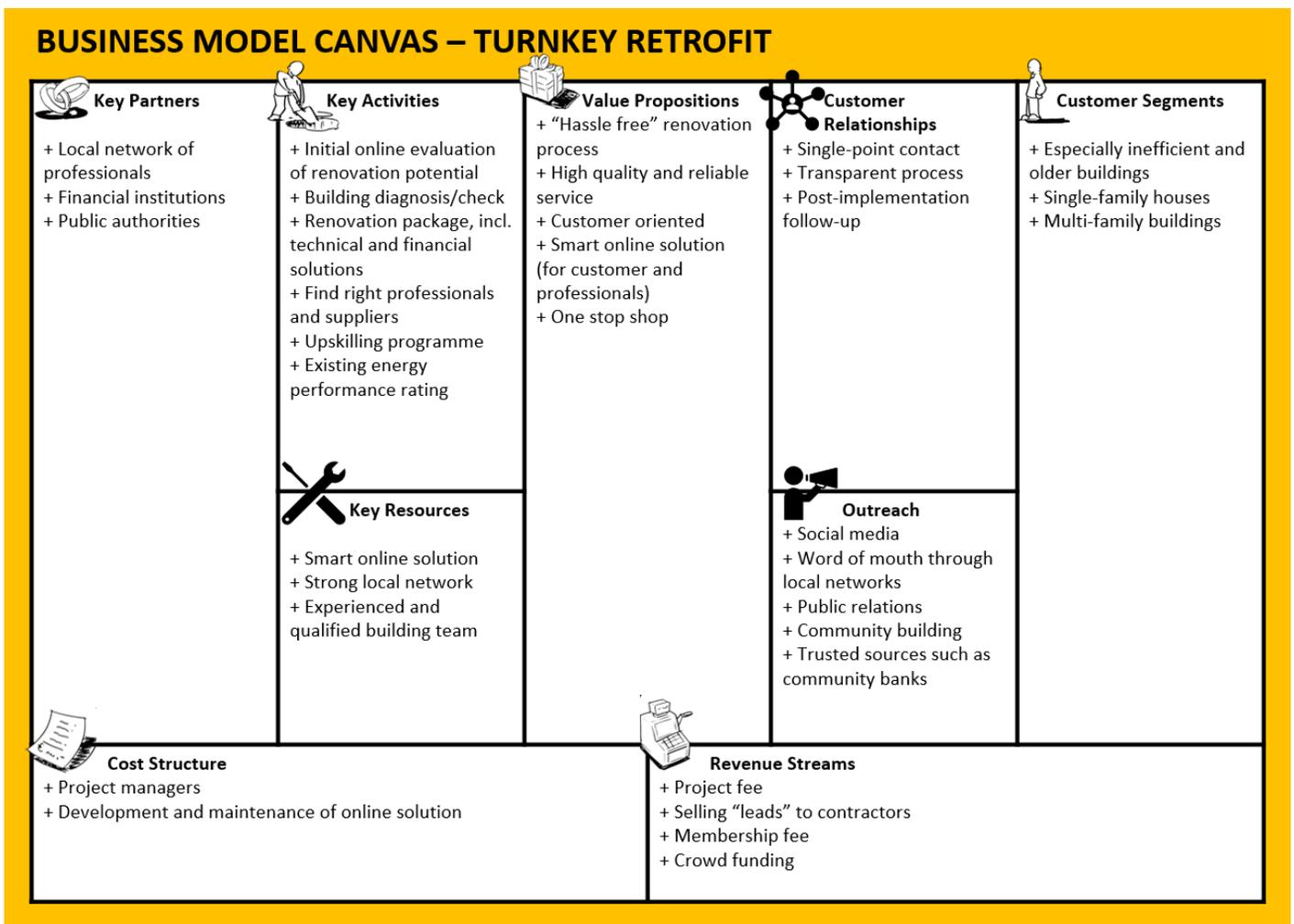
Local meetings		+	+	+	+			+
Customer relationship								
Single contact throughout process		+	+		+		+	+
Key resources								
Product/project manager		+	+		+	+	+	+
Renovation employees and logistics			+		+		+	+
Online portal/solution	+			+			+	
Distribution network				+			+	+
Key activities								
Building inspection and energy audit	+	+	+		+	+	+	+
Approvals from local authorities and apply for subsidies		+	+	+	+	+		+
Manage renovation works		+	+		+	+	+	+
Independent post-renovation inspection		+	+		+	+		+
Energy performance contacting		+	+					+
Training of experts			+	+	+		+	+
Revenue streams								
Customer pays for renovation/ project management		+			+	+		+
Energy performance contacting		+	+					+
Detailed energy audit					+			
Commission for project leads	+							
Commission for project wins	+			+				+
Membership fees		+		+				+
Commission from suppliers (energy or products)				+			+	
Cost structure								
Marketing	+						+	+
Salary of product/project manager		+	+	+	+		+	+
Administration and support	+	+	+	+	+	+	+	+

