Co-funded by the Intelligent Energy Europe Programme of the European Union

COHERENO
Collaboration for housing nearly zero-energy renovation

Report on business models for NZEB renovation of single- family houses including cross-country analysis

---

Lead partner: Segel AS

22.03.2016

Final version

Responsible partner for Norway: Segel AS
Responsible partner for Austria: Ögut
Responsible partner for Belgium: Passiefhuis-Platform vzw
Responsible partner for Germany: dena
Responsible partner for the Netherlands: Delft University of Technology

Start date of project: 1 April 2013
Duration: 36 Month
Target group: Contractors, consulting and informing actors, financing and policy actors
Project website: www.cohereno.eu

Elaborated and written by:

Trond Haavik**,** Segel AS

With contribution from:

Raili Münke and Peter Pannier, dena
Wouter Hilderson, Passiefhuis-Platform vzw
Hannes Warmuth and Franziska Trebut, ÖGUT
Ad Straub and Erwin Mlecnik, TU Delft
Matthias Haase, Sintef Byggforsk
Birgit Vandevelde, VITO

Executive summary

This report is valuable reading for contractors, informing and consulting actors as well as policy and financing actors.

It describes how the COHERENO partners have contributed in establishing 24 collaborations between complementary actors in nZEB (nearly Zero Energy Buildings) retrofitting of single-family houses in the five partner-countries; Germany, Austria, Belgium, The Netherlands and Norway.

The overall conclusion is that the methodology used in this process has been successful. The participating companies have been satisfied with the contribution from the COHERENO partners. For most of them, this has been a “kick-start” of a structured collaboration with other companies. Among other issues, there has been a strong focus on including quality assurance (QA) mechanisms across the different disciplines involved in a retrofitting project.

There is a strong variety of how the twenty-four business models are constituted in terms of companies participating. Some are dominated by contractors, others by advising actors and even some by initiatives by local and regional authorities.

The participants feels that they have just started, and would like to get more assistance to implement their common business models. They are still in the introduction phase to embryonic market. There remains some challenges both in terms of turning this into a mass market, and to increase the ambitions in each upgrading project towards nZEB level.

Contents

1 Introduction and methodology

This report should be read by contractors, consulting and informing actors that consider developing their business in upgrading of single-family houses. This business also represent interesting business for banks and other financing institutions in terms of long term and sustainable investments. Based on the learnings from the COHERENO project, there are important inputs to authorities on all levels.

The overall objective of the COHERENO project is to strengthen collaboration of enterprises in innovative business schemes for realizing nZEB renovations. In order to support this the project partners in the five participating countries have assisted local groups of complementary companies in initiating and developing innovative business schemes towards viable business plans ready for implementation.

In this report, we have summarised the results and experiences from the collaboration structures developed in in the participating countries in COHERENO; Norway, Belgium, Austria, Germany and the Netherlands. In order to secure common procedures in all five partner-countries, the work package leader Segel AS developed "Guidelines for developing Business models" (1) for the processes for the individual groups. The report that explains in detail the methodology for the processes can be downloaded from the project website: www.cohereno.eu

The guideline was mainly followed in all countries, with some exceptions. A short introduction to the methodology follows in the section below.

First step - Preparation for collaboration

Status Analysis

First, a broad understanding is needed of the competitive arena in which the business model is to operate.

- The framework conditions are presented and discussed. The participants at the workshop add their comments. A general PEST form can be used as a checklist during the discussions. PEST analysis is a tool for defining the most important Political, Economic, Social and Technological issues that influence the environment and framework for the business.
- A presentation and discussions on relevant information from WP3; market segment success factors and key barriers (see the project website; www.cohereno.eu).
- A presentation and discussions on relevant information from WP4; QA aspects (see the project website; www.cohereno.eu).
- The conclusions from each of these analysis/discussions are fed into the SWOT analysis, which summarises the internal Strengths and Weaknesses and external Opportunities and Threats. It forms the information foundation from which the business model shall be developed.

Second step – Business Modelling

Business model sketching

Start the work on the full scale business model using the Osterwalder & Pigneur "Business Model Canvas" (2), which consists of the following nine blocks: customer segment, value proposition, key activities, key partners, key resources, customer relationship, channels (communication, distribution and sales), cost structure, and revenue stream. These building blocks, which form the basis for a tool called "business model canvas", are used to discuss a full-service or one-stop-shop concept for energy-efficient renovation.

Third step - Strategic focus and implementation

Strategies and action plan

Based on the SWOT analysis and the Business Model, the partnership between the actors contributing to a One Stop Shop must define their level of ambition through a vision statement. How to reach the vision must be expressed first through their strategic choices. The main questions to answer are: 1) What is to be sold (what is unique about the product/service); 2) Who are the target groups? (It is recommended that the market-oriented people answer this first); and 3) How should it be sold?

In order to implement the strategies that have been developed, a specific action plan is needed which defines planned progress, responsibilities, and the necessary resources (financial and human).

Brief introduction to the processes in the five countries

In Norway the COHERENO partners assisted 5 groups; one in Drammen, one in Hønefoss, one in Lofoten and two in Trondheim. All groups completed a first sketch of a business model already in the first workshop. After the first workshop all participants were given a task to interview minimum one customer (one group with 5 companies means minimum 5 respondents) to get feedback on customer needs and value proposition (part of the work in WP4). The responses were structured and put into one common presentation (including the five drafted business models) which was given to the Norwegian House Owner Association before the second workshop. The Association gave additional comments and feedback to each of the models as well as general feedback. At the second workshop the input from their specific customers and the specific feedback from the Home Owner association to their model along with the general comments were presented to each group. This was the major foundation for discussing revision of the drafted model.

The COHERENO partners; Segel and Sintef Byggforsk jointly gave the process assistance in Norway. Segel consultants took the role as process moderators (their key competence) and Sintef documented the conclusions during the discussions as well as contributed with technical knowledge during the discussions.

In Belgium the COHERENO partners assisted 5 groups: 'Huisraad' group and 'De Raadzaal' group from the Antwerp province, 'Renovatiewinkel' and 'Ceelen' from the Limburg province and 'Leiedal' from the West Flanders province.

For four groups, the workshops were planned to take a two-day form. For the Ceelen group, only one day was planned. This specifically on demand of the participating companies, which had very limited time. All other groups completed a first sketch of the right side of the business model canvas already in the first workshop. After the first workshop all participants were asked to interview minimum one customer (one group with five companies means minimum five respondents) to get feedback on customer needs and value proposition (part of the work in WP4). For each group only one company actually did this interview and provided feedback. At the second workshop, the input from these interviews was presented to each group, as the person who did the interview further elaborated on the specifics of the example. This proved to be a very useful element for discussing the revision and completion of the drafted model.

The process assistance was jointly given by the COHERENO partners; Passiefhuis-Platform vzw and VITO, with assistance from VCB. Passiefhuis-Platform took the role as process moderator and VITO documented the workshops and the conclusions during the discussions as well as presented the quality assurance components and contributed with experiences and knowledge from other research projects during the discussions. VCB supported the second workshop with an expert in construction legislation when needed.

In the Netherlands the COHERENO partners assisted 5 groups. With each group, two or three meetings were held, always led by two researchers from Delft University of Technology. The workshops were held from March 2015 to January 2016 at the TU Delft or in the offices of a participating company. Some additional meetings (to elaborate on more specific issues) were held

with Group 2 and Group 3. Before the groups were formed, several interviews were held with participating firms. Persons from three groups participated at the WP5 Business Collaboration Events.

Two representatives of homeowner organisations were asked to give feedback on the business models. Only (experienced) house owners of group 2 have given feedback on the model. Some collaboration structures preferred to collect experiences from homeowners only after the businesses' intervention in the home renovation.

In Austria, the Austrian Society for Environment and Technology (ÖGUT) also assisted 5 groups; two in the greater area of Vienna, one network covering parts of Upper Austria and Tyrol, one collaboration structure operating in Burgenland and Lower Austria and one in Styria. Al groups completed a first sketch of a business model already in the first workshop. As in other countries, the groups were given a task to interview at least one customer to get feedback on their needs and value proposition (part of the work in WP4). The responses were systematically structured and put into one common presentation including the drafted business models. Due to time restraints the workshop organised with the fifth group was carried out in just one day. As mentioned, the process assistance was given by the COHERENO partner ÖGUT represented by two persons, plus a third person secured the quality of the process by reviewing the results.

In Germany the COHERENO partners assisted 4 groups; located in Hamburg, Kassel and Ingolstadt. The guidelines supposed by SEGEL have been mostly followed. The presentations were shortened and PEST- and SWOT-analyses have been shifted to the second workshop. Dena invited business model canvas experts for supporting the workshops in developing of the models. They guided the participants to the creation of an own model and moderated the discussions. All in all in Hamburg one expert and two dena-employees participated at the workshops, in Kassel two experts (one for each group) and two dena-employees.

In all countries, all groups started from scratch, although many of the companies already knew each other beforehand through more loosely cooperation. For most groups, at least one person had attended one of the national Business Collaboration events (BCE). Typically these persons played an important role in recruiting in other companies to their group.

The Norwegian workshops were all completed through February and March 2015. After the first workshop, feedback from homeowners was collected and used in the second workshop. In the other countries the workshops were spread over a longer time:

- Belgium; February 2015 to February 2016; time between 1st and 2nd workshop varied from 1 month to 12 months.
- The Netherlands; March 2015 to January 2016. time between 1st and 2nd workshop varied from 2 months to 5 months.
- Austria; March 2015 to February 2016; time between 1st and 2nd workshop were rather short for all; between 1 to 6 weeks.

- Germany; March 2015 to April 2016 (in one group the second workshop will take part after the COHERENO project ends); time between 1st and 2nd workshop varied from 2 month to 5 months.

2 Presentation of the companies involved in the collaboration models

The constitution of the different groups is displayed in the table below:

Country	Group	Architect	Energy Advisor	Building planners/consulta	Project	Coordination	Safety	Engineering	Garden design	General contractor	Carpenter	Construction	Insulation	Technical	Electrician	Plumber	Ventilation	Installation	Heating	Painter	Utility company	Bank	Supplier	Non-profit organization	Neighbourhood	Residents'	Municipal
Norway	Group 1, Lofoten									X																	
	Group 2, Trondheim	X								X					X	X	X										
	Group 3, Trondheim			X						X				X									X				
	Group 4, Drammen		X	X						X	X				X	X											
	Group 5, Hønefoss		X							X					X	X											
Belgium	Group 1, Mechelen	X								X		X	X				X										
	Group 2, Kortrijk	X	X										X				X										X
	Group 3, Houthalen																							X			
	Group 4, Puurs	X	X		X	X		X																			
	Group 5, Hamont									X		X															
Austria	Group 1, Upper Austria and Tyrol	X	X	X																							
	Group 2, Lower Austria and Burgenland		X							X	X	X			X					X							
	Group 3, Baden, Vienna, Burgenland	X	X																								
	Group 4, Vienna and Lower Austria	X																									
	Group 5, Styria			X						X																	
The Netherlands	Group 1, Take Five		X										X					X	X								
	Group 2, Harlem	X	X	X	X		X			X	X	X	X	X	X	X	X	X	X	X					X		
	Group 3, Alliantie+	X		X						X													X				
	Group 4, ACE		X	X									X								X						
	Group 5, National Platfor	X		X																		X				X	X
Germany	Group 1, Hamburg	X	X	X				X		X	X				X		X			X							
	Group 2, Kassel	X	X	X	X		X																				X
	Group 3, Kassel					X	X		X			X			X				X								
	Group 4, Ingolstadt	X	X	X				X			X									X							

The colours indicate what type of actors leading the groups

crafts men /contractors
energy group
diverse group - includes both architects and energy advisors
government/municipal/non profit initiative
Architect

There are more information about the groups in the annex to this report.

