Models for a One-Stop-Shop concept

Deliverable number D6.4

MORE-CONNECT WP 6

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MORE— CONNECT

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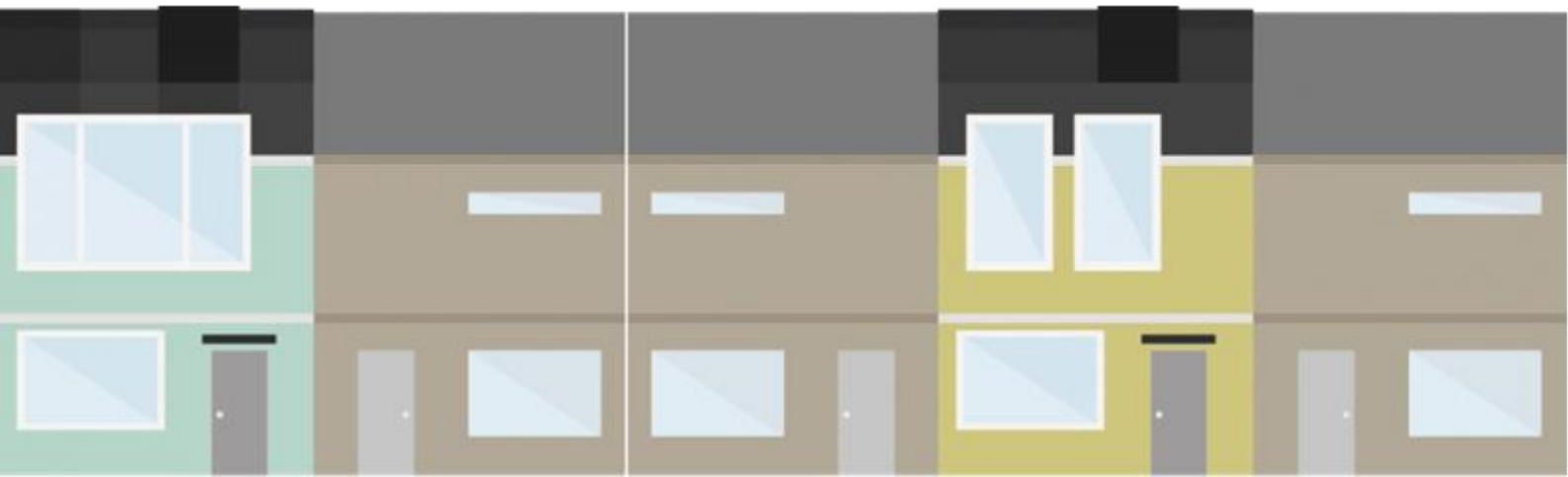

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1 SUMMARY

A considerable part of the existing building stock in Europe should be renovated in order to achieve the European mid-term and long-term energy and CO_2 saving targets. This means that an increase in renovation activity is needed, given the ambitions set towards nearly-zero-energy buildings (nZEB), energy saving renovations are necessary. A new market is emerging in advanced, very energy efficient renovation solutions. The current renovation practice is not yet sufficient, should to be up-scaled and improved to meet energy saving ambitions. For that, several challenges and barriers need to be tackled.
Homeowners do not have a full spectrum of knowledge and resources to decide on an energy saving renovation project. Homeowners have to gather a lot of information to make the right decision for their property, and therefore have to coordinate with several actors, as connecting with building companies, quality assurance possibilities, financial support opportunities and finally decide what is the best thing to do in their particular case.

MORE CONNECT One-Stop-Shop concept
The MORE-CONNECT One-Stop-Shop is a company / consortium, that offers a multitude of products and services to its customers. For the building sector, things will change when the consumer selects renovations at a One-Stop-Shop. The products and services of all parties must be coordinated in such a way that optimum comfort improvement and energy savings are actually achieved at the end of the journey.

The MORE-CONNECT One-Stop-Shop offers a renovated ZEB home, through advising the homeowner, unburdening and responding to their housing requirements. All via one contact point, i.e. company / consortium. The MORE-CONNECT One-Stop-Shop addresses these challenges.

It includes various elements for a homeowner, to find all information necessary for a thorough retrofit in one single place, and enable a direct contact with specialised companies or company clusters offering such holistic renovations.

Performance guarantees and monitoring
An important component of the zero-energy building (ZEB) deep renovation is that the houses are actually ZEB. The homeowner, tenant or the professional landlord depend on the zero-energy promise. Developers and builders must therefore develop their concepts in such a way that the requested and promised performance is in fact guaranteed. To guarantee performance, quality assurance is important to guarantee the energy cost to the end-users, i.e. 1) Before, during and after construction and 2) By monitoring during the management phase.

For a ZEB renovation, the builder guarantees that in addition to performances in the areas of comfort, health and indoor environment, the promised energy performance is also achieved. This is described in the performance guarantees.

Energy services for guaranteed energy user propositions
The basis of an energy service is an agreement between two parties in which a certain consumption may not be exceeded under certain preconditions.

For the One-Stop-Shop based on ZEB (ZeroEnergyBuilding), guaranteeing the energy performance (use and production) is essential. A framework for an energy service is set up for the total energy use, based on the provision of guaranteed energy use / charge propositions. This means that the One-Stop-Shop concept, as well as other suppliers of ZEB, will conclude the 'Total Energy Cost Guarantee Contracts' with their customers.

1. INTRODUCTION

1.1. Background

The main goal of the MORE-CONNECT project is to develop a solution that includes innovative, prefabricated building envelope elements for MOdular REtrofitting and smart CONNECTions. These building envelope elements contribute to the transformation of the European building stock towards near Zero Energy Buildings (nZEB).

The overall objective of work package 6 is to bring the developed concepts to the market.

TASK 6.4 DEFINITION OF ENERGY SERVICES BASED ON ONE-STOP-SHOP CONCEPTS

Task leader: BJW
Other participants knowledge: HIA, RTU, TUT, CVUT, UMinho, Cenergia
Other participants industry: WEBO, LWCC, ZTC, Matek, REF, Darkglobe, Innogie

This task is divided into three subtasks:
- Development of the one-stop-shop concept
- Development of a system for performance guarantee
- Development of an energy cost guarantee proposition to end-users

The first part of this task is to make a definition and elaboration of the 'energy services' based on One-Stop-Shop concepts. This includes a full elaboration of the One-Stop-Shop concept, including a description of the partners and the form of the entity that is going to do the exploitation of this One-Stop-Shop concept.

The second part is to develop a system of performance guarantee, based on two pillars:
- Performance and quality control of the production process (work package 4)
- Performance control in practice by remote diagnostics (work package 3)

Once a fully controlled performance and quality control is achieved, it enables the possibility to offer an energy cost guarantee proposition. This will be done in the third part.

The third part focuses on the elaboration of an energy cost guarantee proposition for the end-users. This will be offered on a basis of the prediction of the individual energy use per household. Suitable and available methods as recently developed (IEA EBC Annex 53) or under development (Dutch TRECO project, IEA EBC Annex 66) will be used for this. Note that real energy use on an individual basis is completely different than the standard Energy Performance of Buildings Directive (EPBD / EU legislation) based energy calculation, as this has other starting points. (I.e. using average input values, comparison of initial energy performances of buildings under static situation. Real energy use takes into account the individual household profiles and occupant behaviour, climatic conditions and real performances of the building and its installations). The preparation of this part (performance control and energy cost guarantees) was started in an early stage of the project with a review of suitable methods. The final proposition was completed in the last part of the project.

Deliverables
D6.4 Models for a One-Stop-Shop concept including a system of performance control and guarantee and a guaranteed energy cost proposition.

1.2. Aim of the report

The overall aim of the project is to develop a solution that includes innovative, prefabricated building envelope elements for MOdular REtrofitting and smart CONNECTions.
Various ZEB renovation solutions will be investigated within the project: By clustering the different innovative propositions (technologies) for ZEB renovation, processes, tools and services, the homeowner receives a less fragmented renovation process.
The development of a 'One-Stop-Shop' concept serves as a platform for both client and company, providing the opportunity to create supply and demand for holistic and integrated retrofit solutions. The clustering of innovative technologies can give Subject Matter Experts (SME's) the opportunity to develop skills, knowledge, capacity and a competitive marketing formula for holistic and cost-effective retrofit solutions.
A 'One-Stop-Shop' for ZEB renovation can give house owners the opportunity to form a well-informed investment decision and it simplifies the access to quality-oriented products. Together these companies offer integrated and guaranteed ZEB retrofit solutions. The communication about project results and the dissemination of these results will follow into the MORE-CONNECT start-up of an European One-Stop-Shop for prefabricated building envelope elements for Modular (n)ZEB Retrofitting.
This report links to Work package 6: Market and Replication of the H2020 project MORE-CONNECT (especially Work package 6.3 the NL business case).

In particular, this report aims to outline energy services based on One-Stop-Shop concepts:

- Definition of an 'One-Stop-Shop' marketing concept
- Elaboration of a system of performance guarantees to assure quality and performance of processes and products, possibly by remote control
- Development of energy cost guarantees to end-users

The findings for this deliverable are relevant for launching the MORE-CONNECT elements on a large scale. These findings work towards a model of developed concepts that can unburden the end user for the deep renovation of their home.

1.3. Methodology

The concept One-Stop-Shop is certainly not new, but it is new to the renovation sector. In this report we look into the first experiences with the development of a One-Stop-Shop (parts) in the Netherlands. The MORE CONNECT One-Stop-Shop model has been outlined in a well prepared workshop in Prague (09-2018). For the necessary instruments of the MORE CONNECT One-Stop-Shop model, various Dutch and European projects formed as basis during the development phase.