5. KEY ELEMENTS FOR TURNKEY RETROFIT BUSINESS MODEL CONCEPT

The role of an OSS is primarily to deliver an integrated renovation service but also to inspire people and increase their awareness about energy renovations. The nine integrated renovation services are diverse, with different purposes, revenue streams, organisational structures, renovation solutions, and models of collaboration with other value chain actors and stakeholders. Despite this, it has been possible to derive some key lessons for the Turnkey Retrofit service.

The Turnkey Retrofit will be a new OSS offering an integrated renovation service for both single-family and multi-family buildings. The OSS will use the solutions and infrastructure of izigloo and Operene but incorporate best practices and learnings from other cases. This section identifies and summarises best practices for the key OSS elements, while the suggestion for the Turnkey Retrofit customer journey is mapped out in the next sub-chapter. The business model canvas is a first proposal which will be further explored within the Turnkey Retrofit project.

Figure 10: Turnkey Retrofit Business Model Canvas



Key partners

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 the involved actors, including benefits and responsibilities that come with being involved in the Turnkey Retrofit process. The benchmarking shows that the most successful OSS have a strong network in the markets where they are active.

- Local installers have long-term relationships with the residents that they have often built up over years. This also makes them effective as promoters of the service. Finding good and reliable installers can be time-consuming when starting/replicating an OSS in a new region.
- The energy auditor/expert is probably the most important player in the value chain, as they are the interlocutor who provides advice and can sell the idea of an energy renovation. Generally, most people interested in a renovation initially only want to implement one to two measures (e.g. replace heating system, new windows etc.) but tailored advice can inspire additional work.
- Financial institutions and local authorities can empower the OSS with a unique selling point, which can comprise of perks like a lower interest rate for clients or a streamlining of the administrative process.
- Support from component manufacturers and energy supplies can trigger a lot of work but also comes with a risk for the OSS of not being perceived as impartial. BetterHome in Denmark, which is founded by four Danish manufacturers, has been successful with this balancing act, partly because the Danes view these companies positively and associate them with quality products and local jobs.

Recommendation: Turnkey Retrofit needs to build strong networks with local actors in the regions it will be implemented.

Key activities and resources

The most important activities in executing an OSS value proposition relate to services and customer management. Services include renovation advice, building check/diagnosis, developing a renovation package, implementation of the actual measures, post-installation check etc. The other activities aim to keep the customer satisfied, which comprises aspects such as good customer service, simplified language and contract, and a single-point contact. Both aspects are key to a successful integrated renovation service.

The key resources enable the activities to be carried out in an effective manner. The first resource should be skilled project managers and the second a smart digital solution, which entices homeowners and facilitates a good collaboration between the various actors involved the renovation process.

Recommendation: Turnkey Retrofit should be the single-point contact for the homeowner and project manager of the renovation works. For larger buildings it is necessary to collaborate with co-contractors, while in smaller projects the actual work can be sold/offered to an external partner that fulfils certain quality criteria. A smart digital platform can facilitate a better process and inspire potential customers to renovate.

Value proposition and customer relationship

The main value proposition of all OSS is to provide an integrated renovation service, including initial renovation advice, comprehensive renovation proposal, quality professionals and guidance throughout the process. The customer relationship can be the unique selling point of the OSS, comprising a single-point contact throughout the process, simplified language (e.g. no talk about u-values or air-leakages) and understandable contracts.