3 Identified challenges and opportunities

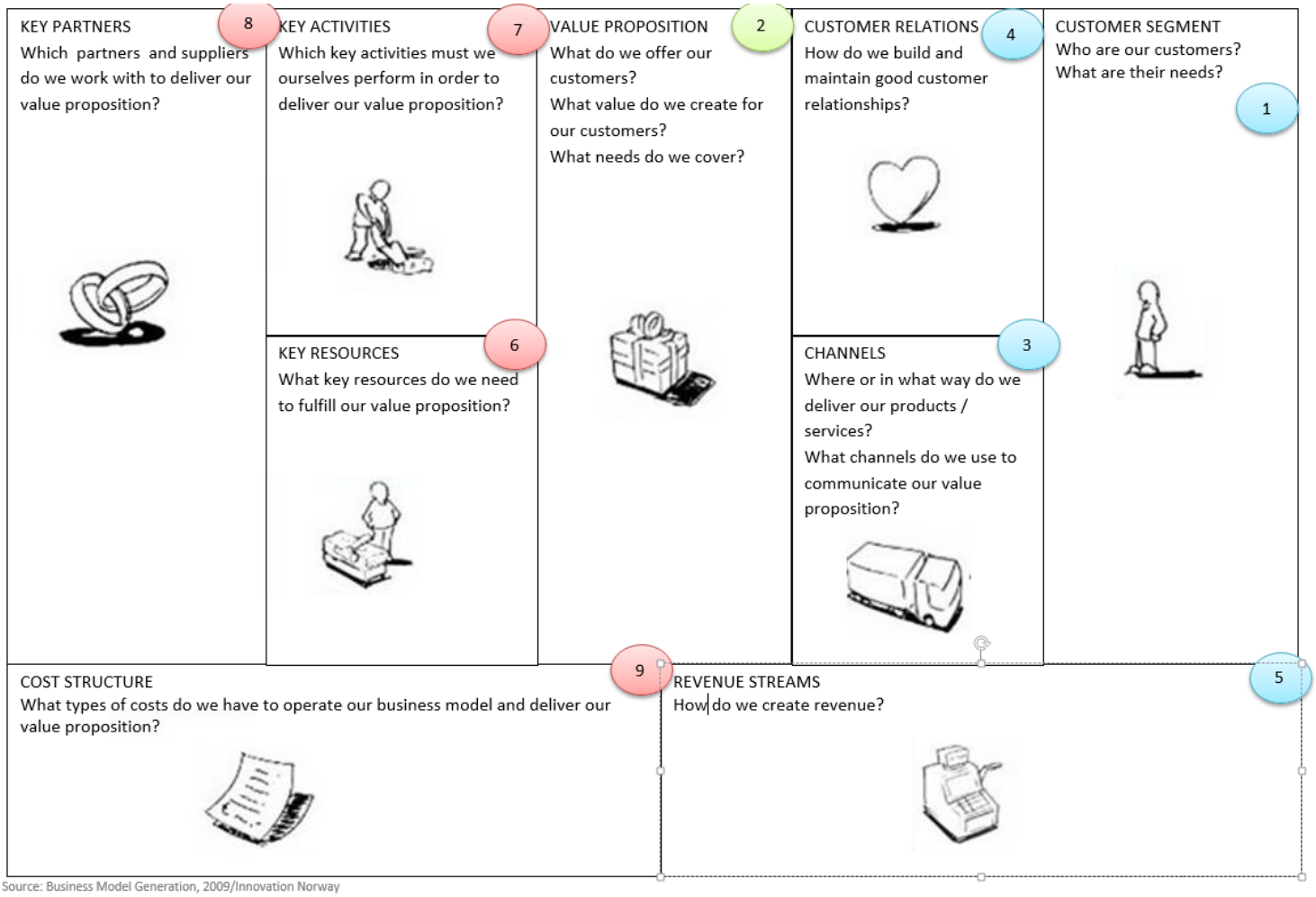
In accordance with the Guidelines, different analyses were made during the preparation and execution of the first workshop. The main conclusions for each of the collaboration structures were gathered in a summarized SWOT-analysis (Strengths, Weaknesses, Opportunities and Threats). In the second workshop the SWOT analysis was updated based on new input between the two workshops. Several of the identified factors were common for the different groups. Below we have presented SWOT factors in a common table.

Strengths	**Weaknesses**
1. Strong commitment -Good teams with motivated employees 2. Professional reliable expertise -good reputation -experience in sales and aftersales -good knowledge about local market -good knowledge about purchase decisions and renovation process -react quickly to customer request, flexible -good routines for internal training 3. Quality -flexible, technological solutions -architectural design as added value -updated solutions -complementary services with excellent quality 4. Authenticity -historic & sustainable values taken into account 5. Companies involved are frontrunners and more open to change 6. One stop shop with one main contact	1. New in the market -lack of experience in managing a collaboration → no defined strategy -not all necessary partners are involved yet -no clear reputation yet -lack of experience in marketing a new concept and managing the sales and aftersales -need of routines for training this concept -no exclusivity for collaboration -limited competence on upgrading 2. Unclear definition of the product/service 3. Too expensive -cost and availability of materials -Time consuming/labour intensive -customers unwilling to pay much for advice 4. Lack of guarantee on energy performance 5. Limited financial strength to invest in start-up 6. Danger of overselling, i.e. clients perceives as they are advised to invest more than necessary. 7. Lack of visibility to potential customers -no shop/front office
Opportunities	**Threats**
1. Increased focus on the environment -increased knowledge -higher legal requirements 2. Possible energy savings 3. Technological development and the price development of technology 4. Increased value of homes after upgrading -lower insurance fee on upgraded homes 5. Market segments with potential -younger generations taking over older homes, particularly houses built between 1960-1985 -high income level amongst owners -many ageing houses in need of upgrading -local upgrading programs -public grants 6. Increased demand for high efficient houses 7. Strong focus on upgrading and good design 8. Limited fossil fuels resources and increasing prices	1. Little knowledge about passive houses and nZEB renovations in the business and amongst owners. 2. Competition -eastern European companies offering simple and cheap solutions by unregistered invoicing -DIY-trend, homeowners find quick fixes online -market is awaiting, more competition to come -new building concepts -new construction or demolishing 3. Strong focus on interior (what is visible) -architects lack interest in energy upgrading 4. Too much documenting for achieving public grants 5. Low energy prices -currently same price for self-generated and delivered energy (the Netherlands) 6. On average small budgets for renovation -rising house prices leaves less funds for upgrading 7. Lack of specialisation with contractors

The matrix summarises the status of all the important factors, which have to be taken into account in further planning of the new business.

4 Business models

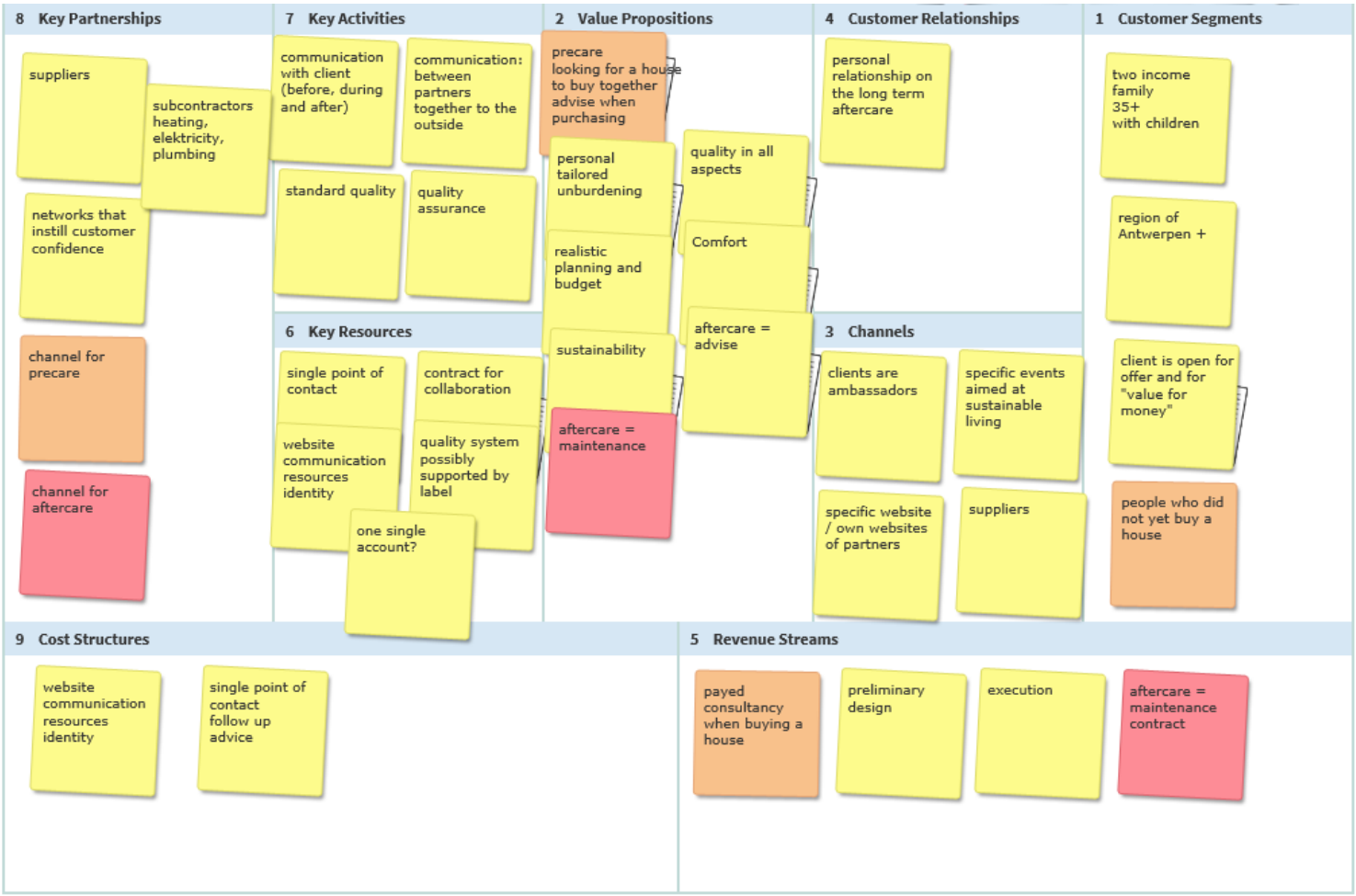
The different business models developed according to Osterwalder & Pigneur (2) methodology specified and included into the business plans for each group, which used this template for developing their own models:



Source: Business Model Generation, 2009/Innovation Norway

The canvas is developed by discussing and concluding on the questions asked for each of the nine building blocks. The order of discussing follows the numbering of the blocks. The blue labels indicate the market-side of the model. The value proposition answer what you are offering to your clients. The red labels describe what how to deliver the value proposition.

The canvas made for one of the Belgian groups exemplifies this:



The yellow colours represent the standard offer and clients. In orange, an extra offer and clientele is depicted; people who did not yet buy a house. Red stands for services after the renovation.
Note that the quality aspect is included explicitly in the value proposition, key activities and key resources.

In the next sub-chapter the content of the different models are discussed.

4.1 Similarities and differences between the different models

4.1.1 Customer segments and their needs

Common for most groups is that they want to address people with good economy, which is a prerequisite for nZEB renovation. Consequently, most of them define "adult" persons, and pointed on two typical groups with economy and in the right situation to ask for upgrading; couples of age 35+ with double income and kids and those above 50 where the kids have left home.

Not all groups have specifically defined the building periods of the houses to be targeted, but those who have done this point to houses in the 80'ies and before. Some of the groups (in Norway) excluded houses built before WW2, as they expect that most of these already have been upgraded. The groups which have studied statistics over the local building stock, have selected a certain time as for example 1960-1980'ies, in order to specialize and develop a certain "mass of production". One of the Dutch groups define historic/listed single family houses as their target.

Most groups define a geographical limitation of their market; typically a radius of 50 km. One particular exception from this are the "Regional renovation network Kassel" which focus on the region of Nord-Hessen, and the "Cooperative Ingolstadt" which covers several municipalities in Bavaria, Germany. In the Netherlands there is one group defining the whole country as market area.

The building type focused on was single-family houses, but the understanding of this also included semi-detached houses, and for some groups also row houses. Some of the groups located near cities also addressed the owners of multi-family houses, and are in particularly interested to work with professional owners.

All groups acknowledge that there has to be a specific reason for initiating the idea of an ambitious upgrading, such as; the house need a facelift, central building elements have met their life expectancy (e.g. drainage, roof and cladding) defaults have to be repaired or change in life situation. In the next step there is a need for having a good and cost efficient process, starting with the decision making process in order to be confident that the best solution is chosen, and followed by a smooth and efficient construction process. Important "soft factors" defined as important needs are improved comfort, get a modern house and easier to use. Other, more specific needs are changes in space, reduced operational costs and get documented improvement of quality of the house. The groups use different wording, but they define quite similar needs.

An interesting aspect in Belgium is that interior, design, well-being, space and light, were seen as important by all groups that included an architect. Groups that did not include an architect made a more practical approach.

In Austria the researchers found that the level and ambition of the energy standard achieved after the renovation is different for all groups. Planners and architects generally set higher standards than executing actors. The city-town differential also plays a role in this certain consideration, meaning that in urban areas the renovation goal is more ambitious.

4.1.2 Value proposition

Note: In order to highlight how quality assurance aspects have been taken into account, these points are marked in red in this and the proceeding sub-chapters.

The key factor is to ease the renovation process for the client – or a good "journey", all groups define good project management, preferably with one main contact point, as a key value proposition. Further, a good quality end result is another essential value proposition for all. All groups also list elements such as; an initial analysis or energy audit as delivery to secure a good foundation for the decision making process, and a total package (one stop shop) for the retrofitting leading to a better and more modern home.

Very few groups include fixed pricing for the project, but then with clear reservations for unforeseen circumstances.

Some of the groups also include financing or assistance in financing into their value propositions. All groups also include responses to the "soft needs" but with different wording;

- Better indoor comfort
- Contribute to climate change/good conscience
- More home security
- Reference customers to confirm credibility

"Hard" element value propositions listed by many groups are (randomly ordered):

- Improved aesthetics and functions
- Increased value of the house
- Tidy construction site
- Sound economy for the whole process
- Maintenance free home for many years
- Lower operating costs
- Documentation of the upgrading

One of the most crucial discussion points in all groups was how to include "independent advice" into the value proposition. How can it be independent if the same group is to offer the advice and as well execution of the renovation and delivering the materials? Therefore, some of the groups solely offer advice and others only execution. Those groups including both, put a strong emphasize on transparency (for example open calculation) in order to give a trusted value proposition. “The Regional renovation network Kassel” in Germany has independent planning of each project. The executor is selected from a pool of several contractors to complete the renovation. In this way, they also may be recognised as "independent" advice, even if they all are linked to the same cooperation.