1.4. Structure of the report

In chapter 2 we look at the characteristics of a One-Stop-Shop and what this could mean for the renovation sector. In the third chapter this is translated into the MORE CONNECT One-Stop-Shop model, which aims at unburdening owner residents and and formulating the Value Proposition for ZEB renovations. In the fourth chapter, the necessity of monitoring is described for ZEB in order to offer the 'Energy services for guaranteed energy uses propositions' and 'Performance contracts' (chapter 5 & 6).

2. ONE-STOP-SHOP

2.1. What is a 'One-Stop-Shop'?

The MORE-CONNECT One-Stop-Shop is a company / consortium, that offers a multitude of products and services to its customers. The One-Stop-Shop can refer to a specific location, meaning that all the requirements a client has can be carried out at that location. For example, a bank may be able to offer you not only personal banking services and loans, but also investment advice, investment vehicles and insurance policies. Compared to visiting a separate institution for each area of need, the One-Stop-Shop saves the consumer time and effort.[1]

2.2. Origin of a 'One-Stop-Shop'

The term One-Stop-Shop dates back to 1920s America when a shopping trip could mean driving all over town to pick up meat from the butcher, vegetables from the market, nails from the hardware store and so on. Then as now, customers wanted to save time, so stores responded by stocking a wider range of products so that shoppers only had to come to their location to check off the majority of the shopping list. This concept of the One-Stop-Shop expanded over time to include business services. The nuance also shifted from a wide product offering to capture more of the customer's grocery purchase to one of offering all the complimentary products and services to a client in a particular area. The business strategy behind the concept of a One-Stop-Shop is to provide convenience and efficiency in services. Modern concepts' offer integrated solutions and generally combine technical components with various forms of service.

2.3. The Advantages of a One-Stop-Shop

There are some obvious advantages of an One-Stop-Shop for consumers as well as the businesses operating them. As mentioned, convenience is a big one. If the firm who does your taxes can also help you with your estate planning and investing strategy, it saves you having to deal with multiple companies. From the firm's perspective, seeing all those aspects of your life also allows them to better tailor services to you in all areas. If the firm sees that your tax bill is going up, they can suggest strategies to minimize the taxes coming from your investments for example. There is also a high level of trust that grows over time when a consumer uses a particular business more and builds a personal connection with it. There may be loyalty perks for the consumer, and the business gains a higher degree of confidence that the customer won't go to another provider based on price alone.

[1] https://www.investopedia.com/terms/o/onestopshop.asp

2.4. One-Stop-Shop for the (renovation) construction sector

When a homeowner decides for a renovation project, it is customary to make a request on the basis of a design and specifications by the architect. At ZEB renovation, the request for proposal works differently. In order to select the right concept, a lot has been developed and tested with in recent years (task 3.2).
For the realization of deep renovations to ZEB, there should be a market where builders deliver a product with a performance guarantee and where clients ask for a product based on performance and need. Due to product development and industrialization / prefabrication, the costs and construction time have been significantly reduced already. The goal is to eventually sell a ready-made ZEB renovation.

For the building sector, things will change when the consumer selects renovations at a One-Stop-Shop. The products and services of all parties must be coordinated in such a way that optimum comfort improvement and energy savings are actually achieved at the end of the journey.

The MORE-CONNECT One-Stop-Shop offers a renovated ZEB home, through advising the homeowner, unburdening and responding to their housing requirements - All from one contact point, i.e. company / consortium.

The MORE-CONNECT One-Stop-Shop platform includes the following activities:

- Design (tool)
- Permits (comply with local laws, rules and regulation)
- Prefabricated building envelope elements
- Financing (and local subsidies)
- Construction / assembly
- Monitoring (energy performance guarantee)
- Maintenance and management
- Customer service
- Marketing

figure 1:Loose components versus holistic solution

The business case of the MORE-CONNECT One-Stop-Shop is described in D6.3. The technical aspects (design guidelines and design tools are elaborated in D3.6). The design tool is a user-centric design tool, has been elaborated in D4.2

No separate parts and design something new every time (with the associated risks!), but proven concepts (N = 1), in products and services.

2.5. Example of One-Stop-Shop Models in the EU

In the European building sector you may find various examples of One-Stop-Shop models.

2.5.1. Portugal

In Portugal, the One-Stop-Shop concept is not unknown but is not yet widespread. There are some companies that explore the niche market for key solutions for residential energy efficiency. As an example, we can point out the company AMPERE (http://www.ampere-energy.pt), whose core business is energy management and energy storage solutions. Global solutions, including advice on the best suitable technical solution for each case, complementary works, monitoring, maintenance, financial advice and guarantees, are part of their business model.

2.5.2. Latvia

There is not a specific One-Stop-Shop company in Latvia, however some companies work as Energy Service Company (ESCO). Usually an ESCO organizes and handles agreements with energy audits, technical and architectural projects as well as construction companies. Note that, ESCOs make their profit on energy bill reduction.

2.5.3. Denmark

In Denmark a One-Stop-Shop concept for energy renovation of single family houses was tried in the years 2012-13. The concept was marketed through flyers and a website. The evaluation of this attempt learned that the building owners were not ready yet for this approach.
It was concluded not to pursue this path further (at the time of the evaluation) and a more narrow approach has substituted the One-Stop-Shop concept by helping interested building owners to find a consultant (architect or engineer) to assist with the energy renovation.

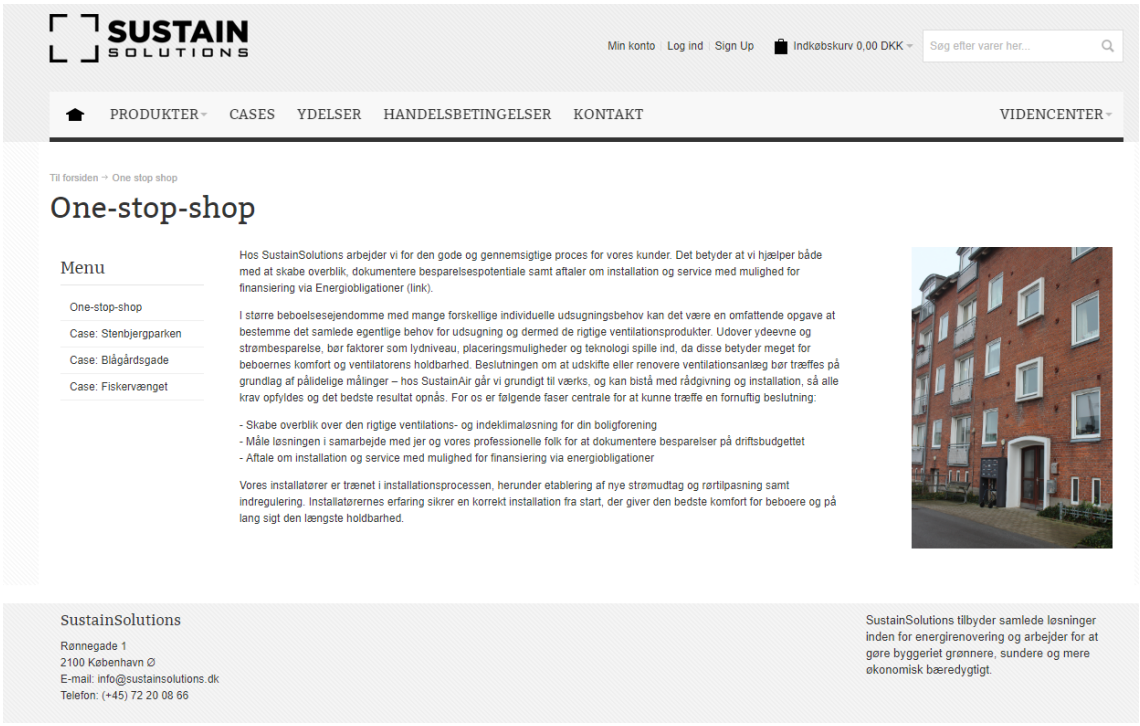

figure 2:Denmark, One-Stop-Shop concept for energy renovation, www.sustainsolutions.dk

Other initiatives were launched where financing was offered together with packages, ranging from various technical solutions e.g. PV-cells together with a roofing company or a new ventilation system with heat recovery: http://www.sustainsolutions.dk/ventilation-shop/finansiering/. For now, no complete One-Stop-Shop for energy renovation exists in Denmark.

2.5.4. Estonia

In Estonia, there is no One-Stop-Shop at the moment. Every building is designed separately. Wood building construction companies may have some typified structures.

2.5.5. Czechia

In Czechia, the One-Stop-Shop concept as defined is not known so far, but for larger projects you see more and more the usage of Energy Performance Contracting (EPC): https://e3p.jrc.ec.europa.eu/articles/energy-performance-contracting.

The examples are listed here (under Příklady projektů): https://www.tzb-info.cz/epc-energy-performance-contracting

2.5.6. The Netherlands

In the Netherlands, various One-Stop-Shop concepts have been developed for the sustainable renovation market. The most defined one is Alliantie+ (http://www.alliantieplus.com/). Alliantie+ is a collaboration between 23 market players. They offer products that can be used for renovation of homes. As partners they can provide complete renovation solutions and performance guarantees to the Dutch housing market. Alliantie+ offers a range of components and together with the owner and/or residents, Alliantie+ reduces the energy use step-by-step.

The new method of serial production (cost price of production) in combination with the freedom of choice (customisation) enables Alliantie+ to turn houses into more sustainable residents by offering ready-to-use, repeatable solutions with sufficient choices and options to deliver a tailor-made product.