Recommendation: Turnkey Retrofit value proposition should focus on the overall customer experience and renovation outcome. The process should be transparent and minimise any unpleasant surprises for the customer, such as a final cost that surpasses the initial budget or delays to the renovation process.

Outreach

An OSS can promote its value proposition to its customers through different channels, including networks, local renovation advice centres, social media, online search engines, public relations or a good website. BetterHome inspires homeowners through its website, which features a smart data solution, in which they enter details about their homes and energy consumption. Based on this they receive a first report and recommendations on renovation measures.

Recommendation: Turnkey Retrofit should be promoted through local networks and online through the website. The website should feature a function that enables the customer to easily get a first grasp of the renovation potential.

Customer segments

To build an effective OSS model, it is necessary to identify which customers it tries to serve. The analysed OSS focus primarily on single-family houses and multi-family buildings. The main target group should be old and inefficient buildings as the energy saving potential is greater there. Marketing activities should in a first step target customers with strong financial means, including families with paid mortgage, high income couples, families where the children have moved out, etc.

Recommendation: Turnkey Retrofit should identify the most probable customer segment for single-family houses and multi-family buildings. Tailored outreach strategies should be applied to the different groups.

Revenue and cost

While the cost structure is rather constant, comprising costs for labour, marketing and maintenance of the online renovation portal, the nature of the revenue streams is more uncertain. The most common revenue types are to get compensation for every completed project, membership fees (mainly for professionals), and funds from third parties, which can be either from public (i.e. EU¹⁴, national or regional funds) or from private actors (e.g. manufacturers, energy suppliers). Energy performance contracting is another mentioned revenue stream when it comes to larger buildings.

Recommendation: Turnkey Retrofit should combine different revenue streams, including project (management) fees and charges for connecting a potential customer with the right professionals. The potential of a membership fee can also be explored.

¹⁴ A couple of the models (Oktave and SuperHomes) have received supporting funds from [ELENA technical assistance facility](#), which is a fund governed by the European Investment Bank in collaboration with the European Commission. ELENA provides grants for technical assistance focused on the implementation of energy efficiency, distributed renewable energy and urban transport projects and programmes.

Proposal for Turnkey Renovation Customer Journey

The Turnkey Retrofit customer journey needs to facilitate an effective collaboration among professionals, while enabling a smooth renovation process for the homeowner. Figure 11 and Figure 12 show the suggested customer journey for single-family and multi-family buildings.