4.1.3 Channels

The channels to reach the customers were quite similar for all groups:

- Social media, incl. Facebook and WEB
- Press coverage
- Demo projects/ambassador customers
- Construction site
- Advertising and "flyers"/info folder
- Networks

Some particular channels (randomly ordered) mentioned by some were:

- The craftsman
- Suppliers
- Mouth to mouth (clients recommendations)
- Bank
- Other external partners
- Organising renovations seminars
- Info evenings
- Exhibitions at home owner fairs
- Exhibitions in local hardware store
- Local clubs or associations

The Dutch group with the aim to cover the national market, also plan to set up representative offices for advising the customers.

4.1.4 Customer relationships

How to make the customer "love" you is for all groups basically about delivering (at least) what the customer expects, and that the process goes fluently. The key factor here is good communication by personal follow up by one single contact person who is available and easy to reach.

Some of the groups additionally offer:

- After sales guarantee/service and control
- Make the owner proud of his home
- Honesty and predictability
- Transparency
- Credibility by using known brands and references

4.1.5 Revenue streams

All groups discussed the revenue model as such and defined main principles, but without being specific about the pricing. Regarding the planning phase, we a see that one part of the groups see this as part of their acquisition phase and therefore offer this free of charge, while the others see this a service to be paid for. In Norway and Germany public bodies offer grants to house owners buying an energy audit. All Norwegian groups offer such audit for a fixed fee.

Coming to the execution phase most of the groups plan to offer a total package and sign one contract with the homeowner. The groups differ slightly if they should offer a fixed price or a conditioned budget price, and combined with additions for extra wishes coming up during the process. Some groups suggest offering an open calculation model and other a "menu-price list" which also may be combined with a "stepwise" upgrading process adapted to the financial situation of the owner.

Some models also define provisions from the executing contractors as an income to the one-stop-shop service. Each contractor pays a certain percentage to the common one contact point.

4.1.6 Key resources

The obvious key resources are the energy advisor/architect, the project manager (either the architect or typically the main contractor), motivated and skilled craftsmen, materials, tools and equipment. In addition, most groups point at these resources as important for such a network:

- A good contract between the partners
- A quality system for managing overall quality between partners
- Internal communication platform
- Tools which easy calculate and visualize what the customer gets
- Holistic understanding within the group

Some of the groups added such resources as:

- A physical shop or contact point
- Sales manager
- Logistic system
- Good connections to suppliers
- The concept itself (may become a brand)

4.1.7 Key activities

The key activities for executing actors were defined as:

- Marketing/find customers
- Identifying the needs (an audit) and advising on measures
- Detail planning and calculation
    - Visualize values for the home owner
- Signing of contract
- Construction/implementation
    - Including project management and coordination
- Quality assurance (also during)
- Hand over
- Invoicing and follow up
    - One year service or service contract

The sub points above are specific from some of the groups.

The models which were dominated by advisors/architects had typically such main activities:

- Common consulting catalogue/ matrix
- Identify needs and design correspondingly a holistic solution
- Promptly calculate project costs
- Individual composition of team for each project
- Organise a get-together of all employees in order to increase common understanding and motivation
- Quality assurance during the process and following up

4.1.8 Key partners

The partners that were identified by the groups differed, based on what was missing in their offer or could be complimentary. The partners can overall be put into 4 categories:

- partners that provide renovation services:
    - suppliers of materials
    - subcontractors for missing disciplines
- partners that create confidence and/or reach possible clients
    - networks
    - local non-profit organisations aimed at sustainability
    - house owner association, etc
    - hardware stores
- local/regional/national government for implementing legislations as well as providing subsidies
    - municipalities or provinces
    - energy bodies offering subsidies
- financial support
    - a bank
    - public bodies offering specific loans for energy efficiency measures

4.1.9 Cost structures

The groups dominated by executing actors have defined mainly the same main elements of their cost structure; salaries to key persons and craftsmen, tools/equipment and material costs. Some of the groups also define such cost elements; marketing costs including exhibition, WEB, concept development, rent, financing and insurance costs, costs related to warranties and claims

In some few models a foreseen cost is a fee to the advisor who brought in the customer.

4.1.10 Cross discussion of the models

There are more similarities between the different models than differences. This applies also across all countries, and we see few special characteristics per country except from Norway and Germany. Norwegian architects do not play that strong role in retrofitting projects as long as the façade is not changed. This also explains why all Norwegian collaboration models are dominated by executing actors, while in the other countries we see a more mixed picture. In Germany we even see an example of how public actors take initiative to form regional models for promoting more nZEB renovations. These differences may be due to the respective networks in the countries of the

COHERENO partners. In general Segel works mainly towards SME's and dena has got many contacts to public actors while working at the cutting point of economy and politics.

A common strength for all models is that there is a strong focus on offering a holistic approach and with one main contact point. Many of the models also have a clear understanding of which customer segments to target. Most of the models lack some competence/subjects in order to be complete, but this is to be solved by subcontracting.

The bigger consortiums seemed to have more challenges in forming a common business model. On the other side, we saw that smaller groups, as well as groups that already knew each other, came to a common understanding more easily.

Most consortia consider independent advice as important, but it may conflict with the business idea to be a complete one-stop-shop including consultancy.

In Norway, Austria and Belgium the anticipated customer needs and value propositions were checked with real customers of companies within each group. Based on the feedback, the groups adjusted their business model drafts. Some examples of feedback resulting in changes were that customers of one group felt that the value proposition was "too selling", and others stressed the importance of a tidy building site. A general feedback to more groups in Norway was that most of the homeowners are willing to pay extra for project management. Some of the groups anticipated beforehand that this was not the case, and therefore "baked" this into the calculation of execution of the project. Several homeowners pointed at feeling safe, and a predictable result (incl. the prize estimation), together with competent workers to be crucial. One group initially included into their value proposition that it should be possible to live in the house during renovation. The feedback from homeowners showed that this was not important to the vast majority.

None of the groups has been specific about numbers for income and costs. However, as the contribution from the COHERENO project was limited to two workshops, they have to elaborate this in the further business development. Another weak point is that customer relationship is lacking a targeted approach. Many groups struggle to find and acquire customers with their existing channels. We see that they all are able to make rather long list of different channels to reach the customers, but how to make a smart and clear mix of this seems not obvious for all groups.

The main learning between the models is to improve the focus on quality assurance issues during the whole process, and to include at least some type of guidance for applying for public funding such as grants or low interest loans.

5 Strategic focus and implementation

5.1 Visions and main targets

5.1.1 Visions

The different groups defined visions, i.e. "a lead star" for what to achieve by the collaboration structure. Some good examples are listed below:

- Be a frontrunner for upgrading to comfortable, safe and energy efficient single family homes.
- Be the regional reference for qualitative energy efficient renovations
- Stimulate sustainable renovation of monumental; residential buildings by offering tailored advice for energy renovation and monumental values nationwide.
- In five years "NN" will be a well-established quality brand for ambitious and deep modernisation of SFH
- In X years we will be established as a well-working renovation network including competent planning and executing
- Initiate a larger campaign to renovate nationwide and show how to do this in a high quality way.

5.1.2 Main targets

The facilitators of the workshops also challenged the participants to define tangible targets for their cooperation. All groups in Norway, Belgium, Austria and one group in the Netherlands defined different criteria and numbers for each of them.

The most ambitious example in terms of volume (a Norwegian group):

Year	2015	2016	2017	2018
# of signed contracts for nZEB Upgr.	7	25	100	200
Backlog in EURO (signed contracts)	1.5 M	5.3 M	21 M	42 M
Client satisfaction rate of process (scale 1-6)	4	4,3	4,6	5
Client satisfaction rate of result (scale 1-6)	4,5	4,7	4,8	5
Variation of size of projects (EURO)	53'-421'			

Main reason for the strong growth is that the group has plans to recruit more contractors to take part in the collaboration.

Below a more typical example is presented (from one of the Austrian groups):

Year	2016	2017	2018	2019
Selected initial contacts	20	50	50	50
Renovation projects	5	10-15	10-20	10-20
Percentage of total turnover (%)	<10	<10	5-50	5-50
Turnover/project (EUR)	100,000	125,000	150,000	150,000
Information events	1	2	2	2

The variance in the ambition levels are reflected in terms of; a) number of projects and b) average size of each project (i.e. type of renovation). Among the groups, which have defined targets, the lowest numbers of projects per group are 4-5 by year 2018. These targets are set by one group in each of the countries, which have defined targets (Belgium, Austria and Norway). The reason for such low targets is that these groups have a small contractor as a major player. This company is therefore the bottleneck for growth. It is therefore interesting to note that the group with highest ambitions in terms of number of projects consists of a large technical contractor, a very big hardware store, planning company and a carpenter/contractor. The group has a very wide interface with potential clients, and therefore sees a huge potential in the market. The partners agree that they therefore will increase their capacity by hiring more contractors (which are typically small companies) as their backlog increases.

The purpose of defining both a vision and tangible targets for the collaboration is to calibrate the ambitions of the partners within each group. Through the discussions, we saw that different participants had initially different aspirations for the cooperation. During this discussion, the views were tuned.

The risk of not taking this discussion is that each partner will invest differently in terms of time and efforts to develop the cooperation (due to various expectations of outcome) and this may lead to frustration and conflicts.

5.2 Strategies and actions

In the second workshop, also strategies and action items were defined for most of the groups. The common structure was to challenge the groups to define a strategy for each of these subjects:

- Market
- Product/service
- Organisation and processes
- Economy and growth

5.2.1 Market strategies

Below two examples of market strategies are listed:

a) **Visible and Customer oriented**

Our focus is directed towards homes built in the 60- to 80'ies

- Be visible in upgrading towards better homes
- Common website
- Differentiate by visualizing the uniqueness of the concept
- Easy to understand and safe for the client
- Develop a brand

The main actions to support this are:

- Increase visibility through channels as exhibition in hardware store, WEB site, building site, social media and press coverage
- Be certified by Enova as energy advisor
- Develop the unique concept – create a brand
- Develop easy communication procedures and materials for the client
- Information evenings for owners organized jointly with local bank

b) **Convince on the first impression (14 days to renovation)**

14 days to renovation will be borne in mind by (potential) customers

- Find and select strong partners in the region

The main actions to support this are:

- Get in contact with brokers and real estate agents
- Update the website(s) and create a social media website (page on facebook)
- Send common mails to existing clients
- Ask home-owners of recently finished projects to serve as a reference
- Acquire common marketing materials
- Set up a “Punschstand” at Christmas
- Contact potential local partners

5.2.2 Product/service strategies

Below two examples of product/service strategies are listed:

a) **Competitive and holistically upgrading**
   - Subcontracts tenders
   - One contact point from a to z
   - Safe and predictable result
   - Necessary designing and planning tools

   The main actions to support this are:
   - Establish tendering routines
   - Invest in additional necessary design and planning tools

b) **Modular planning concept allows more flexibility**
   - Attach/add the service to required procedures (EPC)

   The main actions to support this are:
   - Establish the consistent use of BIM
   - Try to integrate use and method of the planning software more regularly
   - Provide sales training via the network in order to clarify the offer
   - Develop new software packages (house bying check, market value check)

5.2.3 Organisation and processes strategies

Below two examples of organisation and processes strategies of the different groups are listed:

a) **Interdisciplinary involvement**
   - Competent and reliable
   - Interdisciplinary
   - Coordinated
   - Motivated
   - Quality assurance of final deliverable
   - Quality assured cooperation throughout the process
   - Tidy and predictable agreements
   - Sales organization across the group

   The main actions to support this are:
   - Develop procedures for training new and old employees when it comes to implementation of new knowledge and the concept
   - Develop and implement a common overall quality assurance system (interface list / matrix)
   - Develop contract model between the group members and templates agreements towards customers
   - Implement sales organization across the group

b) **Strong collaboration**

- a robust construction for the collaboration
- a fluently functioning communication and consultation between partners
- a holistic offer with complementary partners

The main actions to support this are:

- choice of the collaboration form (legal construction)
- writing and signing the collaboration agreement
- organising on site meetings
- installing a “board of directors”
- searching for missing links in the offer
- a sound financial and legal construction

5.2.4 Strategies related to economy and growth

Below two examples of strategies for economy and growth are listed:

a) **A well-established channel for growth for the partners**

- create a fair cost structure and revenue stream
- realize a healthy growth

The main actions to support this are:

- agreement on prices and margins
- agreement on commission and salary of the contact person
- agreement on incentives for partners
- agreement on invoicing procedure, general conditions, payment conditions
- agreement on how to divide the costs between partners

b) **Economically effective for all persons involved**

- Realize economically sound projects with high cost efficiency for all persons involved (home-owners, partners)

The main actions to support this are:

- Learning curves and effects are passed on to clients
- Establish and guarantee an effective modernization process
- Provide a sound and quick basis for the purchase decision (facts and figures)
- Achieve cost reductions by using optimized and new components

5.3 Implementation and ongoing evaluations

After the last workshop, the COHERENO partners sent these documents to the participants:

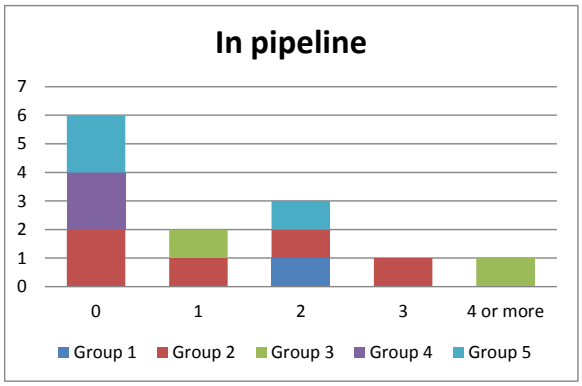
- Revised business model canvas
- Complete revised business plan (approximately 10 pages each)
- Revised PowerPoint document which was used in the last workshop
- A leaflet presenting each business model on a template including the COHERENO logo (see annex 1).