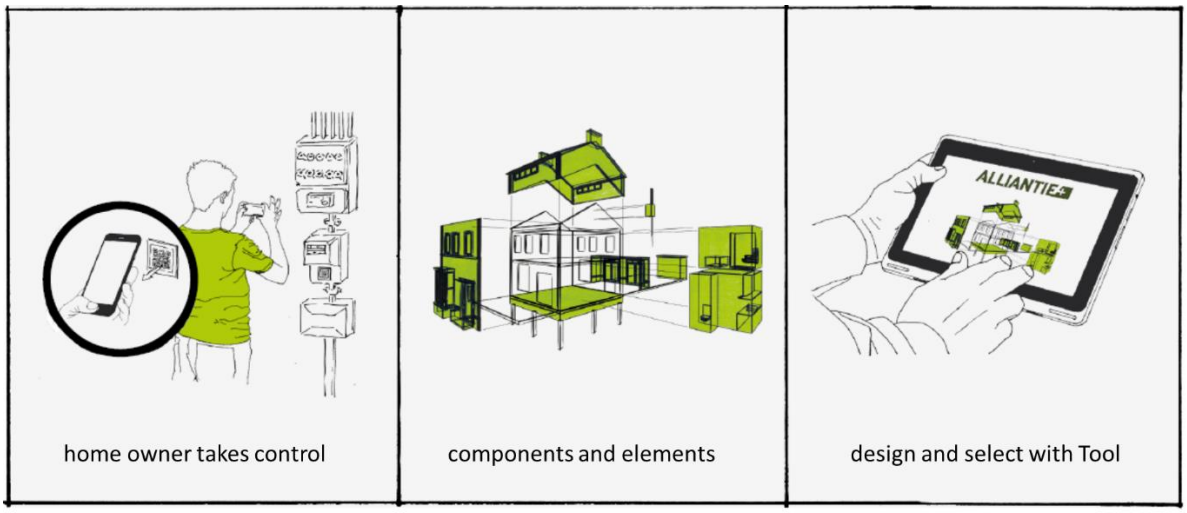

figure 3:Alliantie+: Make a scan of your home, plan the implementation and order various components.

3. THE MORE-CONNECT ONE-STOP-SHOP CONCEPT

Offering concepts is not new and certainly not exclusive to (n)ZEB projects. All MORE-CONNECT Small and Medium Enterprises (SME) partners have been engaged in offering new-build housing construction concepts for several years. This long term experience also applies to other themes as, guaranteeing performance for Zero Energy Buildings (ZEB) and for maintenance and installation companies.

There is a wide range of knowledge available about sustainable renovations present in the industry. Yet there is a difference in comparison to ZEB renovation projects, as various themes are necessary or at least 'strongly recommended' to be included in the One-Stop-Shop concept. For example guaranteeing performance, long-term maintenance contracts, renovating in occupied state, marketing etc. This necessity and the coherence between the different themes is radically different from the traditional method of a construction company and requires a wide range of products, ideally combined in a comprehensive concept. The aim of the MORE-CONNECT One-Stop-Shop concept is to offer a complete solution / total package based focussing on (long-term) performance, optimised use of the product and the value added experience for users. The MORE-CONNECT One-Stop-Shop guarantees that a (n)ZEB home meets the guaranteed requirements based on standard climate conditions and average use. To conclude, the MORE-CONNECT One-Stop-Shop unburdens the homeowner and the ZEB guarantee offers a solid foundation. In order to design the MORE-CONNECT guarantee, we leverage experiences gained from two Dutch projects, i.e. 'de Stroomversnelling' and TKI-Treco.

3.1. Value Proposition

The deep renovated homes are turned into energy-neutral residents and will consume as much energy as they produce. The prototypes and business models should be suitable for application on a large scale, to make it a worthwhile investment by companies and resident owners. Meanwhile offering tailor-made solutions to customers, is something that existing renovation solutions cannot offer just yet.

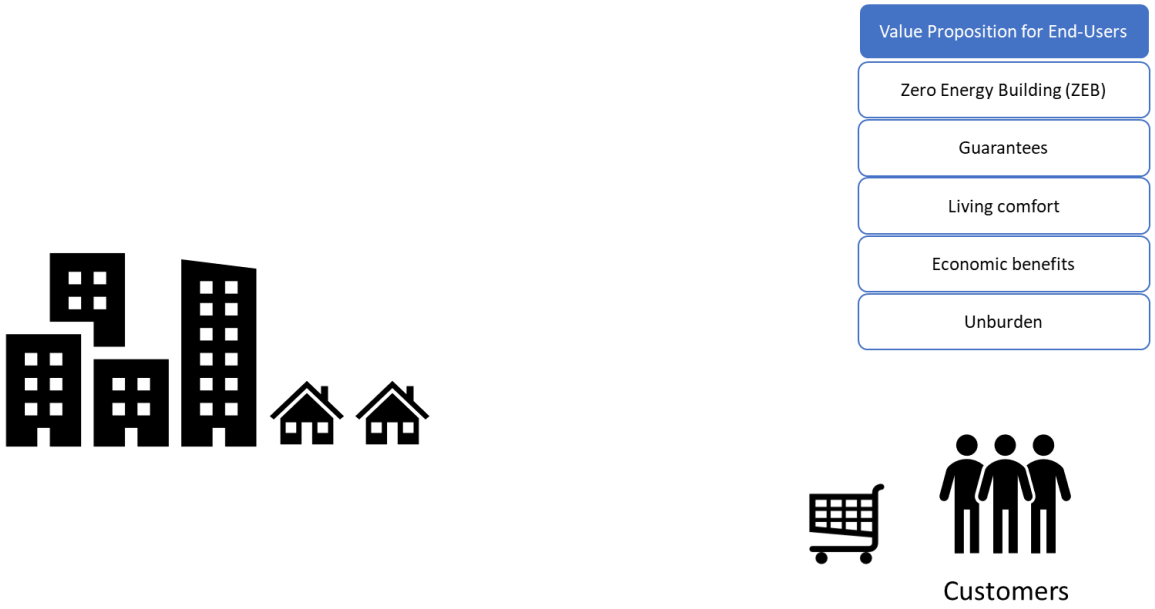

figure 4:MORE-CONNECT One-Stop-Shop Value Proposition for End-Users

During the development of the first Zero Energy Building (ZEB) homes in the Netherlands, many good experiences have been gained with putting residents' interests first during all phases of a project and even before the start of the project. For example during the (further) development of the ZEB prototypes of the 'Stroomversnelling' project. The prototypes have been used to collect residents' experiences, like a test sleep in different homes, so residents could experience what it is like to sleep in a ZEB house with the windows closed. Besides gathering experiences during these trial exercises, valuable recommendations were given by the residents for the renovation concepts.
Other experiences were gained during the call-out and award procedures. In the case of requests for projects, residents' delegations were asked to think about the desired specifications for the ZEB housing. There were also projects in which residents were involved in choosing from the various offered concepts. Providers (builders/concept developers) were stimulated in this way to focus on the residents' interests. For example, there is a provider that delivers ready-to-live components, where the walls are finished and painted and the house is cleaned. The various concepts also provide for minimal inconvenience to the occupant during construction (e.g. provider replaces the shell of the house in just a few days). The complete renovation project is done by a permanent team that introduces itself in advance and discusses with residents what exactly will happen. At the completion of the project, the team gathers residents feedback, to check if everything is to their liking.
And finally, even during the usage phase, the residents interests are being taken to heart, considering guaranteed performances.

Research has shown that residents do not think that the sustainability of their home is so important. They often attach importance to other topics. This is in line with the way many professional landlords look at their building stock. They often have other aspects, including affordable housing costs, higher on the agenda than sustainability. It is therefore advisable to link sustainability to non-sustainable benefits that ZEB brings to the table.
In Groningen (The Netherlands) there is a good example, where sustainability is linked to the reinforcement and repair of homes (that suffered serious damage as a result of gas extraction earthquakes). The cash flow that ZEB generates is used to make the homes earthquake-proof. In other Dutch regions, sustainability is linked to making life-houses resistant and more non-sustainable benefits can be found at individual (home) level, by connecting ZEB renovation to other wishes, as for expanding small homes when needing extra living space for family expansion or care.

3.2. The Partners

The members of the MORE-CONNECT One-Stop-Shop work closely on purchasing and selling ZEB concepts. The stacking of separate solutions is not sufficient for high ambitions in the area of insulation, energy generation and a pleasant indoor climate, whilst being realized as a profitable business case. From a project approach, the customization without any prospect of scaling up, is economically not yet possible for affordable ZEB renovations. Therefore, developers and builders in the MORE-CONNECT One-Stop-Shop offer complete concepts, in which everything is integrated. A concept can be broader than just the physical building solution. It can offer flexible options for residents, such as financing advice, further maintenance of the renovated homes and also the outdoor space can be part of the solution. Rapid acceleration focuses on purchasing and offering concepts that are guaranteed and proven. MORE-CONNECT One-Stop-Shop enables (larger) scale for concept providers but above all provides corporations / professional landlords and residents with certainty that what is purchased as a ZEB renovation is really a zero-energy home.