Figure 11: Proposal for Turnkey Retrofit customer journey – single-family houses

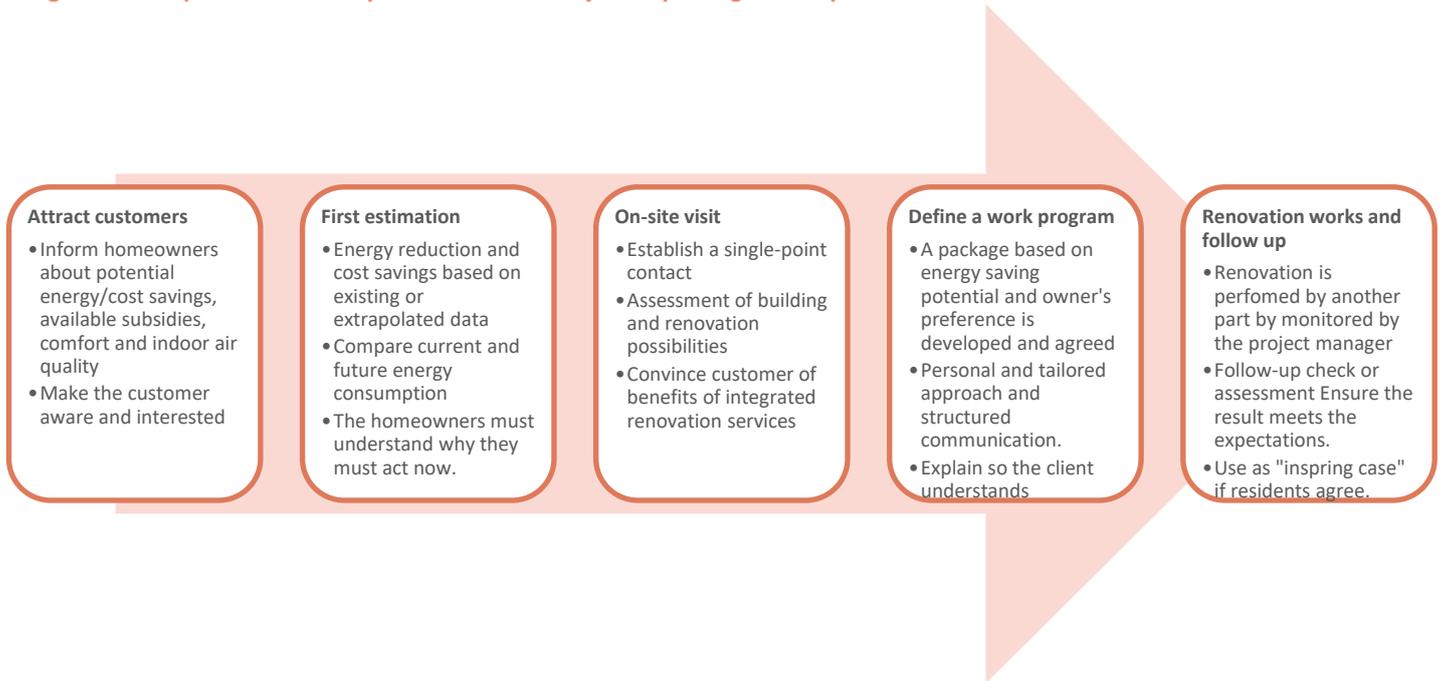
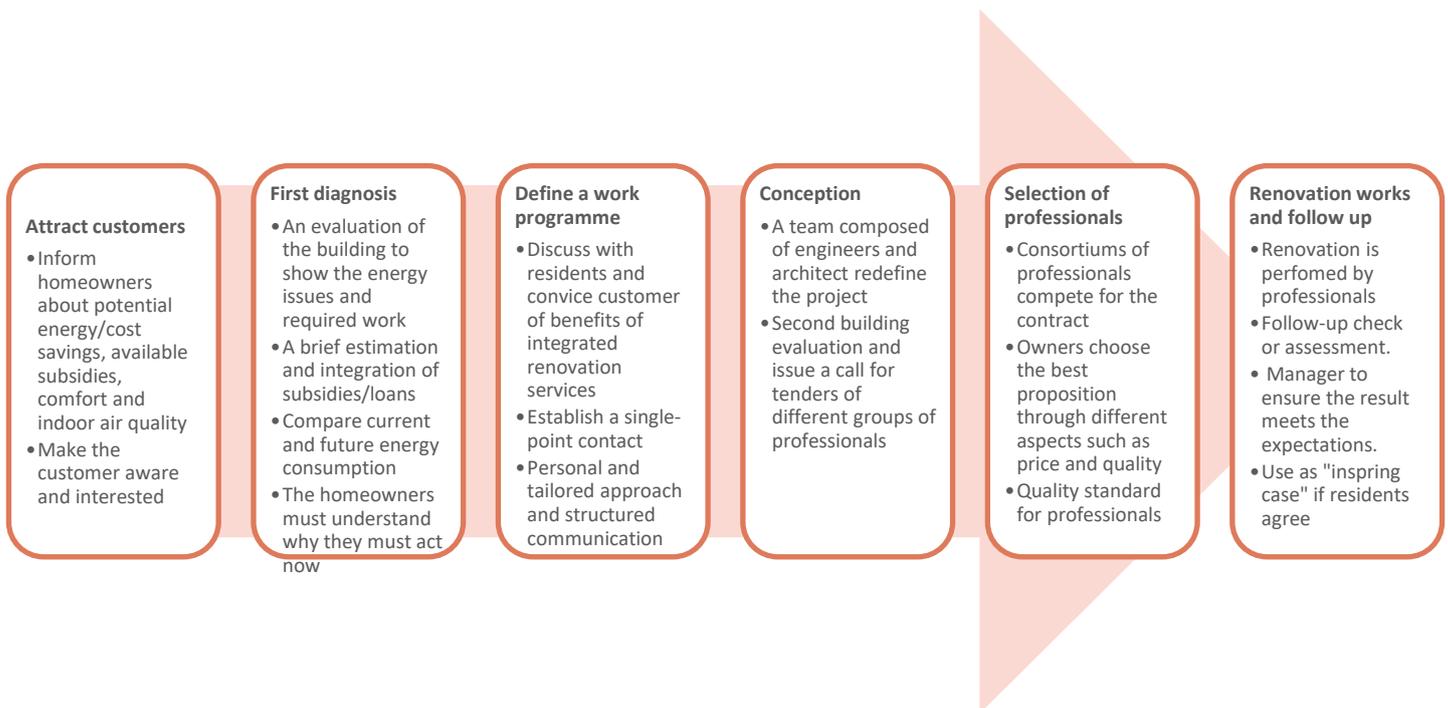