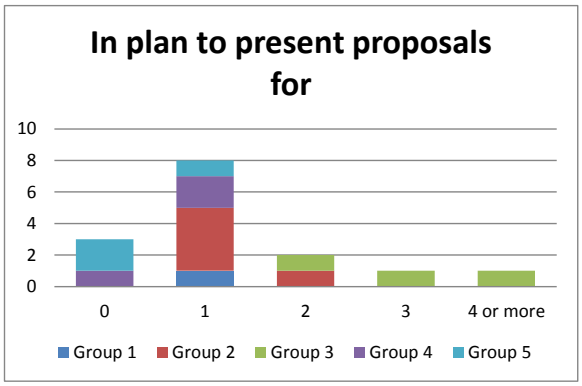
5.3.1 Norwegian groups

After the completion in March, the partners have been in contact twice with each group; in April and in June. The groups have had internal follow up meetings to discuss further proceeding. All except one group reported that they have projects in the pipeline. All also informed that they are still motivated to continue the work with developing the cooperation. The crucial thing is to get started with the first pilot project. At time being there are many "traditional" projects in the market, and as most of the partners in the groups also are active in new construction, there is a challenge with capacity. There is still high activity in the Norwegian construction market.

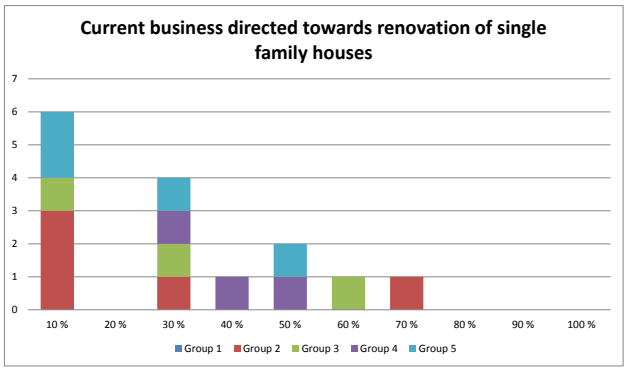
The result of this project is that there are four groups plus one company which have defined each their model for addressing the upgrading market of single family houses. The groups are located in three main parts of Norway; two in central eastern part, two in "Mid-Norway" (Trondheim) and one in Northern Norway. The COHERENO project has therefore succeeded to spread the concept to different parts of the country.

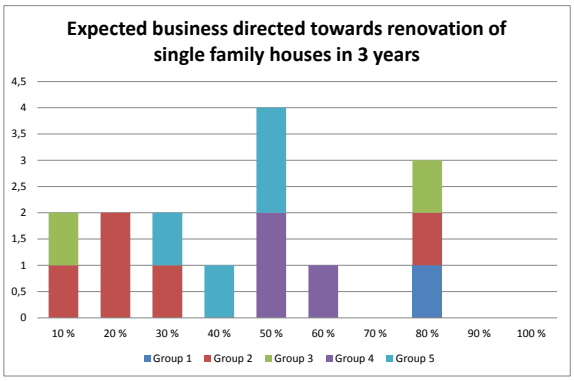
Three months after the final workshop, none of the groups had started a specific pilot project. However, as may be seen in the graph below, all have projects either in the pipeline or in plan to present proposal to customer:





The graphs below demonstrate how the participants consider the share of their business in the upgrading market of single-family houses compared with the situation today. The message is that this is expected to increase for most of the companies.





One of the groups has already established a separate company to operate their common activities, and which will be the entity to invoice the customer (see their web-site; http://www.vikenrehab.no/). The other groups has so far not formalised the cooperation in written agreement. It is too early to say how the internal cooperation within the different groups will continue.

Except from the single company in Lofoten, there are some experiences within each of the groups in retrofitting above the existing building code. As moderators, we experienced that the companies with such experience motivated the others in the group during the process. A few of the companies seemed less motivated (or may be less prepared or ready) for the process. This resulted in some frustration among the other participants in the group. In one of the cases where this happened, they had follow up meetings afterwards and now seem to be back on track.

All groups have expressed the need of additional assistance for implementing their models and get through the first pilots. Segel therefore discussed this with Innovation Norway, which was positive to the idea of filing an application for funding for "Business Network" for two of the groups. The main focus of the project supported by Innovation Norway is three folded; a) develop a collaboration contract proven by a lawyer, b) develop a more detailed action plan for the cooperation and c) get started with the two first pilots. One of the groups in Trondheim, where the involved companies already had experience in working together, did not need further assistance. The case in Lofoten was a single company, which wanted to develop a one-stop-shop by being the project manager and involve sub-contractors for the specific projects. After the participation in COHERENO, the company received a grant from the Norwegian State Housing Bank for documenting learnings from the two first pilot projects.

5.3.2 Belgian groups

The continuation for the different groups has been quite different, but overall positive. The results of the project is that all groups have worked on their collaboration and the common offer they would provide to customers. The first Belgian group resulted in a network of a few contractors together with an architect, who through COHERENO got to know each other and have since referred each other and increased more structural collaboration. They have strengthened their collaboration in different projects that are being implemented since then. They optimized their services, by looking at what expertise the different partners offered and focusing on their own strengths. As an example, before the collaboration, two companies installed cellulose insulation, but one did this as a core business. The other company has stopped this activity, and now has the first one execute this, so it can focus more on its own strengths.

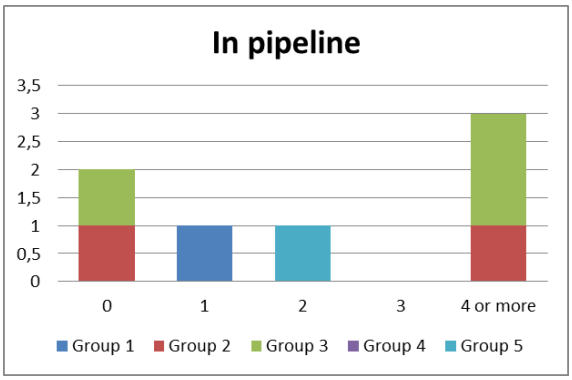
The second group was not an ideal mix of partners. This did not result in a strong collaboration as formed before the workshops, but still offered the participating companies access to each other as well as the larger network of professionals in COHERENO. In particular, the ventilation companies that participated clustered together. One of the companies has used this opportunity to strengthen its own offer and search for new partnerships with companies from Belgium as well as from other countries.

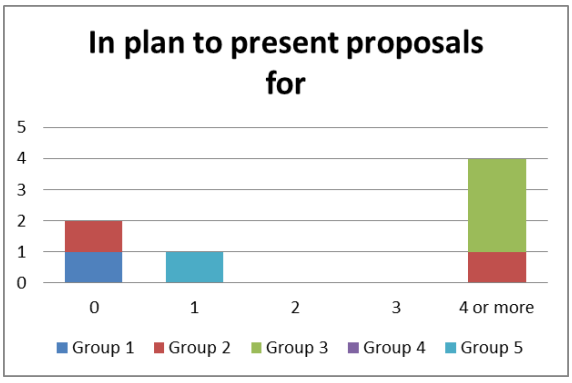
The third group used the workshops to define a business model and has since implemented the "renovation shop" concept into a holistic approach and offer for energy efficient renovation.

The fourth group has defined a new collaboration, with a different main focus and with some new partners. This new collaboration will be structured using the COHERENO methodology.

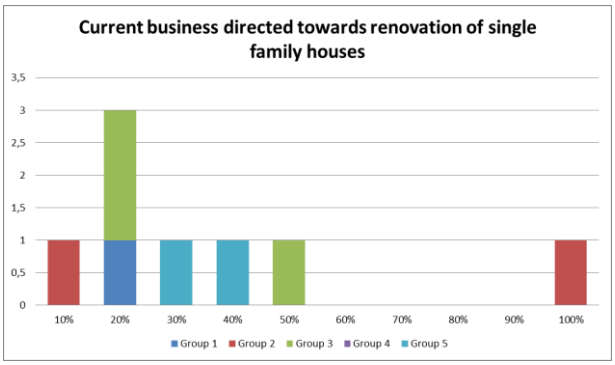
The fifth group had the most concrete collaboration already forming, with the two main participants really having the same ideas on what quality in construction means, and how important it is. The support through the workshops has helped them formalize a lot of the ideas that were already lingering. An example of this increased collaboration is their shared stand on the Innovation Fair, where they created one big open space to tell one unified story to potential customers.

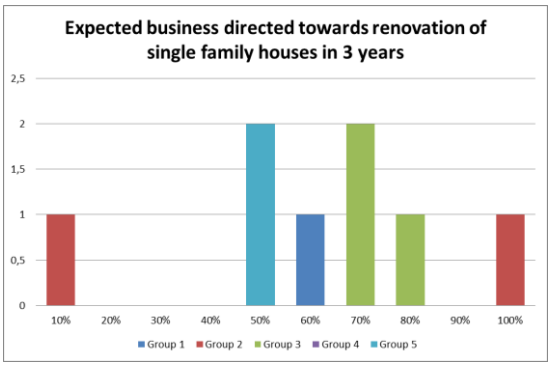
Some groups used the collaboration model in new projects. The graphs below state that the five groups either have projects in the pipeline or plan to present proposals to customers.





All partners are quite active in the energy efficient renovation sector, and are expecting to increase the share of renovations in their activities, as shown in the graphs below. One company already had 100% activities in renovation, and one did not expect an increase. Both were part of group two, again illustrating how divers this group was.





One group has formalized the collaboration and transformed their activities into a one-stop-shop for supporting homeowners in the process of energy efficient renovation. The other groups did not take the route of a formal collaboration structure, because of legal issues like the position of the architect and/or because they felt their own companies had a stronger image than a collective new one would have.

5.3.3 Austrian groups

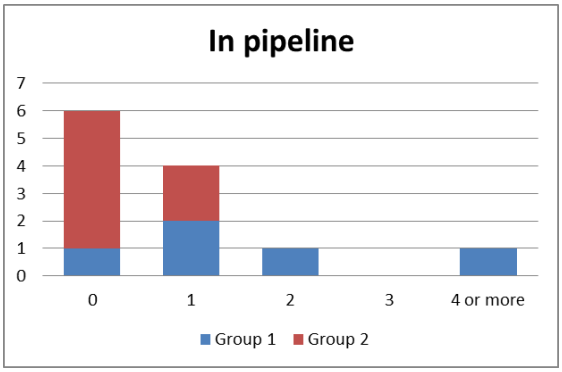
After the completion in January 2016, the partners have been in contact twice with each group. One of the collaboration groups already presented their common model at the biggest building fair in Vienna (BauZ) in January. All groups have had internal follow up meetings to discuss further proceeding. All also informed that they are still motivated to continue the work on developing the cooperation.

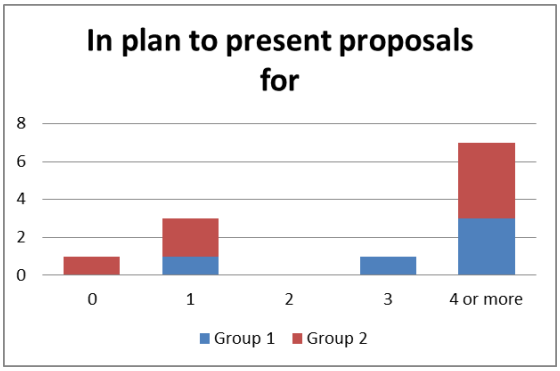
It is crucial to merge the acquisition of potential customers under the common idea, even if they still have their own businesses. They sometimes find it hard to act as one group and differentiate between "traditional" projects. Depending on the ambition of the renovation the first contact point already has to think (and decide) in terms of the collaborative structure.

The concept of COHERENO successfully spread over different regions of Austria including Vienna, Lower and Upper Austria, Burgenland and Tyrol. One potential group in Innsbruck unfortunately could not take part in the workshops although the level of interest initially was high.

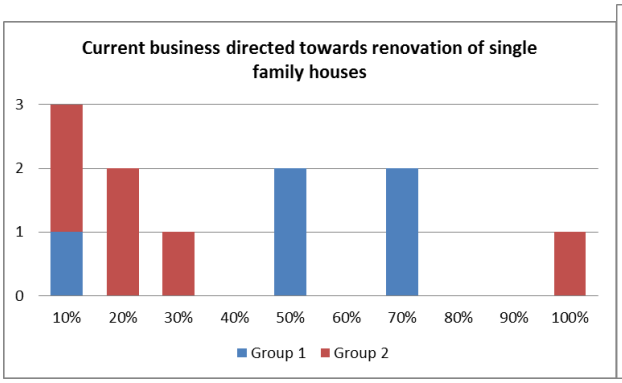
Unlike in other countries the workshops started at a later project stage and therefore cannot be evaluated in terms of realised projects. However, potential prospects or projects already in the pipeline show first success on the market. At least three groups already had one potential client before the workshops and used them to put their collaboration on a solid basis. After evaluating the feedback of two groups, it can be argued that the renovation market requires some deeper consideration.