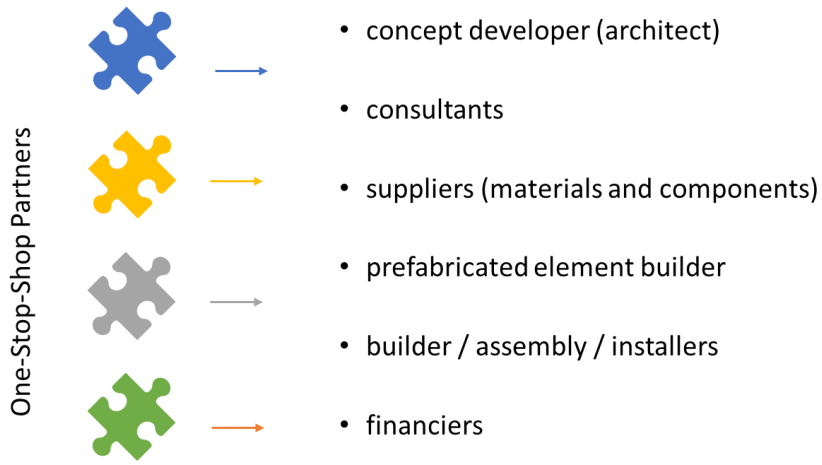

figure 5:The MORE-CONNECT One-Stop-Shop-partners

The MORE-CONNECT team identified the following tasks for the MORE-CONNECT partners:

1. Find projects (clients)
2. Survey the project (approximate scan in order to make design and quotation proposal)
3. Make design for retrofit to (n)ZEB, with options on how to do it
4. Get prices from panel manufacturers and equipment suppliers
5. Give advice and set-up a contract with the client
6. Negotiate contracts with suppliers
7. Project management
8. Site supervision
9. Testing nZEB performance
10. Maintenance for guarantee period

What does ZEB mean for the builders?

Traditionally, builders work on the acceptance of work based on registration of a detailed specification and drawings of an architect. This will be replaced by offering already developed modifiable renovation concepts. Adopt and renovate the traditional way of project-related work is (still) too expensive. This is because the following reasons listed in the table below, describing the traditional building contractor versus ZEB One-Stop-Shop Partners.

Traditional 'building / contractor'	ZEB One-Stop-Shop Partners
Supplier of capacity/labour	Supplier of products and services
Accepts the building project	Creates complete solutions offered by a consortium of innovative suppliers
Gives guarantee on technical parts	Gives guarantee on functional performance
Ready at completion	Continued support during use and maintenance
Works in projects with margins	Complete building solutions and optimised 'building flow' process (lean & efficient)
Waits for 70% residents agreement	Offers a product that everyone wants
Cost-price is leading for market price	Market value is leading for cost-price
Buys existing products from suppliers	Develops with suppliers new products / components for Zero Energy Building (ZEB)
Delivers what is asked by the customer	Research & Development on ZEB solutions
Varying communicative qualities	Professional marketing and communication
Terms and conditions	General supply terms and performance guarantee
Demarcation and what is *not* included	Product specification and what *is* included

table 1: traditional building contractor versus ZEB One-Stop-Shop Partners

The MORE CONNECT team

MORE CONNECT One-Stop-Shop unburdens the owner / occupant. The following actors have been included for this in the One-Stop-Shop:

- Project leader is responsible for the process, permits and gives advice on whether the project is financially feasible.
- Project assistant / secretary arranges practical matters, such as the organization of a meeting or an excursion, etcetera.
- Management Team (delegate MORE CONNECT partners) makes strategic and financial decisions for which the project manager is not mandated.
- Construction and Maintenance project manager handles the technical assessment of (the development of) the product / the renovation proposal during the renovation work on the construction site.
- Builder (builder and / or consortium of companies offering a ZEB concept)
- Residential consultant maintains contact and answers specific questions from residents. Counter / first contact person for residents. Ask questions and monitors progress.
- Financial department. Finance, subsidy and the energy bundle.

External

- Licensing department (municipality) for obtaining a building permit and any changes to the zoning plan.
- District director / district coordinator plays a role in matters that affect the neighborhood (think of outdoor space)
- Health (municipality) assesses the quality of the renovation plans.
- Grid operator coordinates plans around (replacement of) the gas and electricity network. Is the network prepared for homes that generate energy themselves?
- Energy company for cooperation and among other things, to help residents adjusting and decrease of their monthly advanced energy payment.

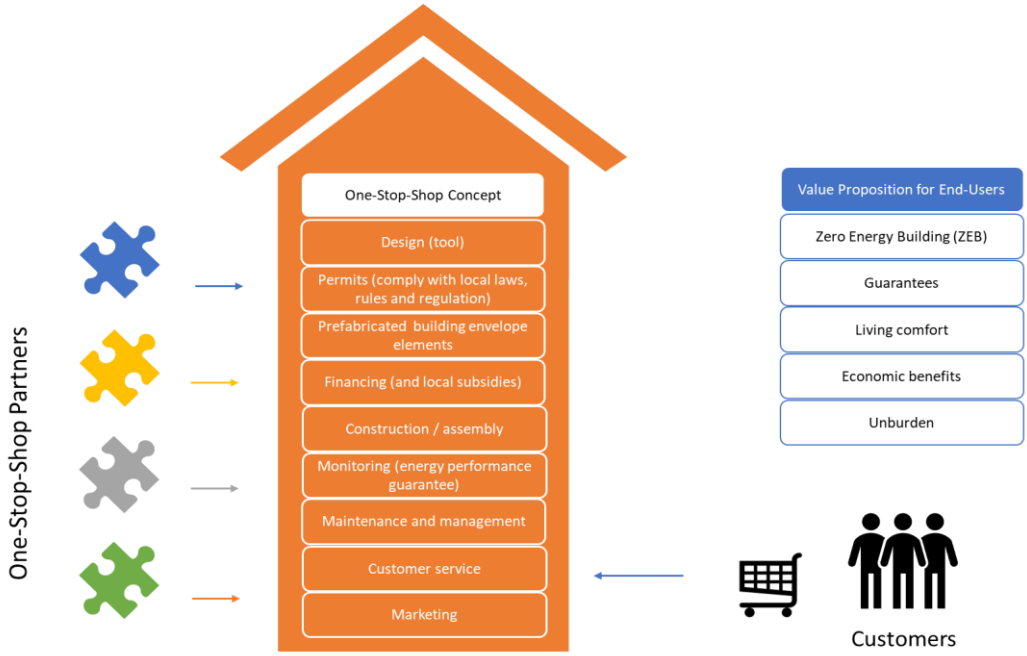

figure 6:Schematic model of the MORE CONNECT One-Stop-Shop

3.3. Organisation and internal communication

3.3.1. The One-Stop-Shop entity

What kind of 'entity' should handle the exploitation of this One-Stop-Shop concept?

There are different organisational forms for a One-Stop-Shop. MORE CONNECT defines the One-Stop-Shop as a company that offers products and services. One-Stop-Shops are often commercial in nature (such as banks, web shops, etc.). But also local and regional authorities try to reach out to their customers and target group offering a wide range of solutions with the aim to unburden the homeowners and residents. The Dutch example of the Alliantie+ One-Stop-Shop is a commercial organisation. In order to independently advise the customer, the MORE CONNECT point of contact (project management) is delegated to an independent advisor.

This important role is not the same for each and every country. Due to the strong role of the municipality and / or local initiatives, a 'local' pop-up One-Stop-Shop may arise to cater for various needs.

What kind of 'entity' should handle the exploitation?

Portugal
We assume that most of the companies exploiting the concept will be commercial entities despite the social benefits of intervening in the existing built environment. However, municipalities in Portugal would have advantages in offering this kind of service since it would influence the amount of local energy renovations in buildings.

Latvian and Estonia
It should be by commercial companies. However additional insurance by these companies should be obtained. Also, state companies can offer such services. Latvian experiences show that state companies receive more support from municipalities. These institutions are unfair competition for private companies.

Denmark
There is a commercial company established by technology supplying companies and also one or two specialist contractors to implement the technologies. A possibility could be that one of the large electricity or district heating supply companies takes up this business opportunity and coordinates the sales, the design, construction and guaranties.

Czechia
It should be by commercial companies. Local initiatives (non-commercial and independent) might be interesting, but the question is who is going to finance the activities.
Initiated by the municipality, that could be a way forward for housing and facility management companies to extend their existing businesses

3.3.2. Technical communication (e-Marketplace)

In the H2020 project P2Endure research has been conducted for the development of an e-Marketplace. P2Endure offers a holistic solution differing from competitors. The draft of the platform is designed to collect and filter information based on Building Information Model (BIM) in order to support the buying, prefabrication and making processes related to building components for deep retrofitting. Furthermore the involvement of different stakeholders is organized at an easy–to-handle level, including efficient and effective communication about project details. The realization and production of the operating platform including the involvement of important stakeholders, as the building supply industry, are not provided in P2Endure. Nevertheless, the analysis of applicable business models shows promising opportunities for a later start-up business. This is following current multi-channel distribution ideas discussed currently with growing acceptance in the building supply industry.

figure 7:Scheme P2Endure e-Marketplace, ©3L

P2Endure e-Marketplace

This e-Marketplace can be characterised by the integration of different components into one system. Six steps were shown when describing the system. First, the user can upload their 'as is BIM' into the front-end display of the P2Endure e-Marketplace. In the second step, this model is presented in the front end of the e-Marketplaces. In addition to the 'as is BIM' the user receives insight in their energy and thermal data. The e-Marketplace products for renovations are also shown at the front-end display. In the third step, the user can add these products to their 'as is BIM'. In the subsequent process step a new calculation of the thermal and energy data is carried out. The parameters of the selected products are added to the original 'as is BIM' data (process step 5). Finally, the calculated data are displayed again at the front-end of the P2Endure e-Marketplace. Using this data, the user can easily identify the thermal and energetic potential (and cost savings) of the renovation. The P2Endure e-Marketplace with the integrated parametric modeller offers the user the possibility to calculate the renovation project energetically. The result of the calculation reflects a comparison of the existing values and the new values. For this purpose, product solutions are made available within the e-Marketplace.

3.4. Permits (comply with local laws, rules and regulation)

As a customer of the One-Stop-Shop, customised ZEB renovations are offered based on the MORE CONNECT concepts that comply with the laws and regulations. Every façade element is made entirely at the factory and installed at the place of destination. And even though each façade can differ in appearance, the underlying principles are the same and the execution is standardised.