Figure 12: Proposal for Turnkey Retrofit customer journey – multi-family buildings



It is clear that the specific country/regional context (including culture, regulations and existing value chain structure) needs to influence the design of the integrated renovation service and the customer journey. These aspects will also influence the chances of success for the Turnkey Retrofit service. The review also shows that the OSS must be embedded in a larger policy framework in order to be effective. These aspects will be further analysed in Work Package 2 of the Turnkey Retrofit project.

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ANNEX

Type/name	Country	Active	Building typology	Link
Industry driven				
BetterHome	Denmark	Yes	SFH, MFH	http://betterhome.today
ENERPHIT	Germany	Yes	SFH, MFH, commercial	https://renovation-hub.eu/wp-content/uploads/resources/ENERPHIT.pdf
WarmerWonen	Belgium	Yes	SFH	https://www.warmerwonen.be/renovatiecoach
ENRA concept	Finland	No	SFH	https://renovation-hub.eu/wp-content/uploads/2019/02/BusinessModelFactSheet_ENRA.pdf
Bolig Enøk	Norway	Yes	SFH	https://boligenok.no/
Energieheld	Switzerland	Yes	SFH, MFH	https://renovation-hub.eu/wp-content/uploads/resources/Energieheld.pdf
KRauta-Rautia	Finland	Yes	SFH	https://renovation-hub.eu/wp-content/uploads/2019/02/BusinessModelFactSheet_KRautaRautia.pdf
ESCO/finance driven				
ProEnergyHomes	Ireland	Yes	SFH, MFH	https://proenergyhomes.ie
Energies POSIT'IF	France	Yes	MFH	http://citynvest.eu/content/energies-posit%E2%80%99if
RenoWatt	Belgium	Yes	Public buildings	http://www.gre-liege.be/renowatt/25/renowatt.html
KredEx	Estonia	Yes	MFH	https://www.kredex.ee/en
Public driven				
Trea	Estonia	Yes	MFH	https://www.trea.ee/teenused/
ProjectZero	Denmark	Yes	SFH	http://www.projectzero.dk/da-DK/Forside.aspx
SuperHomes	Ireland	Yes	SFH	https://superhomes.ie/
Oktave	France	Yes	SFH	https://www.oktave.fr/
BedreBolig	Denmark	Yes	SFH, MFH	https://sparenergi.dk/forbruger/vaerktoejer/bedrebolig
Picardie Pass Rénovation	France	Yes	SFH, MFH	https://www.pass-renovation.picardie.fr
Småland-Blekinge pilot OSS	Sweden	Yes	SFH	http://www.energikontorsydost.se/l/projekt/14811
Cooperative driven				
SiRE	Spain	Yes	SFH, MFH	https://www.anerr.es/sire/
RetrofitWorks	United Kingdom	Yes	SFH, MFH, commercial	http://retrofitworks.co.uk/
Consultancy/independent driven				

Izigloo	France	Yes	SFH	https://izigloo.com/
Operene	France	Yes	MFH	http://operene.fr/
Energiesprong	Netherlands	Yes	SFH, MFH	https://stroomversnelling.nl/
Rhodoshop	Bulgaria	Yes	Public buildings	https://cordis.europa.eu/project/rcn/210315/factsheet/en
Reimarkt	Netherlands	Yes	SFH, MFH	https://reimarkt.nl/
Haarlemse Huizenaanpak	Netherlands	Yes	SFH, MFH	https://huizen aanpak.nl/over-de-stichting/