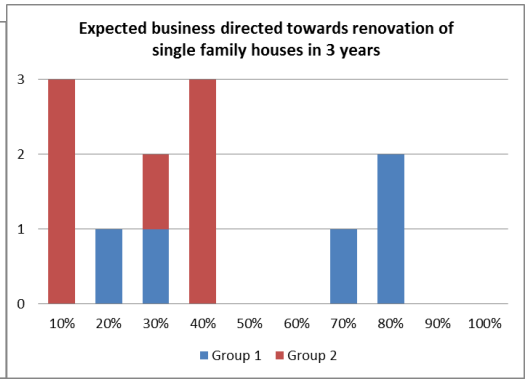
The graphs below state that the two groups either have projects in the pipeline, potential prospects or plan to present proposals to customers.





The last two graphs demonstrate how the participants consider the share of their businesses in the upgrading market of single-family houses compared to the situation today. Generally, the percentage of SFH renovation is rather steady or slightly increasing in proportion to other market segments.





Group 1 specifically puts an emphasis on the renovation of SFH aiming to increase the percentage in this segment. On the other hand, the second group identified SFH renovations as one of several market segments to target.

It is even more gratifying that one group already set up a common website; www.hochwertig-sanieren.at, and officially presented their generated business model at the Austrian building fair BauZ, which took place at the beginning of 2016. Elements, strategies and actions created at the two workshops helped the tow partners to set up the collaboration and enter the market in a pro-active way.

All groups have expressed the need of additional assistance for implementing their models and get through the first pilots. It was found very helpful to have a moderated process to structure their ideas, organise the tasks and responsibilities and to define a clear strategy. The process with one group also revealed latent conflicts and different understandings of how the business should run. The mediation especially in bigger groups was very much appreciated.

5.3.4 German groups

Four collaboration structures have been established.

The group in Hamburg started the work immediately. They did not number the projects in pipeline, but they have some. Starting points of the first ones are the beginning of 2016. They have several home owners in the backyard, who are interested in one stop-shop renovation. They want to check out if the developed structure will function and modify necessary aspects.

The groups in Kassel have been activated. But they need more time for discussions and decisions. The network group (group 3) discussed to develop a strategy within the next months, starting with writing a story book of the network. The target is to establish the organisation within the next two years. The group has contacted people from “InnovationCity Bottrop” a climate-friendly urban redevelopment project for exchange of experiences. The Regional management NordHessen which wants to establish a regional renovation network in the city and around now carries over the accompaniment of the process via round tables and to get concrete results of a new network in the next two years.

The group in Ingolstadt will start working as cooperative in June 2016. Until then they have to clarify the credit with the bank. In February the association of cooperatives checked the statutes, in March the foundation assembly took place. The workshop with dena in April will make the business model more concrete and discuss deeper weaknesses and chances. They want to start with private home-owners of single- and double-family houses. Bigger projects need more time for preparation and will follow soon. It is planned to have both forms of projects in parallel

5.3.5 Dutch groups

TU Delft established five business models of which four will continue their market development. Besides these, TU Delft approached and informed six other collaboration structures. It is known that two of these have also developed their own (confidential) business model.

Most collaboration structures now have to implement their strategy and start to spread their offer to the market. Note that some groups target only a few houses per year, while others aim for a volume market of hundreds of houses per year.

One of the groups, “Take 5”, consists of five small companies, which combine their knowledge of energy saving measures, renewables and the implementation of these. The group includes an process manager and an energy consultant, especially working with ‘platforms of residents’ (residents’ associations) in neighbourhoods, an insulation company specialised in the application of Tonzon floor insulation, an installation company specialised in heat pumps and a company specialised in solar panels, monumental insulation glass, green roofs and energy data analysis. All companies are experienced in the owner-occupied housing sector.

Take 5 targets owner-occupants living in dwellings built before 1980, because of the high potential energy savings compared to newer houses. The geographical area is a part of the region Zuid-

Holland. The companies are under the impression that interested households belong to the higher income groups. They offer solid and independent advise about integrated energy efficiency solutions and unburdening of the client from advise until after-care. Transparency about the costs of the solutions and transparency about the consortium rules are seen as important.

The companies want to stay independent, to serve also clients that are not interested in integrated renovation solutions. Now the individual companies are doing very well and even employ more people. They are working more closely together and share software for business leads. They attempted to rename the collaborative model and registered another domain name, however they lack the time to invest in a more formal structure. The role of the process and energy manager as linking pin is weak. By that, Take 5 is not really targeting initiatives of residents' associations that are interested in energy savings, but the companies concentrate on individual clients. The insulation company experienced that municipal subsidies for insulation are still quite important for doing business, meaning other channels have to be explored than the other companies.

The Haarlemse Huizen Aanpak (HHA) is an existing collaboration structure, with the legal identity of a foundation, including energy consultants, architects and contractors; in total over 20 members. The municipality of Haarlem and the Province of North-Holland support the foundation. Haarlem is part of the region Kennemerland. The aim of the HHA is to improve the energy efficiency and comfort of private dwellings, with a focus on dwellings built before 1970. The HHA want to shift its focus to nZEB renovations and to offer integrated renovation solutions to homeowners including after care.

Potential customers are owner-occupants living in dwellings built before 1970 and especially built between 1930 and 1950; meaning no mass-housing, especially with higher incomes, above 50 years old and with high energy-saving ambitions. Also households buying a house (in the region Kennemerland), especially coming from outside the region are being targeted.

The HHA offers independent integrated advise about energy savings and renovation solutions, showing respect for the existing architectural values of the dwellings. The HHA will unburden the client from advise until after-care. A client contact person employed by the HHA, located at a 'renovation store', takes the lead at the start of the customer journey. All customers are then linked to one contact person (project manager) that manages the process from the first consultation until delivery.

Key partners are real estate agents, mortgage advisers, banks, notaries, neighbourhood platforms of residents, municipalities within Kennemerland, Province North-Holland, product suppliers.

Key partners or new members of the HHA could also be small (specialist) contractors, financial consultants and project managers. Small contractors could also be offered the position of preferred suppliers to keep their freedom to work with their own network of other suppliers.

Since the intervention of the COHERENO project, the HHA took a consultant in employment to be the first client contact. In addition, the website of HHA was updated. Next, a new structure for the revenue streams has been discussed. This discussion will finalised in April 2016. Since the second workshop, TU Delft advised several times about these and other issues of the business model of the HHA.

The foundation Alliantie+ is an existing collaborative structure between an architecture and consultancy office, around 25 large product suppliers companies and localised contractors (SMEs). Alliantie+ has developed solutions for the renovation of elements of mass-housing dating from the sixties and seventies, e.g. for the facades, the roof, building services, kitchen and, bathroom. A combination of those solutions can renovate a home to a nearly zero-energy level. The concept of the Alliantie+ offering solutions for renovation of components allows a phased approach. If a solution is applied it is possible to replace another component without harming the rest of the dwelling: 'no regret solutions'. The owner-occupants can save money to replace another component after a certain time.

Potential customers are owner-occupants living in row houses built in the sixties and seventies and households buying those houses on the market or buying their own house that they have rented before. Those households can stay in their house and update it stepwise to a zero-neutral house.

Alliantie+ offers an integrated approach from advice until after-care, taking away all worries, and a guaranteed technical quality and energy performance. Alliantie+ will develop a media-mix (leaflets, local television, website, etc.) to be used and to be adapted for use by local-based partners and probably renovation stores. A potential client can express his wishes with the web-based house configurator and is then directed to a local-based contractor. Contracting partner of the client is the local-based contractor. The contractor is also responsible for the after care. To keep the contact with the client a web-based system will be build, 'my-house-file' that also could be stored in the back-office of the Alliantie+.

The first implementation of renovation solutions of Alliantie+ took place February 2016 in properties of a social housing organisation. Alliantie+ wil build forward on these and other experiences to optimise the technical solutions, the renovation process and the quality assurance aspects. As part of the COHERENO project representatives from Alliantie+ explored the possibilities for offering the solutions to owner-occupants too. Still much effort has to be paid to e.g. the customer channels, however they are willing to do this and indeed target the owner-occupied sector too. Alliantie+ will present their business model on a Dutch conference organised by TU Delft, May 2016 about nZEB renovation of private houses.

The fourth Dutch group is Alliantie Comfort en Energiebesparing (in English: Alliance Comfort and Energy Saving – abbreviated ACE). ACE includes one consulting company and two insulation companies. An energy supplier and an energy advisor assist the consortium. ACE aims to renovate terraced homes built in the 1970s in the municipalities of Veenendaal (63,000 inhabitants) and Nijkerk (41,000 inhabitants) by offering a standard set of measures. They provide advice on energy measures and financing, execution of building and/or installation work to improve the energy performance of the respective dwelling(s). They offer to take away the difficulties and worries of customers regarding a home renovation; energy cost savings and the use of certified. The company that is responsible for the client contacts during the whole customer journey will approach potential customers from door to door. Before the municipality sends a letter that ACE will approach the home-owners. It is expected that 10% of such visits will result in an energy advice and an offer.

In February the door-to-door approach started in the first neighbourhood of the municipality of Veenendaal. Also the first implementations of energy renovations are taking place.

The partners of ACE have formalised their cooperation in a formal contract and discuss every week about the progress of the actions

The fifth Dutch group is the National Platform for Tailored Advice on Energy Renovation of Monuments. This platform is an intended collaboration between, among others, the national government, municipalities and some consultancy organisations, initiated and led by representatives of a consultancy organisation, an architect, a federation of municipalities and an academic institute. The collaboration is targeted towards owners of monumental homes in the whole country, including homeowner associations, by offering a master plan for energy measures and monumental values and references to acknowledged professionals. Local/regional front offices (consultancy points) will be created where owners of monumental homes can gain advice. Also a national website could serve as a community platform to advice each other about energy renovation, monumental values and appropriate products.

The national stakeholders do not see enough market for a national platform for energy renovation advice of monuments at the moment. Most stakeholders think that instead of this top-down approach a bottom-up approach starting from municipalities and citizens could be more realistic. The core team of the consortium plans to develop a new model together with the municipality of The Hague during 2016. This platform of owners of monuments can work as an engine for stimulating needed initiatives from the market and governmental stakeholders.

6 Discussion of the process and the results

6.1 Experiences from the processes

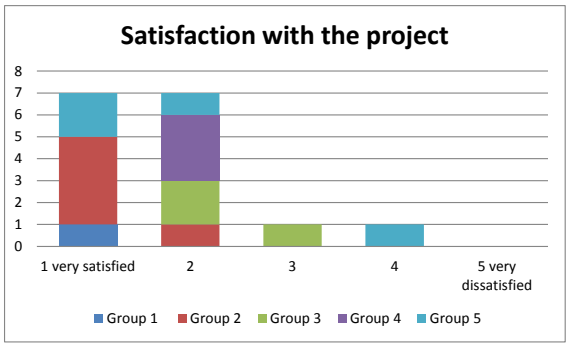
Overall feedback from the participants in all countries is very good regarding the process, but many commented that there should have been more time (than the two full days workshops).

The Norwegian workshops were completed over a rather compact period and this gave room for the facilitators to share experiences between the groups (notably regarding feedback from house owners). In the other countries, the workshops have been spread up to one year between the first and second workshop.

6.1.1 Norwegian groups

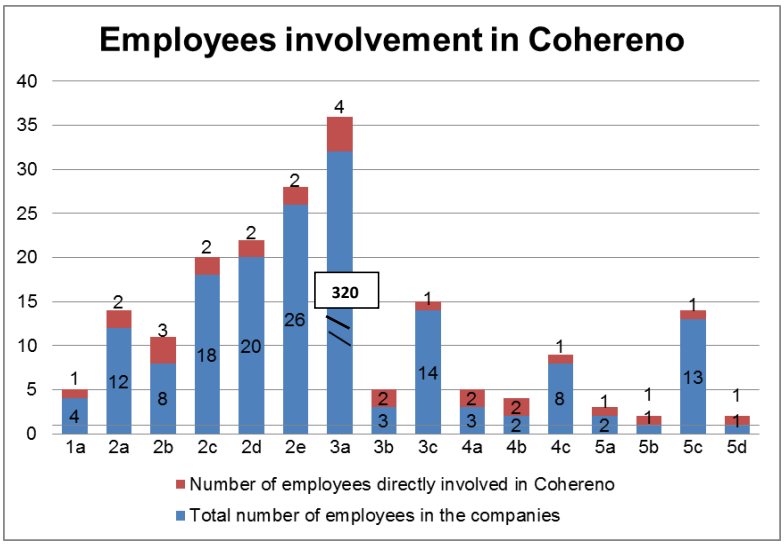
In the graphs below the main results of the evaluation forms from the participants on how they experienced the process. The responses are categorised by groups.

All except one company (a large company) involved top management in the process.



This graph demonstrates the overall satisfaction of the participation. The person with the lowest score found it too theoretical. The person who gave a "3" referred to uncertainty about the commitment of some of their partners.