The strength of this approach is that all requirements are integrated and incorporated in the design from the beginning. About this, hard, verifiable agreements have been made with the parties involved. If the ZEB guarantee applies to the application for the renovation, this is the guarantee that the legally required quality level is met.

When you, as a resident professional landlord or builder, start a thorough renovation, you have to deal with a number of legally regulated matters. These laws and regulations are different in every country. For builders, they have to deal with zoning plans, the welfare committee and laws and regulations concerning flora and fauna. Much of this type of legislation and regulation is in motion to make the necessary energy savings possible.

Zoning plan

According to the Spatial Planning Act (in the Netherlands), municipalities are obliged to draw up zoning plans for their entire territory. In a zoning plan, among other things, planning rules have been laid down about the maximum area and building height of dwellings or distance from the neighbours. Zoning plans can offer the space to a limited extent of the recorded building-, roof and gutter lines or construction planes. That is of great importance for ZEB homes. The installation of a new insulation shell means that the facade of a house is 20 centimeters (or more) thicker and is often also higher. It is possible that this 'extra building' falls within the permitted margin, but otherwise a solution must be found. The first option is to adjust the zoning plan. Adapting a zoning plan is a time-consuming and complex procedure, which can take up to a couple of months. A second option is to provide for general exceptions to the zoning plan in case of changes due to thermal insulation of buildings.
Any necessary environmental permit with a ZEB renovation that conflicts with the zoning plan can now be easier and faster in the Netherlands, because agreements have been made in advance when it comes to a ZEB renovation project. This procedure takes only 8 weeks instead of the previous 26 weeks, in a normal procedure.

The welfare committee

A well-groomed street and environment image is important for the quality of the living environment. It ensures that residents value their environment and feel involved. In order to monitor this quality, municipalities (in all of Europe) have drawn up welfare notes, containing the criteria that the appearance of buildings must meet. ZEB homes often deviate from the current street scene, so it has to interact with the welfare committees. Within Stroomversnelling (in the Netherlands), three important agreements have been made about this:

(1) regional coordinators have been appointed from the spatial quality team who are involved in “Stroomversnelling” projects;
(2) a joint approach has been worked out at a municipal level,

(3) joint guidelines have been formulated that give builders and designers something to hold on to. The above is still valid only for corporations and builders who are affiliated with “Stroomversnelling”, but ultimately everyone can benefit from the results of these agreements

Involve the welfare committee at an early stage in the plan

It is important to involve the welfare committee at an early stage in the plan. Explain to them that it is a ZEB renovation and therefore a transformation rather than a standard renovation. Explain well what deviates from the standards and why and show examples.

3.5. Financing

A ZEB home or zero-on-the-meter home means that a home consumes just as much energy over the entire consumption year as is generated locally in a sustainable manner. In many cases, even more electricity is being produced than actually consumed. A MORE-CONNECT ZEB home has no gas connection and provides other solutions for the heating of rooms and tap water.

In the Dutch project the "Stroomversnelling", the government, builders and housing corporations have agreed to make 111,000 rented homes from the period 1950-1980 energy-neutral in the coming years.

The starting point of the project is that the renovation is paid by the current energy bill. Tenants continue to pay their current energy costs to the housing association, which uses that money for the renovation. In return, the tenant receives a comfortable and pleasant home. Many tenants anticipate about the hassle in advance of the renovation, but in practice most tenants are very satisfied about the extra living comfort after the renovation.

A reliable, sustainable, affordable ZEB home is not for everyone in NL yet, but certainly not in the rest of Europe. It lacks a broadly accessible financial structure to take far-reaching energy-saving measures at acceptable monthly costs.

Energy saving measures against virtually equal housing costs
Object-related financing is an umbrella term for all financing concepts that are linked to an object, rather than to a person. When moving house, the contract is being transferred to the next owner. With object-based financing, far-reaching energetic measures - which have a long-term impact on reducing energy consumption but also have an (equally) long payback period - can be paid in such a way that housing costs remain virtually the same each month.
There is no legal basis for this form of financing yet. The need to make this type of financing possible for private individuals has become quite visible in the Dutch situation (Stroomversnelling).

The financial opportunities per country are further elaborated in deliverable 6.3 ‘Business plans for the favorable concepts’. The instruments for setting up this energy service have been further elaborated in chapter 5.

3.6. ZEB guarantee (NOM Keur of the 'de Stroomversnelling'

“Better living for the same money”. That is the promise associated with a renovation to ZEB. Fulfilling this promise, is not always obvious. A quality mark, on the other hand, offers confidence and guarantee. That is why The Dutch, Stroomversnelling and its partners developed the NOM Keur. This guarantees the energy performance and qualities of a ZEB house. How? Through an inspection that takes place over three phases: proposition, application and lifespan.

Corporations and private individuals are increasingly interested in zero energy houses and an increasing number of developers have ZEB concepts in their portfolio, for both renovation and new construction. ZEB is an ambitious goal. A ZEB home is provided with an insulating shell, extensive sustainable energy generation and smart installations, including a guarantee of up to 40 years on the energy performance, comfort and indoor climate of the home.

In The Netherlands, more than 1,100 ZEB houses are already built. Often to the satisfaction of residents. Unfortunately, that is not the case for every resident. In some cases the promised ambitions and expectations have not been fulfilled, which leads to big disappointments. Intensive guidance and information (One-Stop-Shop) from beginning to end is often the solution

What is ZEB guarantee
The ZEB guarantee ensures a predictably high quality of ZEB propositions for homes, apartments and residential buildings for new buildings and renovations. It does this guarantee by looking at technical specifications, quality assurance, documentation, performance measurements and the experiences of the end user.

The ZEB guarantee lays the foundation for the performance agreements between the homeowner and the proposition provider and makes products comparable. The concepts are tested and proven. This gives financiers, building owners (private individuals, investors and housing corporations) and users (private individuals and tenants) the guarantee that the product meets the requirements set for ZEB guarantee. In other words: that the proposition meets a set quality. In addition, they gain access to an overview of validated ZEB propositions in a register that makes comparisons of ZEB products and propositions possible.

Why a ZEB guarantee
The aim of the ZEB Approval is to offer certainty about performance, the use of the product and the experience value of users. The supplier guarantees that a ZEB guarantee home meets the applicable requirements in standard climate conditions and average use. For example, the end user, professional buyer, mortgage provider or other stakeholder know that they deal with a ZEB proposition, which should be guaranteed to make it a worthwhile investment.

What does the ZEB guarantee means for the concept owner (builder)?

- In order to make the development of new concepts profitable, the concepts must be upscaled, to achieve larger industrial scale.
- In order to guarantee performance, the builder must design the complete designs and assuming system responsibility. This also means that the builder both forward and backward in the construction chain are involved to cooperate (chain collaboration).
- The builder will have more frequent contact with the residents, before and during construction, possibly also during the use period.
- The builder will take care of maintenance more often. After all, the builder can not guarantee without having control over the maintenance.

What does this mean for the owner/resident?

- The homeowners influences the choice of the housing concept. Indirectly because the nZEB renovation concept developer will develop concepts that are sought after and directly influenced by the homeowners gets the final choice.
- The resident will have more frequent contact with the concept owner (builder), before and during construction, but possibly also during the use period.
- The resident can count on a comfortable home for a long period (40 years) with a continuous quality for fixed housing costs.

ZEB guarantee consists of 3 parts, see the diagram below:

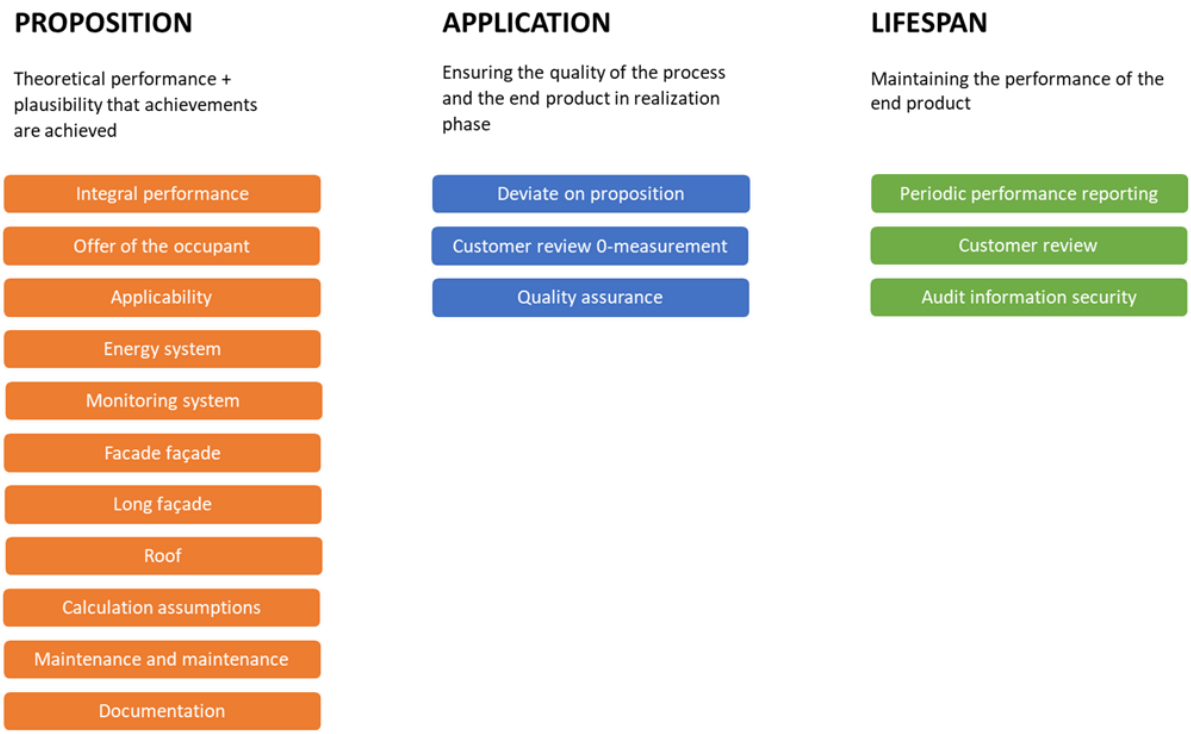

figure 8:ZEB guarantee in three levels

Obtaining a ZEB guarantee

In the Netherlands a review committee has been set up that assesses and guarantees the quality of organization, process and services. The technical guidelines and preconditions of a ZEB guarantee renovation are attached in the "Maatlat"(see the appendix for the Dutch version.) The builder / concept developer will fully complete and elaborate this Maatlat for the application of the ZEB guarantee.