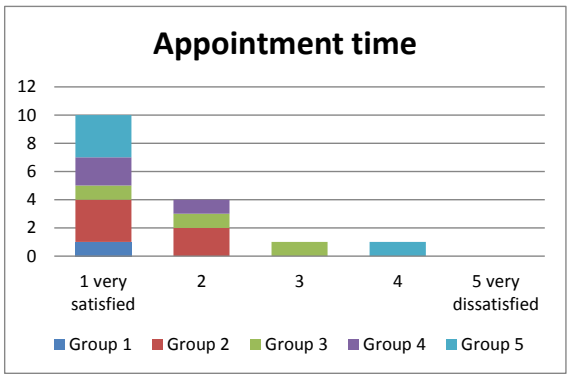
In the graph below we see the size of the companies participated in the workshops (numbering describe which group they belong to).

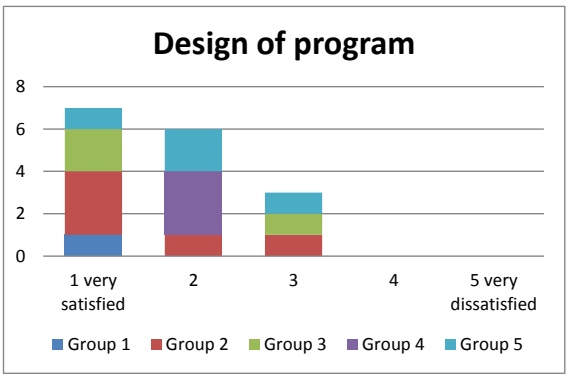


Note: the scale is wrong for company 3a as it has 320 employees.

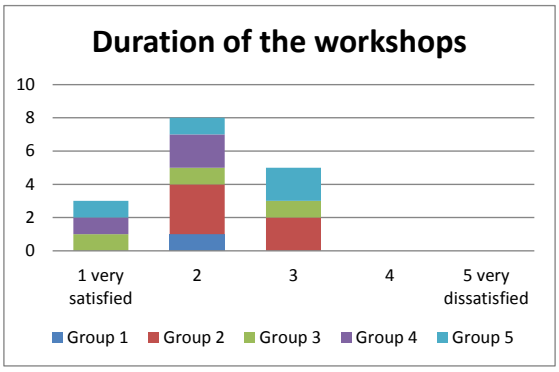
The main range is from 1 employee to 26 and with the one exception with 320 employees, which is a national contractor within the technical subjects. The smallest companies are mainly within consulting, planning and advising companies. The companies within the second group are most common in size, and with relatively many employees in total.

The graphs below show that the participants were quite satisfied with both the appointment time and the design of the program. It is difficult to see any clear differences in answers between the groups.

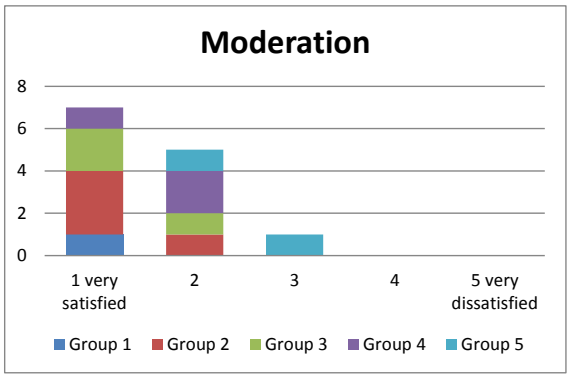


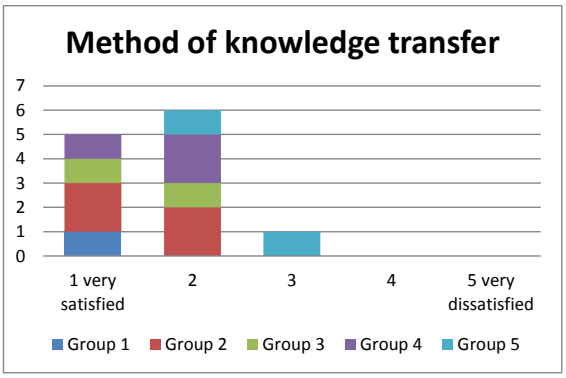


Regarding the duration of the workshops, the satisfaction is somewhat less as shown in the graph on the right. The comments were that they would like to have more time. This is an interesting point, as during the planning of the COHERENO project, we were afraid that the companies would not have enough time for these workshops. We believe that the reason for their wish, is that the workshops were about their own businesses and not a "traditional" seminar.

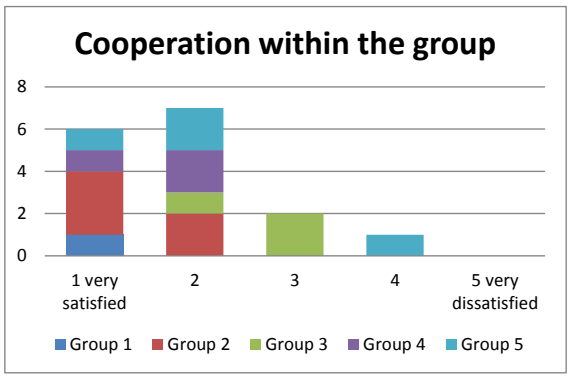


The participants were also very satisfied with the moderation and method of knowledge transfer. In their verbal comments, they were even more positive in their expressions than the numbers shown below.





As shown in the graph to the right, most of the participants were quite satisfied with the cooperation within the group. Few of them commented that the commitment could have been stronger from some of the other partners in the group.



The COHERENO researchers/moderators also experienced this as a successful process. One challenge was that "readiness" in understanding the core idea by each participant differed. Therefore the process was also a "maturation" of their motivation for actively participate. The subjects to be worked through in only two days are quite extensive. Ideally, there should have been three workshops.

The main reason for good running processes is that there were two persons with complementary skills; Segel with experience in moderating strategy processes with several participants and Sintef with special competence within construction of buildings. Additionally, there was a very good help in good process tools, including the detailed description in the Guideline and prepared working documents.

It was quite dense with the time between the two workshops (and for all groups). In between the two workshops (for all groups) we managed to organize that each participant had to interview one customer, and info from all interviews was structured and presented to the House Owner Association for further feedback. This was again structured as new input for the second workshop for each group. This may sound as quite a rush and optimistic to do, but at the end it functioned quite well. This gave a more fluent and intense process, in which it was possible to draw synergies between the groups.

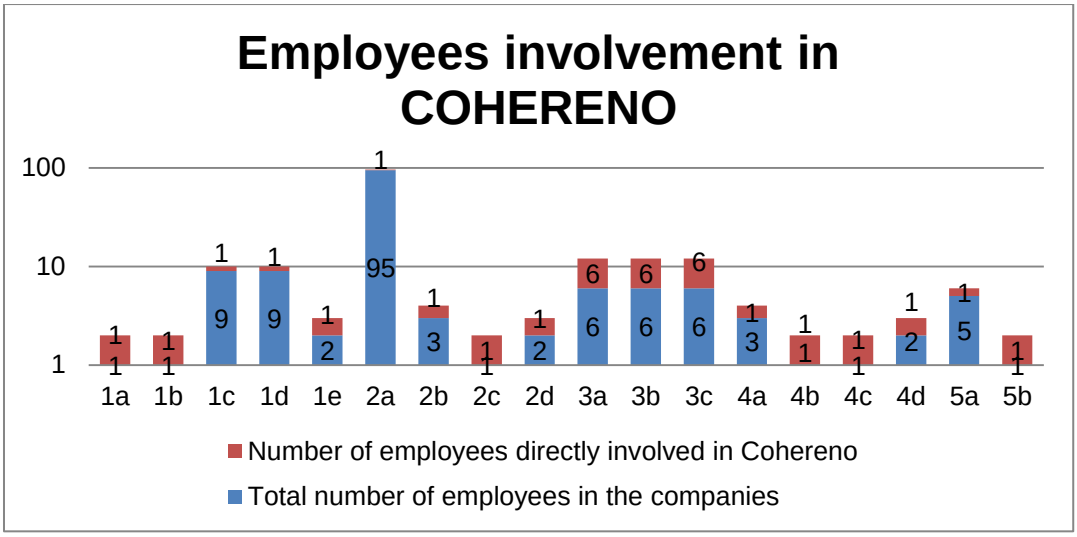
6.1.2 Belgian groups

The overall evaluation of the workshops was positive, but most participants commented on the time. Most groups found the SWOT analysis as a bit too long. One group would have preferred more attention to legal questions, even though a legal expert from VCB was present during this meeting and there was focus on these issues already, another group would have preferred a more complementary composition of the group.

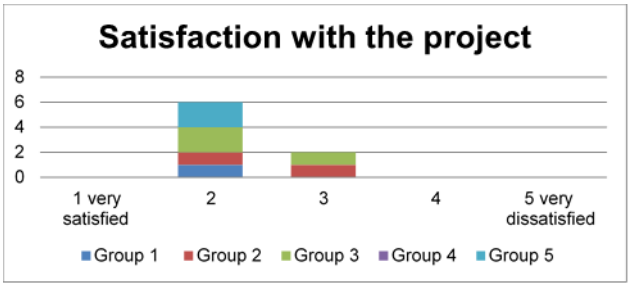
The graphs below show the main results of the evaluation forms from the participants on how they experienced the process. The responses are categorized by groups. The numbering is the same as presented earlier in this document.

All companies involved their top management in the participation of COHERENO. This can be explained mainly because most companies were quite small in scale. Often the person participating

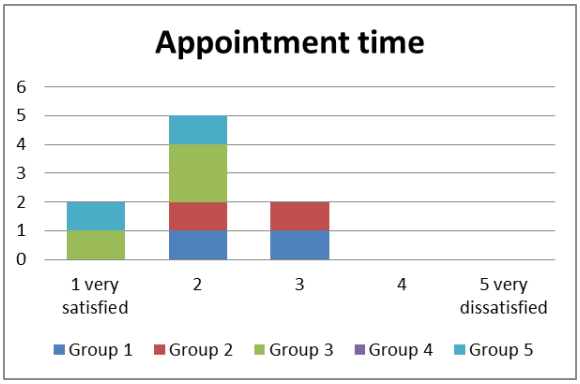
in the COHERENO workshops was the manager himself. The Flemish construction market is characterized by a large portion of SME's, this is clearly reflected in the composition of the groups.

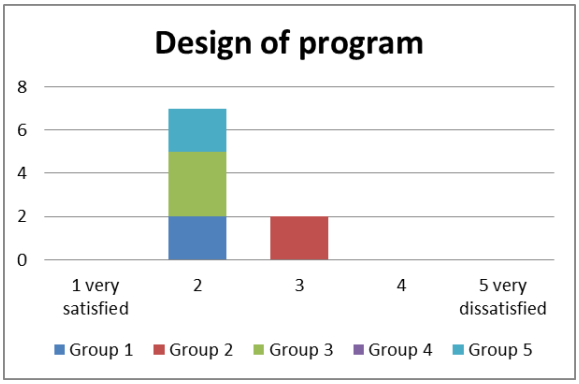


The graph to the right demonstrates the overall satisfaction of the participation. Overall the response rate of the evaluation form was low. Two people who evaluated the workshops as average (a score of 3) found the approach to theoretical at times (group 3), or experienced a lack of cohesion within the group itself (group 2).



The graphs below show the satisfaction of the groups with both the appointment time and the design of the program. The evaluation of the design of the program was overall satisfying except for group 3. It was group 3 were the companies were brought together by a third party and thus their expectations were less clear.

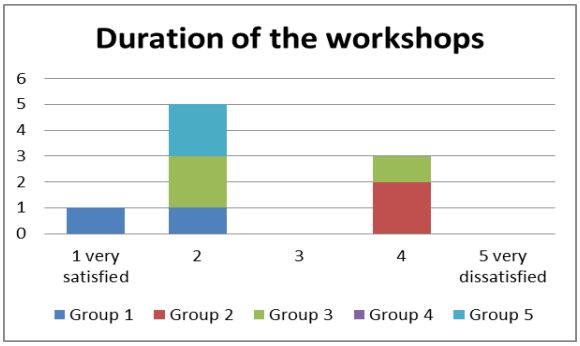


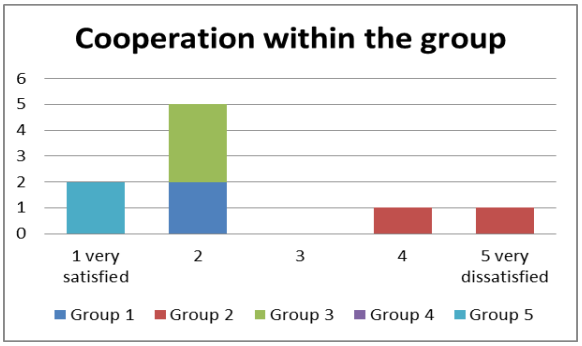


Regarding the appointed time, the results were more fragmented. Group 3 and 5 were satisfied, for group 1 they would have preferred more attention to the legal issues of the collaboration. In this

group an architect was involved, and in Belgium this poses some specific legal issues. We had anticipated these questions, so for VCB a legal expert was present during the meeting and we discussed these issues for around one hour. Still, this was not enough, so in these cases maybe a half day could specifically focus on legal issues. Group 2 was less satisfied because of the difficult collaboration.

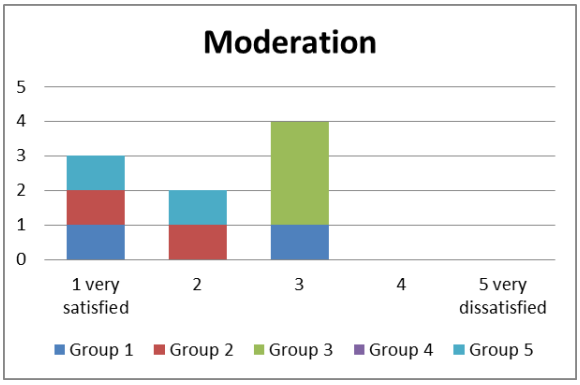
This is also reflected in the evaluation of the duration of the workshop. Group 1 and 4 were satisfied here, being content that they got the opportunity to sit together with likeminded people they - or a colleague - already had worked with before. For group 3, one person found that too much time was allocated to the development of the Business Model, even though the group had decided before the start of the workshops to mainly focus on this aspect (since the strategies would be developed in another project). As for group 2, the participants found the process to longwinded because they had no clear image of the collaboration that would arise from the meetings, and so the composition of the group and the interest of the participants proved to be very fragmented. This clearly contrasts to groups 1 and 3.

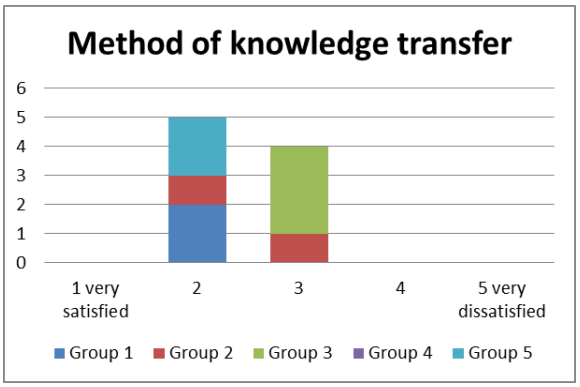




The overall satisfaction with the moderation was average to positive, though the verbal feedback after the workshops was more positive than the answers of the evaluation form. The participants, who evaluated the moderation as average, remarked that they would have preferred a stricter time management. It can also be noted that the second group , in spite of being dissatisfied with the cooperation in the group, they were satisfied with the moderation.

As for the method of knowledge transfer, mainly group 3 was only moderately satisfied, because they already had done some preparations beforehand and were mostly colleagues, they did not feel like they gathered a lot of new knowledge.





The COHERENO researchers/moderators experienced the workshops as an overall successful process. One challenge was the differences in the expectations of the outcome. For groups were people already collaborated through a binding actor, the process went quite smooth, as their expectations were quite similar. But the less strong these bonds were, the bigger the expectations differed. Groups 1 or 5 are examples of very strong bonds, group 2 of a very weak bond.

Another challenge was the appointed time and the proposed structure of the process. For groups who had a more or less clear image of possible collaboration, the process was clear and interesting. But for groups were the idea of possible collaboration still had to mature, the structure of the first day maybe would have been inverted. Starting with a rough business model, including prototyping, and thus first defining a rough idea of the collaboration, would have focused the discussions on the SWOT analysis. In some groups now, this discussion was too general, because participants had no idea on what the collaboration would look like.

Having different moderators was a very interesting experience. Especially with different backgrounds. One workshop, only one moderator could be present due to unforeseen circumstances, and this was far from ideal because this moderator had to guide the discussion as well as prepare the report. On the other hand, VCB was able to provide a legal expert who participated in the workshop where these questions were likely to arise, and this was experienced as a very strong addition. So here the lesson learned would be to analyse the need for specialized knowledge between workshops, and tackle this with an expert in the next workshop.

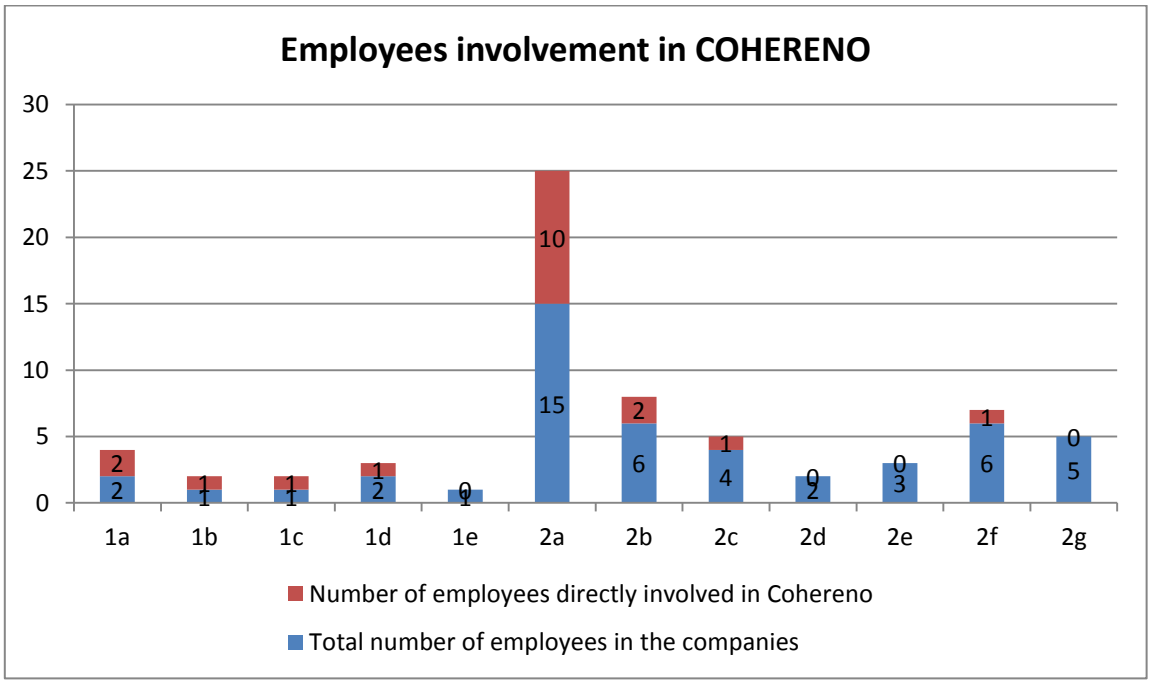
The preparation of the workshops itself went smooth, thanks to the manual and explanatory documents that were provided, as well as the template for the presentations, an example presentation and extra info. Also, we were trained on the subject during different partner meetings by Segel directly, who used their own experiences in general as well as specifically for COHERENO to explain to the other moderators how to prepare and what to expect.

6.1.3 Austrian groups

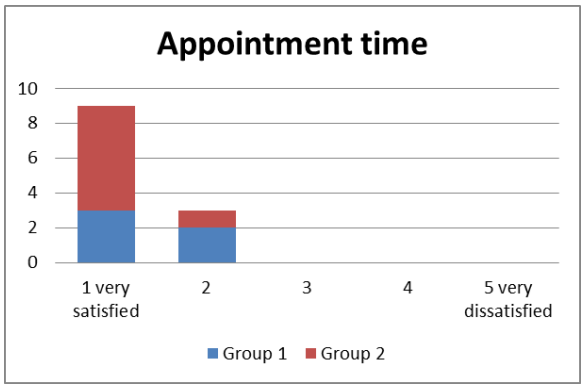
Overall feedback has been provided in Austria by two groups, which also consisted of a larger group of participants. The feedback can therefore be seen as valuable input in order to learn from the process and to improve the overall design.

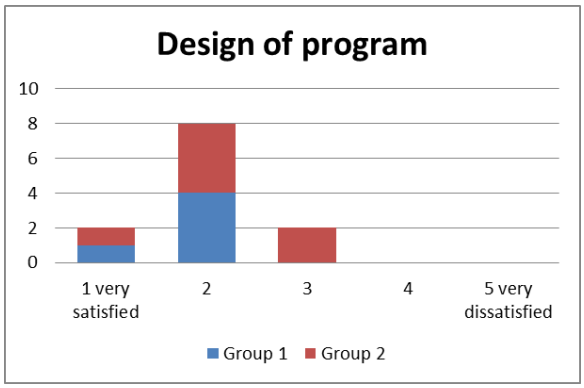
The graph below shows the main results of the evaluation forms on the satisfaction and impression of the two workshops held. The responses are individually shown by group. Both groups were mostly satisfied with the information they received, the business model generation and the overall concept of the workshops. Group 1 was mostly satisfied, whereas group 2 were just satisfied. General comments on what could be improved were not provided, which makes it difficult to interpret the feedback in detail.

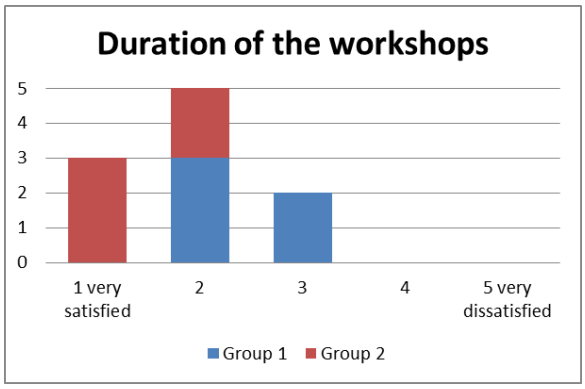
In the graph below we see the size of the companies involved in the COHERENO workshops. The numbers on the x-axis describe which group they belong to. In general, the participating companies are small-sized companies, employing 1-6 persons. Bigger companies (as seen in other countries, for example in Norway) were not among the participants.



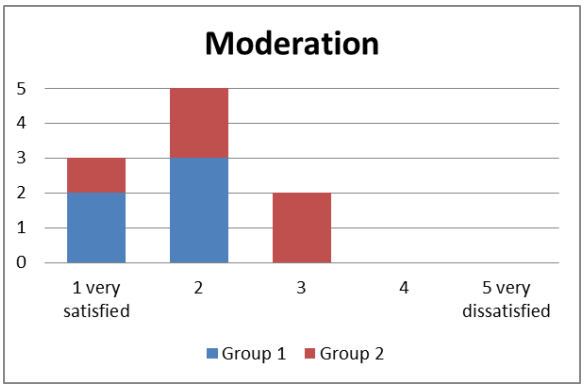
The following three graphs provide more feedback on the overall satisfaction with the “appointed time”, “the design of the program” and “duration of the workshop”. Looking at the appointed time it can be stated that the format of two-day workshops was appreciated, actually another day in order to review first experiences with the action plan was mentioned and highly preferred.

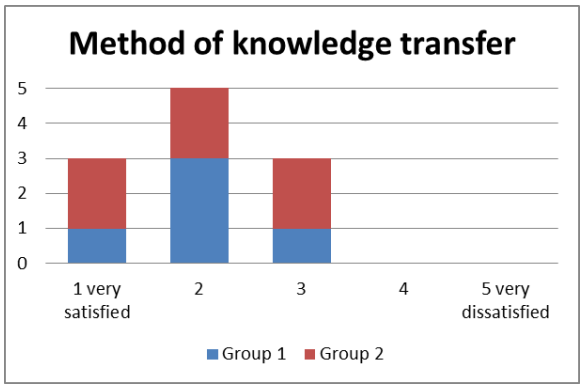


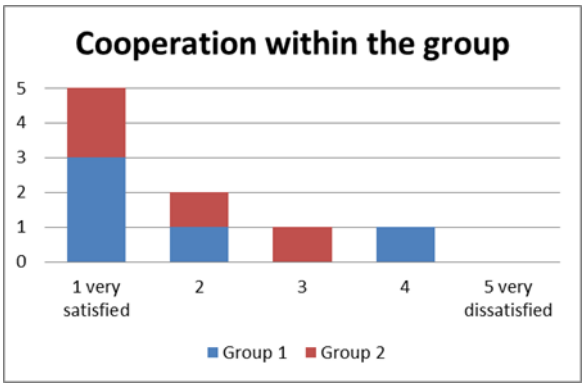




The moderation of the workshops was experienced mostly satisfying; however, there is still room for improvement. In Austrian workshops, the business model generation took longer than expected due to the fact, that in general only person of the group participated in the Business Collaboration Events and was familiar with the method of business modelling (by Osterwalder & Pigneur). The effort to introduce and work with the model caused some additional effort.







The cooperation within the group was mostly experienced positively. The workshops clearly generated a momentum to deepen the cooperation and/or to motivate the participating actors bringing their (long-held) ideas into action. The majority of participants was “very satisfied” with the cooperation generated within the workshops.

In contrast to other countries where consultants experienced with the business modelling carried out the two workshops (Segel in Norway or special consultants in Germany), it was quite difficult to engage and motivate the Austrian groups from scratch. Moderating skills and the special competence with energy efficient buildings however ensured a successful process. The guidelines provided by the WP leader were a very good help in the preparation as well as in the execution phase.

The three main aspects in Austria, which could improve the process can be summarised as follows:

- Try to focus on just one customer segment or target group when modelling the first time with a group of actors. Starting with a clearly defined segment will make it easier for the following building blocks to articulate the required needs and tasks.
- Value the energy efficiency standard. Although holistic and deep renovations are generally at the centre of the business model the renovation towards nZEB standards are not seen as a crucial aspect. Achieving the common national building standard does not “produce” more frontrunners in this market segment.
- Moderator and facilitator assistance should have been available for more time

6.1.4 The German groups

Written evaluations from all participants so far has not been collected in Germany. The workshop participants were enthusiastic and liked the workshops. They spoke in high terms of the professional accompaniment of the consultants. The networking partners appreciated the workshops as initial moments for establishing new business collaboration.