The manual (Handboek NOM Keur) and the Maatlat describe exactly what the steps below here consist of.

The steps are:

1. ZEB guarantee on Proposition: The assessment of the ZEB proposition The Proposition test is a substantive assessment of all technical and process-related characteristics of a ZEB proposition. This is carried out by a board of external experts based on the 'Maatlat' completed and substantiated by the builder / concept developer as described in this "Handboek NOM Keur" (ZEB guarantee manual). The Panel advises the Association (Stroomversnelling) on whether or not to award the ZEB guarantee on Proposition.

2. ZEB guarantee on Application: The step from Proposition to Realisation. The Application test is a substantive and practical assessment of a project by a panel of external experts based on the 'Maatlat' as described in this ZEB guarantee manual. The practical assessment takes place on location. In the case of a positive assessment, a simplified assessment can suffice for future projects. In case of a negative assessment, future projects must be fully inspected again. The advisory board gives advice on whether or not to grant the ZEB guarantee on Application. The starting point here is that proposition holders who have a fast track also benefit financially.

3. ZEB guarantee Lifespan: The Guarantee of lasting quality. The Lifetime Test is an experimental assessment at least 1 and 3 years after implementing a ZEB guarantee project by a board of external experts based on the 'Maatlat' as described in this Manual ZEB guarantee. Full delivery of the requested documents guarantees the acquisition of the ZEB guarantee for Lifetime. The outcome of the assessment is in fact meant to learn as much as possible and can be made public, or in smaller settings, in closer coordination.

4. MONITORING

A More Connect renovated home (ZEB) requires independent and reliable monitoring. This enables the concept owner (contractor, installer, consultant) to measure and guarantee the energy performance during the life span of a home.

The realisation of every type of energy-efficient home involves more than just technology and contract forms. It is also about the simple and safe access to transparent and up-to-date data, putting the resident in the middle and putting a steering opportunity for the parties involved.

The realisation, completion and maintenance of these homes requires a timely exploration of the monitoring and management process after delivery of the house.

From the moment of completion, both the resident and the landlord need measurement data, validating the energy performance and guarantees. As a homeowner you would like satisfied residents and you will receive relevant information preferably ready-made and at the right time.

As a contractor and also a guarantee party, you want continuous access to relevant energy data and being assured that you will be informed, as soon as a breakdown or other exceptional situation occurs in a home.

The objectives for monitoring are:

1. Registering the energy flows to comply with the legal obligations regarding the Energy Performance.
2. Enable the Customer to assess whether the home meets the performance requirements as agreed with the Supplier.
3. Enable the Supplier to assess whether the property is functioning properly and according expectations.
4. Enable the Supplier to carry out management and maintenance services and possibly optimise these services.
5. To enable the Supplier to provide the Tenant with insights into the effect of his/her behaviour on the available energy bundle during the year.
6. Enable the Supplier to improve their ZEB renovation products through insights into anonymised performance and usage data.

From the Dutch TRECO study, the following results emerged regarding 'data collection and data evaluation of climate, building and installations':

- Outdoor temperature: Apply a one-time correction based on local measurements in comparison with the nearest weather stations.
- Solar radiation: Negligible for the heating of thermal energy
- Indoor temperature: Important to measure per room
- Air quality: For CO2 concentration measurement, it is essential to measure per room

5 ENERGY COST GUARANTEE TO END-USERS INCLUDING ENERGY SERVICES

The basis of an energy service is an agreement between two parties in which a certain consumption may not be exceeded under certain preconditions. In this part of D 6.4 we look for the interests of the stakeholders in setting up an energy service (for guaranteed energy uses propositions).

5.1. Introduction

For the One-Stop-Shop based on ZEB (ZeroEnergyBuilding), guaranteeing the energy performance (use and production) is essential. A framework for an energy service is set up for the total energy use, based on the provision of guaranteed energy use / charge propositions. This means that the One-Stop-Shop concept, as well as other suppliers of ZEB, must conclude a 'Total Energy Cost Guarantee Contract' with their customers. An important feature of these contracts implies a responsibility of the entire chain:

- End users are responsible for their own awareness of energy consumption and behavior
- End users need to be aware of the indoor air quality (CO2, indoor temperature)
- The owners of buildings are responsible for (maintaining) the energetic quality of their building stock
- Concept vendors (builders) are responsible for the energetic quality of their products including the quality of the delivered parts and components
- Supply industries are responsible for the quality of their products (in particular the reliability of energy performance) and the provision of real and realistic figures rather than ideal figures
- The installation companies such as installers, builders etc. are responsible for the quality of their work, especially the reliability of the energy performance

This section looks at a ‘service framework' to the market. Knowledge and findings can be used from the Dutch TKI-TRECO study (Towards Real Energy performance and COntrol by predicting, comparing and controlling).

> *TRECO is a research and development project aimed at increasing the insight into the backgrounds of the "actual" energy use, in order to subsequently translate this into data models, monitoring concepts, in which TRECO Office focuses on the office sector and TRECO Home on the housing sector.* http://www.tki-treco.nl/

There are several providers selling monitoring systems for energy performance guarantee propositions in the market. The common feature of these systems is that they are all complete propositions, strictly aimed at making the total energy flow of a building transparent: natural gas, electricity. With prescribed meters / sensors and a fixed database under management of the monitoring systems, and a (very) strong focus on EPV (energy performance fee, which is a Dutch solution to pass on the costs of ZEB homes to the tenants of the house).

Offering energy performance guarantee (contracts) is clearly valued by the market. Nevertheless, there is a reluctance to implement energy monitoring systems on a large scale in renovated and new

homes. TRECO has implemented a market survey. The TRECO survey looked at the obstacles that were explicitly made by the various stakeholders.
By reflecting on the obstacles identified by the various stakeholders and combined with the results from the study of the existing systems, a framework for the energy service has been established.

5.2. Results of the stakeholder survey

Different motivations emerged from the stakeholder survey, that justifies an investment in an energy service. The motivations per stakeholder are:

Homeowners
Residents of a house often find it difficult to link their energy consumption to their behavior. The energy and financial effect of opening a door or turning the thermostat up one degree is unknown to many residents. Energy is an 'elusive entity'.
Yet more and more people (in the Netherlands) are busy with their energy management. Naturally from financial motives, but also increasingly from the realization that reducing energy consumption is good for the living environment of the future. The willingness of housing consumers to gain insight and to get a grip on their energy management is increasing.
The interest for an energy service is mainly aroused by the residential consumer if the energy service succeeds in giving the individual specific indications about the possibilities for energy saving. If one can mirror this to comparable households, this gives an extra motivation to save energy.
It takes one month to see behavior changes in the height of the energy consumption from the occupant

Housing corporations / investors
Professional building owners are particularly interested in a current stock, now and in the future. Where the energy costs have played a subordinate role in the past, these are now a relevant investment criterion. Not all professional owners immediately want to commit themselves to comprehensive warranty systems. The administrative burden and initial investments are scaring, and the parties also have doubts about the underlying business cases.
The need for a low-threshold energy service, on the other hand, is present in many parties. Detection is the most important, by being able to measure and compare buildings.
Current real estate management is based in complains. No pro active management. No automated energy monitoring systems available, energy costs are low compared to the costs of for dealing with the complaints.

Project developers
For very energy-efficient homes, the house buyer in the Netherlands can get extra mortgage space. In addition, there is the social trend of increasing attention to energy management and saving. For a developer, who develops houses at his own risk, there are clear incentives to reinforce his sales proposition with a buyer-specific prediction of the energy management of each individual home. The need to extend the forecast with an energy performance guarantee is still limited. On the one hand because of the lack of good prediction modules, on the other hand because of a discrepancy in the costs of measuring systems and the value of the guarantee for the buyer.

Supply industry
Within the supplying industry there is serious attention to making the energy management of buildings stand out. The focus here is on facilitating clients and contractors. Manufacturers of domestic installations try to get the energy performance of their products explicitly, wholesalers and service providers offer complete energy monitoring systems. The main goal of the supply industry is to measure the energy performance of the products (especially on the efficiency of components) that are offered or to offer monitoring products (so not on the actual use).

Executive parties
Construction companies always offer a guarantee for their products. With the increasing attention to the energy management of buildings, there is the potential to agree on guarantees with the homeowners. The challenge for the builders lies in the fact that the known, legally established energy calculation (the EPC calculation) does not give a precise picture of the actual energy performance of a building. The underlying calculation method only 'takes' into account a standard consumption of a relatively economical household.
It is possible for implementing parties to be able to provide energy performance guarantees for their structures with the ability to correctly predict, measure and compare the energy consumption.