For all workshops business modelling experts were initiated for supporting and leading through the modelling process. This situation gave the respective dena-workshop leader free hands for a better technical support of the participants. So participants could ask for special themes and getting competent answers. A third workshop would be appreciated for most of the participants and for the general development and support of the business models as well.

The methodology of the Business Model Canvas can be used as a tool for developing business for collaboration structures also in the market for high efficient building renovations involving various companies, especially at the beginning of the developing process.

Concerning involved companies, the workshops demonstrate a wide range of company types and sizes. Some general findings for all models are visible. For the success of the project it is important to involve the crafts people in the project in an early stage. A lot of companies work together with companies which know each other already for a long time from other performed projects.

A relationship of trust is mostly the basis for working together on site. Another significant characteristic of the participants is a high demand/standard of quality work on site on itself and on the companies involved in the currents projects. A lot of companies using this point as an important value to stand out from other companies work in the building industry. High quality on site is necessary to develop trust and confidence by the clients and to realise building refurbishments which are highly energy efficient.

All networking groups emphasise the absolute necessity of continuous training of all networking members. In all workshops the participants agreed this as a consequence of a wider development of building services equipment and a continual development of regulatory law and standards.

For the success of a well running network a coordinator is necessary. This fact is another cognisance of the workshops. In Hamburg we have an architect/engineer as the driving force. In Ingolstadt we

have a bricklayer and master craftsman but for the teams in Kassel the driving forces are not defined yet. They are still in a finding process in view of this point.

Another lessons learned and what all workshop participants confirmed is the importance of communication. Starting with periodic meetings on site and regular communication (protocols of site meetings and minutes) and furthermore a close contact to the clients. Especially in the Hamburg workshops the Bauteam members underlined this fact as a requirement for the success of a project.

Complemental to this the workshop participants emphasised the need of a trade-spanning collaboration on site. Only if all involved trades know what there flanking trades do or did the quality of the work on site on will be on a high level.

6.1.5 The Dutch groups

Unfortunately it did not work out for almost all participants of the workshops to give written feedback on the COHERENO workshops by filling in the translated evaluation form. Based upon our conversations the involved firms appreciated the organised workshops, working with the business model canvas and the moderation and support of the TU Delft very much. Most of them would like to have more and further support, however they also acknowledged the fact that their own full agenda's construct that.

The experiences of the moderators working with the whole methodology and especially the business model canvas are good. Obviously, the Dutch workshops were not that structured as has been written in the Guidelines. Due to ongoing activities and difficulties in aligning the agendas of various companies, most (smaller construction) companies could not be engaged to spend a full day on a workshop. Instead, it was needed to develop the same amount of information in sequential shorter time frames, using opportunities for exchanging knowledge via e-mail, short briefings or additional meetings and feedback on reports. We organised two or three workshops for each group separately. The groups were moderated and minutes and reports were made. During the workshops the PEST- and SWOT-analysis was discussed and the business model sketched. The willingness of most participants of the groups to attend the workshops and share information in this format was great. However their willingness to do some homework, e.g. interviewing experienced home-owners (it was not possible to use and present this in the series of workshops) and also to get the feedback on the workshops and to fill the evaluation form, was very meagre.

Two representatives of home-owner organisations, both member of the National Advisory Board, VACpunt Wonen and Platform31/Energiesprong have given feedback on the business models. This feedback was discussed with the involved companies of the models.

The Dutch business models are not a direct successor of the Business Collaboration Events held in the Netherlands, however some involved businesses were present at the BCEs. Before starting the group sessions the start-up took more time than expected, e.g. we needed a series of actions by telephone, e-mail and interviews with firms to inform them (and to convince them). Besides, we also had a lot of contacts and interviews with interested parties that were not followed by business modelling or that

decided to develop a business model without the support of the TU Delft. The Dutch market is really in a transition phase, coming from the innovators to the early adaptors.

Three main aspects will improve the quality of the process:

- Make sure that all participants in a group already have discussed the idea for creating a collaboration and are motivated to invest time in developing the concept
- Each group should have one pilot customer from the beginning in order to secure that there is a concrete project to work with from the beginning
- Moderator and facilitator assistance should have been available for more time

7 Cross discussion and some recommendations

When all groups have completed their processes (some to be completed after the finalisation of the project), the COHERENO partners have assisted the establishment of 24 groups in five countries, while the target was twenty five to fifty (budget resources within this project were limited to the time to assist 25 groups through two workshops. It should be noted that companies have formed additional groups inspired by the COHERENO project.

An overall conclusion is that there is more work to be done before the collaboration structures can be fully operative. One important point is to get into place a legal contract between the cooperating companies. It is also interesting to note that those companies having filled in the evaluation forms state that they expect this part of their business to grow within the next three years.

The processes and results have been good, but some had more challenges during the process, such as timing for gathering all companies in the group, different level of commitment within the group and limited time frame for assistance from the COHERNO partners. We will discuss some issues we think are important for organising similar processes for other groups.

7.1 Methodology and competence offered to the companies

The methodology applied in this project is well documented, and it showed to function quite well in all countries. One common challenge was that two workshops to do this work was too strict. All countries did therefore not follow the guideline strictly. It became important to adapt the schedule to what was possible for the participating companies. We therefore recommend following the Guideline developed in the "OneStopShop Project" where it is described three workshops (3)

Please see:

http://www.one-stop-shop.org/sites/default/files/Guidelines-How-to-develop-a-business-model.pdf

One interesting point was that during the planning of this project, the researchers feared that SME's would not have time to participate in two full days workshops. However, when they see this fits into their strategy to target the upgrading market, they are more than happy to receive the assistance to develop adequate strategies together with partners.

The COHERENO partners have their core competence within sustainable construction, except from Segel, which is a consulting company. This company was responsible for the processes in Norway but Sintef assisted with its technical competence. This was proven as a good mix of competence for running good processes. In Germany dena realized that they did not have the facilitator competence in-house, and hired therefore external consultants to help them. This was also a very good experience.

In Austria, first experiences with participating groups helped to improve and optimise the overall process for following workshops.

One critical factor in assisting groups especially when it comes to the business modelling can be determined in the moderator's objectiveness. When the process gets bogged down or currently leads into a dead end, moderators support groups to structure their ideas and to bring them back on track. However, there is a risk that with the ongoing process you find the same patterns and advice in several groups, which may influence the whole business model. A rotation of moderators can therefore be suggested in order to provide an unbiased and open-minded assistance.

The processes also showed that some struggled with using the business model canvas as a tool for developing business for collaboration structures involving various companies. The canvas can be regarded from the perspective of the consortium serving the companies as clients, or as a model for the individual businesses serving homeowners. This duality sometimes leads to confusion. The important question in order to clarify this issue is to conclude whose business model is this. If the group agrees that one of the companies should be the one contact point and invoice the client, they must see it from this perspective, and see the other companies as "key partners". In the cases where this is not obvious, the perspective has to be seen as a consortium (as it would be for a corporate business).

7.2 Recruiting companies

An important learning is that the best way of recruiting companies for a collaboration, is first to find one enthusiastic company which again invites complementary companies they already have some experience in working together with. Persons who attended the open Business Collaboration Events (BCE) formed a majority of the groups.

Except from Norway, all countries struggled to recruit enough groups. Why was this easier in Norway? Some possible explanations:

- The recruiting arena (BCE) also had a workshop that involved a few homeowners. The representatives from the companies therefore got the sense of interacting with real clients in this respect. Maybe this increased the number of participants who wanted to join in for the next step?
- Segel's main activity is to run innovation programs where several firms participate. The consulting company is therefore experienced in recruiting companies for such programs. The communication with potential participants focused on:
    - Do you see an interesting potential in the upgrading market of single family houses (in Norway the refurbishment market is bigger than new construction). And is this a strategic focus for you?
    - It was clearly stated to these companies that if the answers were "no", then they should not join our program. If yes, what we offer is a "gift" to companies wanting to develop a systematic approach towards this market. In fact, the feedback from participants were that this was a "kick-start" for their cooperation.

7.3 Checklist for companies establishing a collaboration for upgrading of homes

In all countries, we checked the different business models on how they have fulfilled the “The Five Disciplines For Creating What Customers Want” (Carlson & Wilmot) which we have rewritten into our context:

1. Is there a holistic understanding of the customers' needs – which normally encompasses more than just energy efficiency?
    - All groups have defined customer needs and even some checked it on existing customers.
2. Do the "value propositions" fulfill the needs?
    - All groups also have addressed the most important needs in defining their value propositions. However, as earlier discussed there is room for further improvements (in particular for those who did not check it out towards homeowners).
3. Are there one or more enthusiastic persons who are committed to the process?
    - In each of the groups, there are several very committed persons.
4. How do you consider the team multi-disciplinary?
    - Many groups are multi-disciplinary, those not intend to have such as external partners. The question remains however, if all of the companies are committed enough to contribute actively in realizing the collaboration.
5. Is the project supported by the top management and in line with each of the companies' strategies?
    - Most companies (except from the largest companies) have involved top management and state that this is in line with their strategies.

For those planning to form new groups, the five points above must be on place if the collaboration shall be successful.

Based on the learnings from our processes in the COHERENO project, we have gathered a "checklist" to be used during the process for creating or modifying business models for one stop shop for nZEB renovation of single family houses:

- Clear idea of target groups
- A strong holistic perspective
- One contact point and sender of invoices
- Check their ideas towards existing customers
- Make use of existing reputation (which should be strong in the local market)
- Good starting point is cooperation with companies you already know
- Including hardware store into the group opens a broader marketing channel

- Make a strong commitment with each other within the group, for example by establishing a separate company together
- Open calculation model build confidence and distribute risk in a fair way between the group and the customer
- Find new type of partners as for instance WEB portals addressing this issue and cooperation with local municipalities
- Include assistance in how to achieve funding and financing of upgrading projects

In order to learn from the weaknesses the following points may be learned from:

- Establishing a tight cooperation takes time to build trust between the partners and find the "right" model for the group
- Important to get the first pilot project short time after the business model development
- All partners in the group must put high priority on this development work
- Make sure that all needs defined for the targeted customer segment is well responded in the value proposition and the rest of the business model.
- QA should have a strong focus during the whole process

7.4 Focus on QA and nZEB renovations

Already at the first workshop with each group, the COHERENO facilitators made use of the outcome of the previous work in this project related to quality assurance in nZEB renovations. Consequently, all groups included elements of QA in their business models. As their ambition levels are towards nZEB level, we see that the targeted customer segments are families with high income. This is necessary as such high ambitions are quite costly. We experienced also that many groups are pragmatic about the ambition level for each retrofitting project, in order to reach a wider market. The most important point for all groups is to get started with any project just to get the experience in working together. Through real projects, they can elaborate their QA procedures across the disciplines. Only two workshops is too little to reach to a complete and ideal collaboration structure.

Idealistically, nZEB upgrading should be so cost-efficient that it should be available for a wide market. However, any innovation (such as nZEB renovation) is first accepted by a minor part of the market. When local reference examples are visible, a growth can be expected.

Therefore, we see the importance of continuation of these measures:

- Operationalise QA-procedures and –tools across the disciplines.
- Harvest from the experiences of operation from the collaboration groups developed as part of the COHERENO project. A follow-up program, which includes monitoring, should be set up.
- Develop methodologies for more cost-efficient retrofitting. Preferably, this should could include use of prefabricated solutions in order to reduce on site construction. This will also reduce the burden for the homeowners.

National authorities should make sure that adequate subventions programs support the embryonic development of this market. In this respect, it is important to identify how more of the best cases can

be realised in the first stage, and secondly how these can rapidly be replicated. Measures both on the supply and demand side should be synchronized.

References:

(1) Guidelines for developing Business models, Bergset R. (2014), COHERENO, www.cohereno.eu
(2) Business Model Generation, Osterwalder & Pigneur (2009)
(3) Guidelines – How to develop a business model for One Stop Shop house renovation, Haavik & Aabrekk, et al (2012), http://www.one-stop-shop.org/sites/default/files/Guidelines-How-to-develop-a-business-model.pdf

Annexes

Leaflets presenting the different models (deliverable from COHERENO work package number four):

Country	Collaboration Group	Annex number
Norway	Group 1, Lofoten	1
	Group 2, Trondheim	2
	Group 3, Trondheim	3
	Group 4, Drammen	4
	Group 5, Hønefoss	5
Belgium	Group 1, Mechelen	6
	Group 2, Kortrijk	7
	Group 3, Houthalen	8
	Group 4, Puurs	9
	Group 5, Hamont	10
Austria	Group 1, Upper Austria and Tyrol	11
	Group 2, Lower Austria and Burgenland	12
	Group 3, Baden, Vienna, Burgenland	13
	Group 4, Vienna and Lower Austria	14
	Group 5, Styria	15
The Netherlands	Group 1, Take Five	16
	Group 2, Harlem	17
	Group 3, Alliantie+	18
	Group 4, ACE	19
	Group 5, National Platform	20
Germany	Group 1, Hamburg	21
	Group 2, Kassel	22
	Group 3, Kassel	23
	Group 4, Ingolstadt	24

The colours indicate what type of actors leading the groups

crafts men /contractors
energy group
diverse group - includes both architects and energy advisors
government/municipal/non profit initiative
Architect