5.3. Energy service

Based on the motivations of the various stakeholders, it is possible to distinguish five elements that can give rise to the investment decision in an energy service:

To predict
For professional parties, who offer a home or an energy performance guarantee to a private customer, it is very attractive to be able to make a predetermined prediction of the energy consumption of the home in advance of the specific customer. The energy service uses the Prediction module within the Energy Model. Based on the following parameters, the future energy consumption of the household is calculated:

- Physical dimensions and properties
- Installation properties
- Indoor temperature
- Number and age of residents
- Inventory of electrical appliances

This method has been applied to new buildings and renovation to ZEB. When renovating, the history of energy is a very important part of the behavioral / energy use.

Measure
The energy service only comes to expression in the conditions that are set for the parameters to be measured in the home. These are not only minimal, but also primarily aimed at being able to visualize the indoor climate of the home. The TRECO research has shown that the attention of the user is drawn more by the theme of health than by the theme of energy.
Sensors per room:

- Indoor temperature
- CO2 concentration

Supplemented with:

- Measurement of relative humidity in the bathroom
- Reading smart meter counters (electricity on quarters, gas on hours)

Within the energy service it is possible to add additional sensors and energy meters, so that the conditions set in, national or regional regulations can be met. This is particularly attractive for professional homeowners and the supply industry.

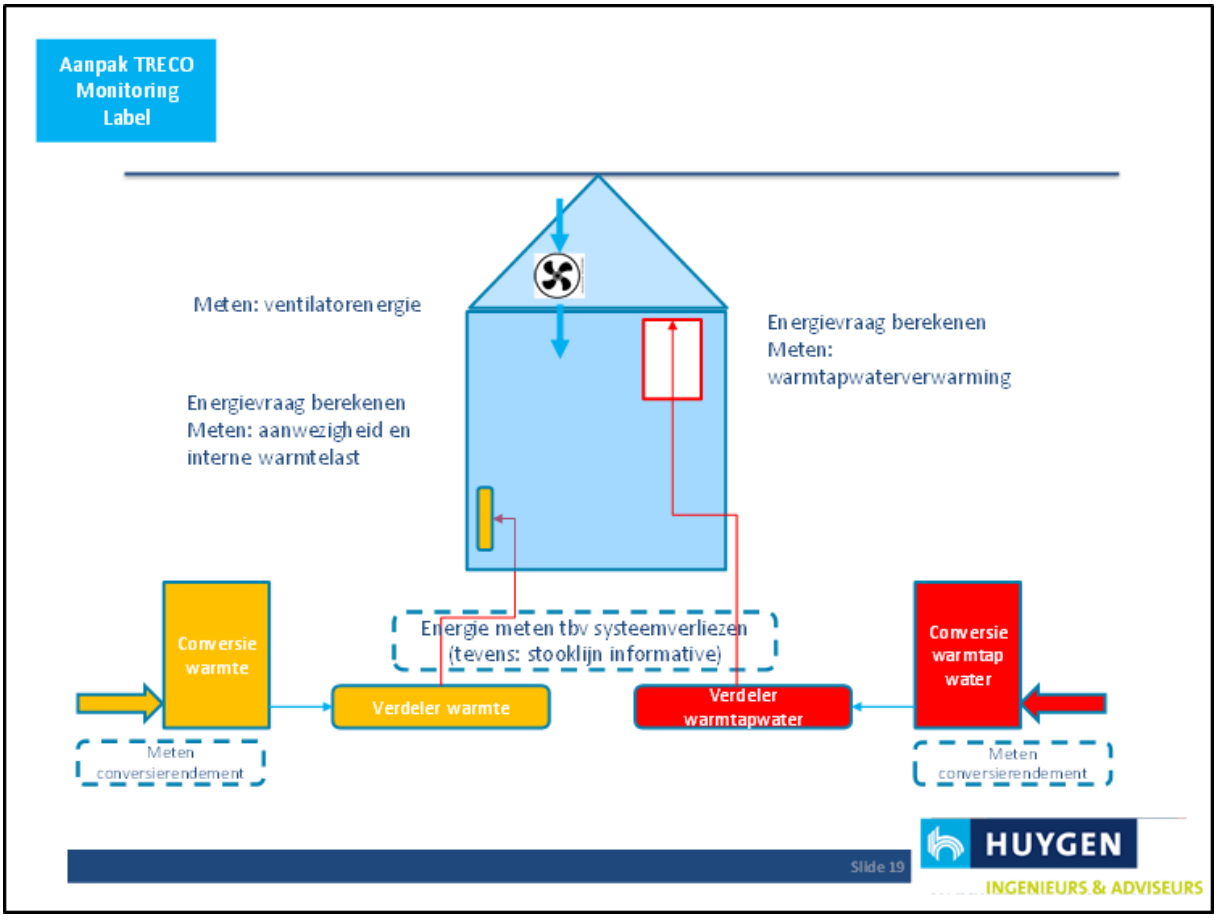

figure 9:Measurement setup of the TRECO monitoring

Compare

Being able to compare the energy management is for many parties a important factor in the investment decision in an energy service. For professional homeowners, this is mainly motivated by their desire to gain insight and to keep their homes current, for residents it is very attractive to be able to mirror themselves to comparable households. With an energy performance guarantee, being able to compare properties is always of added value, because it allows us to detect omissions more quickly that can threaten the guarantee.

A comparison module provides insight into several relevant consumption parameters per unit of time:

Daily exceedances of the following limit values are recorded and presented:

- Air quality (CO2)
- Relative humidity of the bathroom

Every month, deviations from the following parameters are recorded and presented:

- Efficiency of the heat generation (optional for boiler)
- Shower use (info from central heating boiler / heat pump)
- Actual and set indoor temperature
- User behavior regarding electrical consumption

Feedback

The most important reason for residents to make use of an energy service is to be able to take advantage of the presented possibilities for energy saving. At the same time, this is also the biggest damper if it appears that the information provided is general and is not focused on the home or the occupant himself. The calculation module will have to be tailored to the energy household of the specific home and the information provided will pay particular attention to the quality of the indoor climate, the resident will more easily accept the feedback provided. With a greater chance of adjusting the energy behavior.

The interface informs the resident in visual language about the following indoor climate aspects:

- Hourly values about CO2 concentrations and relative humidity
- Monthly values on electricity and gas consumption
- Comparison of energy consumption with desired and with historical values

Behavioral adjustment

The ultimate goal of every energy service is to contribute to energy-saving behavioral adjustments of the resident. It has a primary interest in this itself, because it results in a reduction in costs. If the One-Stop-Shop offers an energy performance guarantee on the home, we have the same interest from their guarantee obligation.

No research has yet been done into whether and how the offering of the energy service developed by TRECO actually leads to behavioral adjustments of residents. It has become clear during the validation period that behavioral adjustments are not only achieved through good feedback, but that support through good information is desirable. Further research into the most effective ways of educating and building knowledge of residents who use an energy service is recommended.

The five themes of the energy service can be reduced to the figure below.

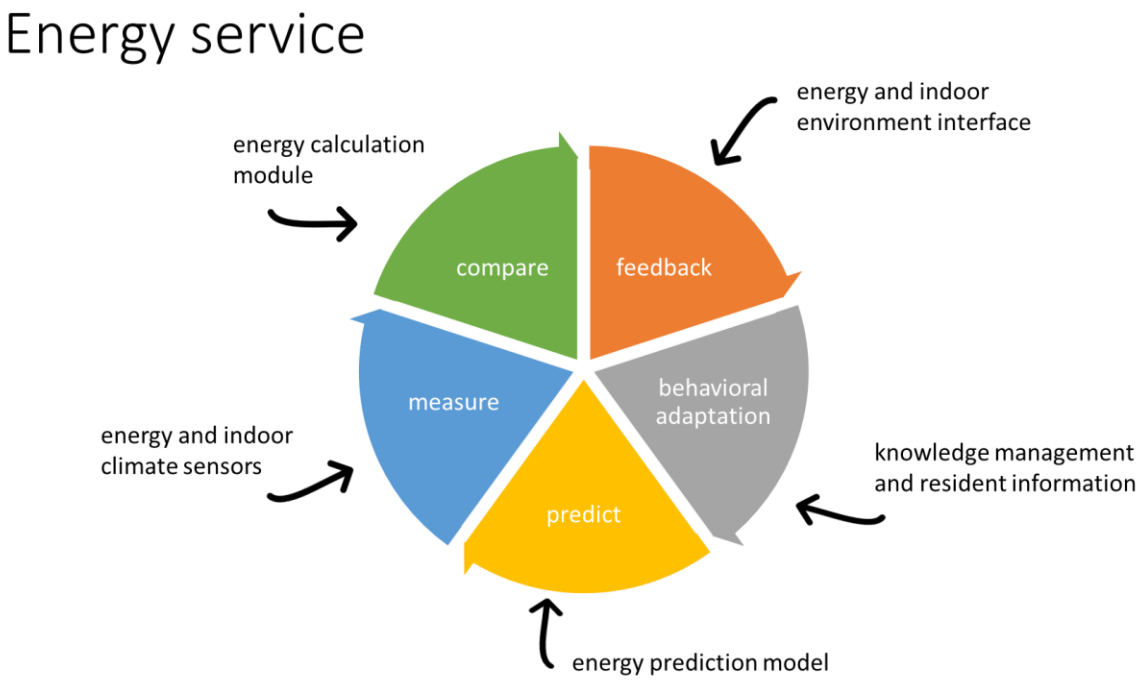

figure 10:The cycle of predicting until behavioral change developed by TRECO

This "cycle of predicting" is applied once only to new homes or to ZEB renovation.
With existing homes the house is its own reference. In doing so, the monitor continues to monitor efficiency of energy conversion and on partial meters of electricity.

5.4. Energy Use in a Energy Bundle

The concept of an energy bundle and the associated user behavior is new. The resident gets a house with guaranteed performances in the area of comfort, temperature, etc. These performance guarantees go hand in hand with a certain usage behavior. Opening windows works (mostly) negatively. There is also a different kind of comfort. For example, in a ZEB home there is usually no provision of high-temperature of radiant heat, while this heat is often very much appreciated. It is important that residents are well informed about this.
And then the Energy Bundle. Suppose a resident receives 2500 kWh as an annual Energy Bundle. Does the resident know how much kWh has been used in previous years? And what can you do with that?
And how is it monitored how much has already been used? For this too, it is important to communicate in a crystal-clear way. Below are a number of guides and tips from the first experiences.
Indicate the consequences of more and less energy use When used above the bundle, the resident simply receives energy from the energy company that sends a bill for this. With less consumption, the unused energy is, as it were, delivered to the energy grid. A number of points to take into account:

- The resident has a contract with a self-selected energy supplier.
- The resident continues to pay for a connection for electricity (the gas connection expires).

- In some countries (the Netherlands) each household also receives 'refund energy taxation', the fixed expenses are on average at or below 0 euro.
- A household may still return energy to the energy grid at this time. As a result, excess energy generated during the day and in the summer can be eliminated against the extra energy required at night and in winter. due to the increase in sustainably generated electricity and thus the trugging yields will be limited here in the future.
- The advance that is paid monthly to the energy company must be adjusted to the new situation.

5.4.1. Models/tools are used to determine the energy consumption of end users (EU)

IDA-ICE software

IDA Indoor Climate and Energy (IDA ICE) is a new type of simulation tool that takes building performance to another level. It accurately models the building, its systems, and controllers – ensuring the lowest possible energy consumption and the best possible occupant comfort.

IDA ICE is an innovative and trusted whole-year detailed and dynamic multi-zone simulation application for study of thermal indoor climate as well as the energy consumption of the entire building. The physical models of IDA ICE reflect the latest research and best models available, and the computed results compare well with measured data. While serving a global market, IDA ICE is adapted to local languages and requirements (climate data, standards, special systems, special reports, product and material data).

Excel-based tool (Calculation methodolofy based on EN ISO 13790:2009)

In Portugal and Latvian, a simplified method operating on a excel-based tool is used for energy calculation in residential buildings.

The tool is based on a simplified approach based on an quasi steady state method for calculating the energy balance and determining the energy needs necessary for heating, cooling, ventilation and domestic hot water preparation, following the rules established in the national regulation related to buildings energy performance and certification.

Be18 (Calculation methodolofy based on EN ISO 13790:2009)

In Denmark there is a offcial tool based on international standards which has to be used to verify the nationally implemented EPBD – energy frames – Be18.
The tool has been developed by the National Building Research Institute –SBI at Aalborg University – Be18 – and has been updated over the last 10 years to reflect changes in the Danish Building regulations. It calculates the energy demands month by month. The user interface is well worked out – and also the results are well organized and easy to compare with the national requirements. The energy frame is automatically calculated using the primary energy factors for electricity, oil, gas and district heating.

6. PERFORMANCE CONTRACT

A performance contract consists in any case of the following elements:

- Comfort and indoor climate performance.
- The amount of energy available for household appliances and lighting (the bundle).
- The required building-related energy use for space heating, possibly comfort cooling, hot water, ventilation, auxiliary energy and monitoring.
- The amount of sustainable energy generation on, or in the home.
- Maintenance plan during the contract period for, among other things, the building and the installation(s).
- Residential manual containing instructions for the resident to achieve the performances and conditions to be able to invoke the guarantee. It is up to the builder to record it.
- Monitoring protocol indicating which measurement data from the home are registered for the purpose of determining the performance.
- How to deal with any disputes. The guarantees that builders and installers issue at their ZE(B) products are usually about the functioning of the installations. If these use more energy or supply less energy than was assumed - without this being attributable to user behavior - then the bill (as far as applicable) is not for the resident but for the guaranteeing party.

Who signs?
In the case of a rental housing of a housing corporation (professional client), the performance contract is generally concluded between the builders and the housing corporation. If it concerns a private home, the contract is concluded between the owner / user and the One-Stop-Shop. In the One-Stop-Shop the responsibilities and guarantees for each project partner are regulated. The owner / user is only dealing with the One-Stop-Shop!

7. CONCLUSION AND RECOMMENDATIONS

7.1. Risks (per country) for the one-stop-shop

7.1.1. Portugal

We believe that the main risks for the one-stop-shop in Portugal are the energy performance guarantee as well as financing, which of course are closely associated. Confidence and trust on the companies offering the service is also a critical point.

7.1.2. Latvian

Main risks are lack of one-shop-stop sufficient knowledge to select proper solution and technologies. Limited possibilities for house owners to receive guarantees in case of renovation process failure. In a limited company, the liability of members or subscribers of the company is limited to what they have invested or guaranteed to the company. Usually Latvian engineering companies has equity capital up 2800 Euro

7.1.3. Denmark

In Denmark the economic benefit of a deep energy renovation is hard to justify. It is generally a risk that the implemented energy renovation solutions do not perform as in the calculations. As with EPC-contracts in general the use of the house may change – which make the verification of the guarantees almost impossible.

7.1.4. Estonia

For Estonia – to change the way of thinking about, what is environmentally and economically feasible in the long term, is a big challenge. It concerns both – customers and professionals and almost all 'themes' except permits which is known and common practically for all retrofit projects.

7.1.5. Czechia

There is a risk of complicated legal arrangements of the relationships among the building owner, end-user and, general contractor and subcontractors and the body who carries the guarantee.

7.2. Advantages (per country) for the one-stop-shop

7.2.1. Portugal

We believe that the main advantages of the concept in Portugal are related to economic benefits and to the fact that customers are alleviated from complex, tedious and time-consuming procedures. Once assured the confidence on the company offering the service, the concept has a high potential of being well accepted by the end users as it eases their lives.

7.2.2. Latvian

Main benefits of the One-Stop-Shop concept are time reduction for building owners for retrofitting process management and management of all retrofitting activities by professionals.

7.2.3. Denmark

The One-Stop-Shop concept will make it much easier for the consumer to make the decision for an energy renovation. He/she should not have to worry about getting the right contractors to do the work. They can lean back, relax and feel confident that somebody else takes care of the whole process.

7.2.4. Estonia

For Estonia – according to 'values', most of all – dissemination of the idea of the One-Stop-Shop concept itself. Today's market is too fragmented and often different stakeholders do not know about others decisions

8. ATTACHMENTS

Appendix 1: (Appendix) rental agreement
This document indicates what the resident can expect after the renovation. It describes the rights and obligations of the resident and the landlord.

- 160908_Bijlage-1_Aanhangsel-huurovereenkomst-versie-2.0 (1)

Appendix 2: General delivery conditions
These general terms and conditions are intended for use in a purchase agreement (hereinafter "Purchase Agreement") for renovations with guaranteed energy performance to tenants. The terms used in capital letters in these terms and conditions have the same meaning as in the purchase agreement.

- 160908-Bijlage_2_Algemene_leveringsvoorwaarden_versie_2.0-def (1)

Appendix 3: Product specification Stroomversnelling multi-family homes
Purpose of this scheme: to record what is / is not included in the basic ZEB renovation

- 160908_Bijlage-3_Productspecificatie-Stroomversnelling-gestapelde-bouw_def-versie-2.0

Appendix 4: Performance formulation (warranty aspects)
This document sets out what performances are offered and realized in terms of energy, comfort and indoor environment.

- 161027-Bijlage-4_Prestatieformulering-alle-woningtypes_def-versie-2.0.... (1)
- Bijlage-4-Prestatiegarantie-bij-Afname-1

Appendix 4A: Technical management and maintenance in the agreement

- Bijlage-4A-Technisch-beheer-en-onderhoud

Appendix 5: Monitoring protocol
This appendix contains the agreements between the Purchaser and the Supplier regarding the objectives of monitoring the performances delivered, the responsibilities back and forth, including the responsibilities towards the tenant, the reporting on this monitoring, and the actions to be taken, if the agreed performances are not achieved.

- 161202-Bijlage-5_Monitoring-protocol-def-versie-2.0 (1)

Appendix 6: Process agreements, technical management and maintenance
This appendix contains further (work) agreements about the service level and other operational matters that affect the management and maintenance period. An optimal service to the tenants is paramount. The supplier or the maintenance parties that are called on must carry out the work within the frameworks that apply to the Take-off Agreement.

- 160908_Bijlage-6-Procesafspraken-technisch-beheer-en-onderhoud-def-versie-2.0 (1)

Appendix 7: Code of Conduct and Construction Days Plan
In these behavioral codes the builder indicates that he will behave towards the tenant and the information provided with respect to construction days step-by-step plan.

- Bijlage-7-Gedragscode-en-Bouwdagenstappenplan

Appendix 8: Processor agreement

Standard processor agreement (to be filled in and supplemented by the parties themselves) for the processing of data relating to the residents of ZEB houses, to comply with the rules that apply to the processing of personal data.

- Bijlage-8-Bewerkersovereenkomst

Appendix 9: Definition overview

In this appendix (in alphabetical order) the most relevant terms used in the Purchasing Agreement and the corresponding appendices are defined.

- 160908-Bijlage-9-Definitielijst-versie-2.0-def (1)

Appendix 10: Code of Conduct dealing with tenants

- Bijlage-10-Gedragscode-omgaan-met-huurders-5-juli-2015 (1)

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